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Smart Manufacturing Transformation: Research on Green Productivity and Energy Efficiency Optimization Strategies

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Abstract

This study integrates theoretical and practical perspectives to investigate the synergies between digital infrastructure and green development in new energy enterprises, aiming to unlock pollution-carbon reduction mechanisms for sustainable growth at both enterprise and national levels under dual pressures of economic quality enhancement and decarbonization. In methodological terms, this study employs a stratified sampling approach across 30 Chinese provinces, surveying 1,092 residents, new energy enterprise employees, and government personnel through field interviews and questionnaires. The analysis examines how new digital infrastructure drives multi-dimensional pollution-carbon reduction synergies in enterprises. Findings indicate broad public recognition of digital infrastructure's positive impact on emission reduction synergies. Furthermore, the research integrates enterprise-level emissions data with green finance and technological development indicators to model their mediating effects on these synergies. Finally, the study concludes based on survey and empirical analysis that, amid the new wave of information technology, there is growing recognition of digital infrastructure's critical role in carbon reduction. Specifically, the synergistic potential of new digital infrastructure in enabling pollution-carbon reduction for new energy enterprises is increasingly acknowledged and accepted.

Keywords

Green productivity, Energy efficiency optimization, Green technology development, New energy enterprise.

1. Introduction

In September 2023, General Secretary Xi Jinping proposed the concept of "new quality productivity" during his inspection in Heilongjiang, defining it as innovative, structurally optimized, technology-intensive, efficient, and sustainable productive forces. This strategic priority for high-quality development serves as China's essential material-technical foundation for modernization, with leadership emphasizing its pivotal role in advancing economic progress and Chinese-style modernization as the fundamental mission of the new developmental era.

A 2010-2018 study analyzing energy efficiency indices across 30 Chinese provincial-level regions revealed distinct spatial patterns, with higher efficiency concentrated in Jiangsu, Zhejiang, and southern Fujian. The eastern and southern coastal areas maintained top-tier performance, followed by the northern coast, Yangtze River middle reaches (second tier), southwestern and Yellow River middle reaches (third tier), while most northwestern and northeastern regions remained in the fourth tier with relatively lower efficiency levels.

The manufacturing sector faces urgent challenges from excessive fossil fuel consumption and CO_2 emissions accelerating global warming and threatening ecological security. As the critical battlefield for emission reduction, manufacturing industries exhibit imbalances in industrial

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structure and energy systems, alongside low resource efficiency. Transforming through intelligent green manufacturing development—strengthening clean production innovation, equipment industrialization, and service sector advancement—holds vital significance for achieving synergistic pollution reduction and carbon mitigation. Integrating developmental and emission-reduction objectives while balancing immediate needs with long-term goals will enhance cross-sectoral clean production capabilities. Transitioning smart manufacturing to renewable energy foundations not only improves ecological quality but also facilitates carbon peaking/neutrality targets, ultimately realizing the dual benefits of environmental protection and sustainable economic growth.

2. Survey Program Design for Synergistic Perception of New Infrastructure Enabling Pollution Reduction and Carbon Reduction

2.1. Background to the survey

The rapid advancement of digital technologies like 5G networks, IoT, and big data analytics has driven widespread integration of new infrastructure into sectors including energy and environmental protection. These innovations create transformative potentials for new energy enterprises to achieve pollution and carbon synergy reductions, necessitating comprehensive assessments of their practical impacts. Shifting perceptions among governments, enterprises, and the public regarding the role of new infrastructurein enabling emission reduction synergies require multidimensional investigations to evaluate its influence on industrial transformation and ecological benefits, thereby informing future policy frameworks.

Governments currently lead new infrastructure promotion through strategic investments, recognizing its capacity to balance economic growth with environmental sustainability while advancing industrial upgrades. Within this landscape, employees in new energy vehicle battery manufacturing possess specialized expertise regarding "new infrastructure-driven pollution-carbon synergy reduction," making their insights critical for understanding sector-specific impacts.

Public awareness varies significantly based on individual engagement and information accessibility. Some residents demonstrate limited understanding of new infrastructure's practical implications, necessitating targeted educational campaigns via government and media channels to enhance public comprehension. Such efforts will also provide actionable feedback for refining policy implementation strategies.

2.2. Purpose of the survey

This study systematically investigates the multifaceted role of new infrastructure in driving enterprise-level pollution and carbon reduction, evaluating its impacts on pollutant emissions and energy efficiency while analyzing stakeholder perceptions across government, industry, and academic sectors regarding synergies between infrastructure development and emission reduction. By establishing an evidence-based precision strategy framework for energy conservation in new energy enterprises, the research aims to accelerate deployment of innovative technologies in infrastructure scenarios, reinforce corporate ecological accountability, and provide data-driven insights to optimize sustainable policy systems. Ultimately, it seeks to align technological advancements, industrial practices, and regulatory frameworks to empower businesses to address environmental challenges effectively, achieving dual objectives of economic growth and ecological sustainability within the evolving context of new infrastructure.

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2.3. Subjects and scope of the survey

This survey mainly targets people in the field of new energy enterprises and the public, and its scope includes government and enterprise staff and the general public.

2.4. Methods of investigation

(1) Questionnaire method. Design a questionnaire to be distributed to new energy enterprises, relevant government departments and residents to collect data and information on the perception of the new infrastructure empowering pollution reduction and emission reduction synergies and the related impacts. Collect and analyze data on energy consumption, pollutant emissions, and the development of new quality productivity of new energy enterprises, and understand the perceptions of government and enterprise staff on new infrastructure and other related policies, and assess their empowering effects on pollution reduction and emissions reduction. Collect the perceptions and outlooks of individual residents on the green synergistic development of enterprises, and summarize and organize the data obtained.

(2) Interview survey method. Invite experts, scholars and industry consultants in related fields to conduct interviews to obtain their views and suggestions on the impact of new infrastructure-enabled new energy enterprises in reducing pollution and emissions. Collaborate with relevant industry associations to obtain the general situation and experience of the industry, and to understand the promotion and effect of the new infrastructure in the whole industry.

(3) Field method. Conducted on-site visits to new energy science and technology companies and new energy enterprises with more advanced new infrastructure technologies to understand their specific modes of operation and the results of synergies in reducing pollution and emissions. Compare the results of the survey with other similar enterprises or industries to analyze the differences in the impact of new digital infrastructure construction in different situations.

2.5. Questionnaire design

The questionnaire is structured into four main sections: respondent demographics, knowledge assessment, occupation-specific questions, and open suggestions. Demographic data (gender, city, age, education, occupation) is collected for categorical analysis. Occupation-based differentiation tailors questions to three groups: residents are surveyed about daily life impacts and participation in pollution/carbon reduction initiatives; new energy enterprise employees provide feedback on policy effectiveness and improvement suggestions; government employees address inter-agency collaboration and policy adjustments. The survey evaluates public awareness of new infrastructure's role in enabling energy enterprises to reduce pollution and carbon emissions, measures attitudes toward related policies, assesses real-world impacts on residents, analyzes participation patterns in environmental initiatives, and gathers sector-specific recommendations.

It specifically examines how new infrastructure empowers emission reduction synergies, quantifies actual participation levels among residents and enterprises, and evaluates governmental efficiency in policy implementation. The collected data will identify perception differences across demographic groups, compare policy concerns among stakeholders, synthesize actionable governance suggestions, and predict development trends with potential challenges. By analyzing respondents' views and proposals, the survey aims to provide evidence-based insights for policymakers, enterprises, and communities to optimize infrastructure-enabled environmental strategies, enhance cross-sector collaboration, and advance sustainable development goals through coordinated efforts between new energy sectors, government agencies, and citizens.

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3. Survey Implementation and Statistical Description

3.1. Investigations

Together with the instructor and team members, discuss the selection of topics. Make a detailed and specific time plan and work arrangement by the team leader. Set up the web questionnaire through Questionnaire Star, distribute and collect the questionnaires. Analyze the data and further adjust the research plan. After the research, team members discuss the article ideas together, divide the research report into several parts according to the division of labor, write a certain part of the research report separately, and finally summarize the amendments.

3.2. Data processing and testing

(1) Pre-survey In order to make the questionnaire more convincing, before the official start of this survey will check whether the questionnaire is scientific or not, so this survey conducts a simulation of the survey to fill out the questionnaire, for some ambiguities, the abstraction of the problem this survey to change, for the irrational order of the adjustments for the official questionnaire to lay the foundation for the increase in the accuracy of the questionnaire. The pre-survey designed the questionnaire through Questionnaire.com, and subsequently had panelists actively forward and fill out the questionnaire on social media platforms such as QQ, WeChat, and Weibo. During the period of February 15 - February 20, 2024, a total of 175 questionnaires were collected, and the questionnaires were screened in the following order. (i) Excluding questionnaires with abnormal data that do not comply with the regulations; (ii) excluding questionnaires with omissions or missing values; and (iii) excluding questionnaires in which the respondent's time for answering the question is less than 100s. The final number of valid questionnaires obtained is 161, and the recovery rate of questionnaires is 92%, which meets the basic requirements. Finally, in the data entry, the double entry method is adopted, and the questionnaire is automatically calibrated by using Epidata software, which ensures the accuracy of the questionnaire and improves the quality of the questionnaire. The final effective questionnaire for data statistics and the next step of analysis.

(2) formal survey. In order to ensure the accuracy and reliability of the questionnaire, this survey uses Credamo platform to distribute the questionnaire. This survey will set the research object of the residents of 30 provinces except Tibet, focusing on the survey, the data bazaar for the distribution of the questionnaire.The period of February 22, 2024 - February 28, 2024 is the period of questionnaire collection for this survey. Up to the last moment, a total of 1,210 questionnaires were collected in this survey, and the collected questionnaires were screened as follows: (i) Excluding the questionnaires that were repeatedly filled out by the interviewers;(ii) Excluding the questionnaires that were not related to the data based on the actual content;(iii)Excluding the questionnaires that had omissions or there were still missing values;(ⅳ) Excluding the questionnaires that the respondents had an answer time of less than 100s, by calculating the average answer time for filling out the questionnaires as well as the thinking time, the survey considered that if the filling out time was less than 100s, it was completed by the interviewers in a non-serious situation, therefore the survey chose to exclude relevant data. survey chooses to exclude the relevant data. Excluding the unqualified questionnaires, a total of 1,092 valid questionnaires were collected in this survey, and the recovery rate of the questionnaires amounted to 90.3%, which was basically in line with the requirements. The valid data were further entered, organized, coded and further analyzed.

3.3. Data quality analysis

3.3.1. Reliability test

The reliability test focuses on the consistency, stability and reliability of the measurement results, i.e., whether the test results reflect the stable and consistent true characteristics of the

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respondents. The reliability analysis testing method adopted in this survey is Cronbach's Alpha (alpha value) reliability coefficient method. Its formula is:

$$a = \frac{k}{k-1}(1 - \sum_{i=1}^{k} \frac{s_i{}^2}{s_p{}^2}) \quad (1)$$

Where, k is the number of items in the scale $s_i{}^2$ is the variance of the ith item and $s_t{}^2$ is the total variance of the scale. This formula involves the ratio of the number of items to the number of items minus one, multiplied by the difference between the total variance of the scale and the variance of each item. As shown in Table 1, the Cronbachs alpha coefficient ranges from 0 to 1, with higher values indicating higher internal consistency .

Table 1. Pre-survey reliability analysis table

Cronbachs Alpha	Item Count (of a consignment etc)
0.803	15

Because Cronbachs alpha > 0.8, the questionnaire structure and questions were well designed.

3.3.2. Validity tests

Validity, or validity, is the degree to which a measuring tool or instrument measures the thing to be measured. In order to explore whether the factors are consistent with the data analysis, KMO test and Barlett's test of sphericity were used in this investigation.

Table 2. KMO test and Barlett's test of sphericity

KMO and Barlett's test		
The Kaiser-Meyer-Olkin metric for sampling adequacy		0.687
Barlett's test of sphericity	approximate chi-square (math.)	27.904
	df	6
	significance	<0.0001

As shown in Table 2, the value of KMO > 0.5 indicates that the variables are correlated and the significance < 0.05 in Barlett's test of sphericity indicates that the questionnaire questions have met the criteria for the next step of modeling.

3.4. Quality analysis

3.4.1. Qualitative analysis

(1) Inductive analysis. Inductive analysis is a method of drawing conclusions by analyzing and summarizing existing data. In a specific study, the researcher first collects a large amount of data and then classifies, organizes and summarizes the data to draw conclusions.

Prior to the questionnaire survey, this survey was conducted to understand how to collaborate in reducing pollution and carbon emissions through new infrastructure, and to understand the amount of emissions and methods of the relevant enterprises, which were analyzed by studying the relevant perceptions of the residents, government officials, and enterprise staff.

(2) Structural analysis (physics). Structural analysis refers to the analysis of the components of an economic system and the laws of change in their comparative relationships. For example, it analyzes the structure of the three industries in the gross national product and the structure of consumption and investment, and it analyzes the structure of the role of various factors in economic growth. Structural analysis is mainly a static analysis, i.e., an analysis of the pattern of change of the components of an economic system over a certain period of time.

This survey was conducted through a questionnaire to find out the level of understanding of the residents, staff and members of the government on the empowerment of the new infrastructure, to study the influencing factors, and to put forward the corresponding opinions and recommendations.

3.4.2. Quantitative analysis

(1) Descriptive statistical analysis: The data was organized and described through tables, classifications, statistics and other methods to make the collected data more understandable by presenting it in a graphical way. The data of this survey is presented more clearly by drawing bar charts to understand the impact of different dependent variables on the construction of digital facilities to reduce pollution and emissions.

(2) Univariate analysis: Univariate analysis focuses on univariate description as well as statistical inference, reflecting the basic information of the sample data in the simplest way possible, mainly expressing the concentrated or discrete trends of the sample. It includes interval estimation and statistical hypothesis testing.

(3) List analysis: Columnar analysis is mainly used to conduct relevant statistical analysis and inference using the columnar table, using the columnar method to determine whether the attributes examined are related to each other or not, and whether they are independent of each other. In applying the column association method, this survey chooses to adopt the chi-square test.

It is known to have the formula:

$$X^2 = \sum \frac{(f_0 - f_e)^2}{f_e} \tag{2}$$

The testing process is as follows: first make a hypothesis that there is no difference in Ho and there is a difference in H1, select the statistic, calculate the left and right rejection domains, compare the value of the statistic and the size of the critical value, and make a judgment.

4. Analysis of the Mediating Effect of Synergies between New Digital Infrastructure and Pollution and Carbon Reduction

4.1. Selection of variables

4.1.1. Sample selection

This study utilizes panel data from Chinese new energy enterprises spanning 2011–2022, following China's 2015 "National Big Data Strategy" initiative. Data sources include governmental publications (National Bureau of Statistics, China Statistical Yearbook series), industry reports (Internet Society of China, MIIT Information Center), and commercial databases (CSMAR, Wind), supplemented by corporate annual reports and CSR disclosures. Screening criteria excluded financial/ST/*ST firms, enterprises lacking mandatory carbon emission disclosures or CSR reports, and observations with missing data. The final sample comprises 1,005 valid entries after truncating continuous variables at the 1st and 99th percentiles to address outliers.

4.1.2. Variable setting

(1) Explanatory variable: Pollutant emissions (POLLUTION): The pollutant emissions covered in this section are the pollutant emissions of enterprise i in year t. The pollutant emissions of enterprise i in year t are the pollutant emissions of enterprise i in year t. Pollutant emissions from enterprises mainly include COD and ammonia nitrogen emissions from wastewater in the new energy industry, and sulfur dioxide and nitrogen oxide emissions from exhaust gas in the new energy industry. For data processing, we standardize the emissions of the above four pollutants - converting them to a uniform number of pollution equivalents and summing the pollution equivalents (plus 1 to take the logarithm), and taking the opposite, as a measure of enterprise pollutant emissions.

Carbon Emission (CO_2): Carbon emission accounting is the basic premise for effectively carrying out all carbon emission reduction work and promoting green transformation of the economy, as well as an important support for actively participating in the international

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negotiations on coping with climate change. Carbon accounting can directly quantify the data of carbon emissions, and can also identify potential emission reduction links and ways by analyzing the data of carbon emissions in various links, which is crucial for the realization of carbon neutral targets and the operation of the carbon trading market.

(2) Explanatory variable: Digital Infrastructure (DIC): Digital infrastructure is an infrastructure system driven by data innovation, based on communication networks and centered on data computing facilities. It is the main goal of digital economy development in the "14th Five-Year Plan" period.

(3) Intermediary variable: We categorize the level of green development into two mediating indicators:

Green finance development level (GF): Green finance is an important means to promote economic structure transformation after China's economic development has entered the "new normal". Green finance pursues the coordinated development of financial activities with environmental protection and ecological balance, and different provinces, autonomous regions and cities have different development status, and the size of its value can reflect the strength of each government's policy on green finance. We select four indicators, namely, green credit, green investment, green insurance, and government support, and use the entropy value method to measure the green finance index of each province, region and city.

Green technological innovation (OIC): sustained green technological innovation is the driving force to ensure sustained economic growth and the key to realizing high-quality economic development. In order to be more relevant to the reality, we choose the factor of green innovation efficiency to measure the green technological innovation of enterprises, that is, sustained innovation as an independent variable, while using innovation input indicators (R & D costs) and innovation output indicators (number of patents) before and after the comparison, the specific formula is:

$$IIP_t = \frac{IIN_t + IIN_{t-1}}{IIN_{t-1} + IIN_{t-2}} \times (IIN_t + IIN_{t-1}) \tag{3}$$

$$OIP_t = \frac{OIN_t + OIN_{t-1}}{OIN_{t-1} + OIN_{t-2}} \times (OIN_t + OIN_{t-1}) \tag{4}$$

Where, IIPt and OIPt are the firm's innovation input persistence and innovation output persistence in year t, IINt, IINt-1, IINt-2 and OINt, OINt-1, OINt-2 are the firm's R&D expenditures and patent applications in year t, respectively.

(4) control variable. By collating relevant literature and generalization, we use the following indicators: ①Regional level. Considering the factors affecting the regional level, we choose the economic development level (EDL), industrial structure (IS), and marketization degree (MD) as control variables. Among them, the economic development level is measured by the per capita GDP of each province; IS is measured by the share of manufacturing value-added in regional GDP; and MD is obtained by the share of government general public budget expenditure in regional GDP. ②Enterprise level. For the firm level, we select financial leverage (LEV), return on total assets (ROA), return on equity (ROE), total asset turnover (ATO), cash holdings (Cashflow), shareholding concentration (TOP1), board size (BOARD), proportion of independent directors (INDEP), and Tobin's Q (TobinQ).

In particular, LEV is measured by the year-end asset-liability ratio; ROA is the average residual value of net profit to total assets; ROE is the average residual value of net profit to shareholders' equity; ATO is operating income to average total assets; CASH is derived by dividing the sum of money funds and trading financial assets by total assets; TOP1 uses the percentage of shares held by the first largest shareholder; and BOARD is taken as a natural logarithm through the number of board members; INDEP equals the number of independent directors divided by board size. In addition, the year (YEAR) variable is controlled.

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4.2. Mediating effects modeling

4.2.1. Meaning

The independent variable X affects the dependent variable Y. If X affects Y by influencing the variable M in addition to its own direct effect on Y, the variable M is regarded as a mediating variable. The role is publicized as follows:

$$Y = cX + e_1 \tag{5}$$

$$M = aX + e_2 \tag{6}$$

$$Y = c'X + bM + e_3 \tag{7}$$

If the variables have been centered or standardized, the corresponding equations can be used to illustrate the relationship between the variables. Where c is the total effect on X on Y, ab is the mediating effect via the mediating variable M, and c′ is the direct effect. When there is only one mediating variable, the relationship between effects is as follows:

$$c = c' + ab \tag{8}$$

The mediation effect size is measured by c - c′ = ab.

Bootstrap test is: Bootstrap method is a method of repeated sampling from a sample, provided that the sample is representative of the population. The general method of sampling is to repeat the sample with put-backs. Bootstrap method does not involve the overall distribution and its parameters and utilizes the empirical distribution derived from the sample instead of the overall distribution, which is a non-parametric method.

4.2.2. Modeling

Based on the definition of the mediating variables above, we construct the model as follows:

H1: The development of digital infrastructure can curb corporate pollutant emissions.

Model I:

$$POLLUTION = \beta_0 + \beta_1 DIC + \beta_2 CONTROLS + \alpha + \varepsilon \tag{9}$$

H2: The level of green finance development and green technology innovation can inhibit the emission of pollutants by enterprises.

Model II:

$$MECHANISM = \delta_0 + \delta_1 DIC + \delta_2 CONTROLS + \alpha + \varepsilon \tag{10}$$

H3: The level of green financial development and green technological innovation as mediating variables to inhibit corporate pollutant emissions.

Model III:

$$POLLUTION = \theta_0 + \theta_1 DIC + \theta_2 OIC + \theta_3 CONTROLS + \alpha + \varepsilon \tag{11}$$

Where, β, δ, and θ are parameters to be estimated, α is a year fixed effect, and ε is a random perturbation term; POLLUTION is pollutant emissions from firms; MECHANISM is a mediating variable, including the level of green financial development (GF) and green technological innovation (OIC); DIC is the level of digital infrastructure; and CONTROLS is a firm- and region-level control variable, which is expanded below. control variables will be expanded specifically below.

4.3. Analysis of mediation effect results

We first conduct Bootstrap test for the panel data of the sample firms for 12 consecutive years for the level of green finance development.

The expression for mode one is:

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$$POLLUTION = 0.1532 + 0.0106DIC + 0.0009LEV + 0.0002ROA - 0.0003ROE + 0.0016Cashflow - 0.0003Board + 1.86 \times 10^{-6}Indep - 0.00001TOP1 + 0.00004TobinQ - 0.00005ATO + 7.42 \times 10^{-8}EDL - 0.0005IS + 0.0113MD \quad (12)$$

The coefficient of Digital Infrastructure Construction (DIC) is positive, which indicates that when the initiative of developing digital infrastructure is carried out, it also has a significant inhibitory effect on the emission of pollutants from enterprises. And in the control variables, the regional level model is reflected as significant, which clearly shows that each region in its own development process, indeed have paid full attention to the enterprise emission reduction this important issue, and not in the pursuit of economic development in the process of the abandonment of the key concept of green development, but can be well balanced between economic development and environmental protection balance relationship.

The expression for mode two is:

$$GF = 1.2734 + 0.4285DIC + 0.0092LEV + 0.1501ROA - 0.0795ROE + 0.0430Cashflow - 0.0132Board + 0.00006Indep - 0.0006TOP1 - 0.0037TobinQ + 0.0021ATO + 3.5 \times 10^{-6}EDL - 0.0218IS - 0.1263MD \quad (13)$$

The results show that the continued development of digital infrastructure will contribute to the advancement of green finance. The green finance metrics we use are a combination of green credit, green investment, green insurance, and government support over a 12-year time horizon using the entropy weighting method. It is clear that the development of the green finance industry is inevitable and imperative under the current digitalization trend, and that the pace of its development will accelerate with the improvement of digital infrastructure.

The expression for mode three is:

$$POLLUTION = 0.1467 + 0.0063GF + 0.0080DIC + 0.0008LEV - 0.0007ROA + 0.0002ROE + 0.0013Cashflow - 0.0002Board + 1.5 \times 10^{-6}Indep - 9.37 \times 10^{-6}TOP1 + 0.00006TobinQ - 0.00006ATO + 5.32 \times 10^{-8}EDL - 0.0003IS + 0.0120MD \quad (14)$$

Table3. GF mediated effects results analysis table

Term (In A Mathematical Formula)	Ratio	Efficiency Value	Bootstrap Standard Error	Confidence Interval at 95% Level
GF indirect effects	-0.0191058	0.0000597	0.00082296	[-0.0206721,-0.0174286]
GF direct effect	-0.00008846	0.0000315	0.00065215	[-0.0014337,0.001112]
GF total effect	-	0.0000912	-	-

The conclusion shown in Table 3concludes that while there is no mediating effect of the level of green finance development on the direct effect between digital infrastructure development and corporate pollutant emissions, there is a fully mediating effect reflected in the indirect effect. Therefore, we believe that green financial development has a fully mediating effect on corporate pollutant emissions. The report of the 20th Party Congress proposes that promoting the greening and decarbonization of economic and social development is a key part of achieving high-quality development, and especially points out that it is necessary to promote the development of high-end, intelligent, and green manufacturing industries, and at the same time emphasizes that green environmental protection is one of the new growth engines of the Chinese economy. Promot the continuous development of green finance while suppressing corporate pollutant emissions is consistent with our experimental results.

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5. Collaborative Coupling Model of Pollution and Carbon Reduction for Digital Infrastructure Enabled Enterprises

5.1. Measurement methodology

5.1.1. Indicator measurement

Coupling degree describes the degree to which two (or more than two) systems or elements interact and influence each other, and is a dynamic relationship of interdependence, coordination and mutual promotion under the good interaction of subsystems. The larger the degree of coupling, the stronger the interaction between the systems. Its functional expression is:

$$C=[\frac{\prod_{i=1}^{n}U_i}{(\frac{1}{n}\sum_{i=1}^{n}U_i)^n}]^{\frac{1}{n}} \tag{15}$$

In this paper, we calculate the coupling value between the two systems, when n is 2, and construct the coupling degree model of the two systems based on the above equation:

$$C=2\sqrt{\frac{U_1\times U_2}{(U_1+U_2)^2}} \tag{16}$$

When C=1, it indicates that the two systems are in the optimal coupling mode and realize orderly development; when C=0, it indicates that the two systems are in a disordered state.

The coupling degree can only indicate the interaction between systems, and cannot present the overall coordination status. If all systems are at a low level and the gap between the evaluation values is small, the coupling degree will still obtain a high value, which will lead to the analysis results not matching the actual situation. The degree of coupling coordination is used to express the good interaction between different systems or elements, which can well make up for the pseudo-high coupling phenomenon mentioned above. Its calculation formula is as follows:

$$D=\sqrt{C\times T} \tag{17}$$

$$T=\alpha U_1+\beta U_2 \tag{18}$$

Where, D is the coupling coordination degree; T is the comprehensive coordination index between the two systems, reflecting the overall benefit or level between the two systems; U_1 represents the comprehensive evaluation level of the new infrastructure, and U_2 represents the comprehensive evaluation level of the pollution reduction and carbon reduction, which is obtained from the processed Malmquist index normalized by the polar deviation; α and β represent the weights of the two systems in the overall coordinated development, respectively.

At present, there is no uniform definition of the values of α and β. It is generally believed that when the degree of influence and contribution to the overall system development between the two systems are not similar or when the differences between the systems cannot be accurately determined, they can be considered equally important. Existing studies consider that new infrastructure and pollution reduction and carbon reduction play equally important roles in the process of China's high-quality development in the new era, so they are given the same weight, i.e., $\alpha = \beta = 0.5$; since the level of new infrastructure development in this paper is synthesized through the level of information, integration, and innovation infrastructure development with the corresponding weights, in order to further explore the coupling and coordination degree of new infrastructure subsystems and pollution reduction and carbon reduction, referring to the already determined Since the development level of new infrastructure in this paper is synthesized through the development level of information, integration and innovation infrastructure and the corresponding weights, in order to further explore the coupling and coordination degree of new infrastructure subsystems with pollution reduction and carbon reduction, the coupling and coordination degree of information, integration and innovation

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infrastructure with pollution reduction and carbon reduction is calculated respectively with reference to the identified subsystem weights.

5.1.2. Measurement and analysis results

In order to visualize the coupling and coordination status of the two systems, the intervals and grades of the degree of coupling and coordination of the two systems are divided to determine the type of coupling and coordinated development, drawing on the classification standards of relevant scholars. Where the relative development degree is expressed by $F=U_1/U_2$.

The coupling degree reflects the strong or weak relationship between the subsystems in the system that are interrelated, interdependent and interacting with each other, and the coordination degree reflects whether the subsystems promote each other at the high level stage or constrain each other at the low level stage. In order to reflect the synergistic relationship between pollution reduction and carbon reduction, the coupling and coordination degree model was introduced with reference to the method of Wenmei Liao et al. The different stages were divided according to the range of values of coupling degree and coordination degree and the coupling degree and coordination degree were defined as the explanatory variables based on the polar-variance-normalized emissions of CO_2 and SO_2 , respectively.

$$C = \frac{2\sqrt{CO_2 \times SO_2}}{CO_2 + SO_2} \tag{19}$$

$$D = \sqrt{C \times (0.5CO_2 + 0.5SO_2)} \tag{20}$$

Where, c is the degree of coupling between the "carbon system" and the "pollution system"; d is the degree of coordination. Coupling coordination does not directly characterize the coordination effect between carbon and pollution, but indicates the "relevance" between carbon emissions and pollution emissions, the greater the degree of coupling and coordination indicates that the "carbon system" and "pollution system" interdependence between the more obvious. The larger the degree of coupling and coordination, the more obvious the interdependence between the "carbon system" and the "pollution system". Since CO2 and SO2 are both negative indicators, the smaller values of equations (19) and (20) represent the better coupling and synergy between carbon and pollution emissions.

Figures 1 and 2 analyze spatiotemporal patterns of carbon-pollution emission coupling. Figure 2 reveals an inverted U-shaped trajectory, indicating that China's carbon-pollution coupling coordination initially exhibited high-level coupling with "high-quality coordination" (2011–2017) characterized by strong emission-output alignment. However, this phase represented functional coupling rather than genuine eco-efficiency improvements. Post-2017, as new infrastructure accelerated, coupling intensity weakened while coordination levels stabilized, reflecting improved alignment between emission reduction and industrial transformation. Carbon trading policies likely strengthened this synergy by incentivizing low-carbon transitions. Notably, Figure 2 highlights a persistent positive correlation between coupling degree and coordination level, yet most regions remained trapped in "low-level coupling with dysfunctional coordination" during the sample period, underscoring uneven regional progress in achieving genuine emission-ecology harmony.

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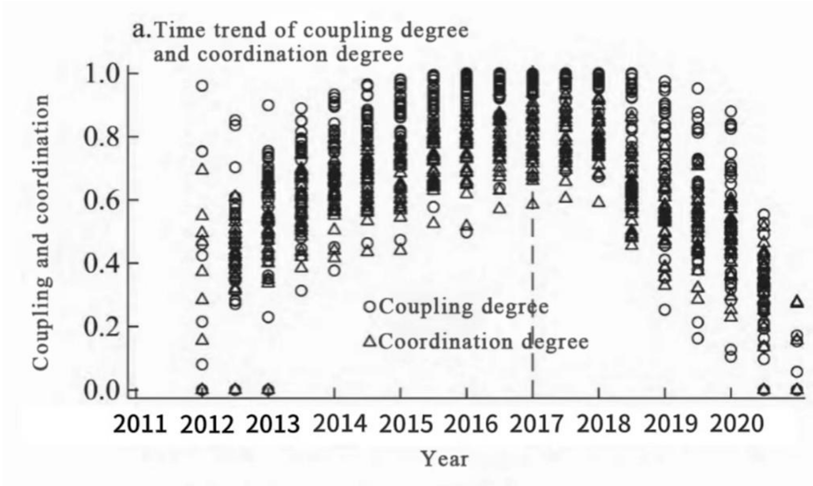

Figure 1. Coupling harmonization time trend

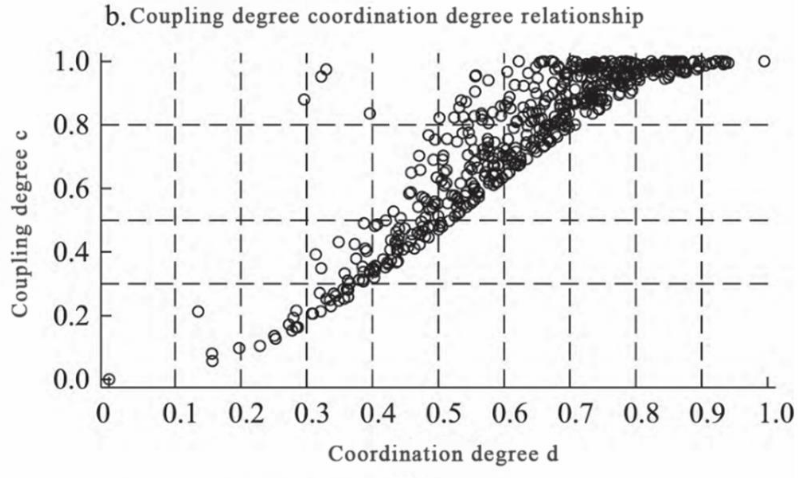

Figure 2. Coupling degree coordination degree relationship diagram

6. Suggestions

6.1. Government level

Digital infrastructure development plays an important role in reducing emissions and improving efficiency for manufacturing enterprises, and governments have multiple identities in promoting digital infrastructure development. As a policymaker, the Government should introduce specialized policies and development plans to clarify the objectives, tasks and roadmap for the synergistic development of new infrastructure and new energy enterprises. And it can set up special funds to support the application of new infrastructure projects in new energy enterprises, as well as new energy enterprises to carry out the research and development and transformation of technology related to pollution reduction and carbon reduction. Relevant technical standards and norms can be formulated to ensure that the synergistic development of new infrastructure and new energy enterprises is rule-based, scientific and reasonable. At the same time, the government can build a cooperation platform and organize relevant enterprises, research institutions and other organizations to establish an exchange and cooperation platform to promote information sharing, technical exchanges and project cooperation. As the government, it should also strengthen publicity and guidance to improve social awareness of the new infrastructure to empower new energy enterprises to reduce pollution and carbon synergistic development and attach importance to create a favorable atmosphere.

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6.2. Enterprise level

First, actively invest in the introduction and upgrading of technologies and equipment related to new infrastructure, such as intelligent energy management system, advanced environmental monitoring equipment, etc., and utilize the new infrastructure to enhance its ability to reduce pollution and carbon emissions. Secondly, strengthen the collection and analysis of data, and better understand its own energy consumption and emissions through the data platform built by the new infrastructure, so as to accurately formulate and implement strategies to reduce pollution and carbon emissions. Furthermore, strengthen the cooperation and exchange with other enterprises and research institutions to jointly explore the innovative application of new infrastructure in the field of new energy and promote technological progress. Digital infrastructure construction is crucial for manufacturing enterprises to reduce emissions and improve efficiency. Lastly, continue to carry out technological research and development and innovation, and utilize the opportunities brought by the new infrastructure to continuously improve the competitiveness and sustainability of enterprises in terms of pollution reduction and carbon reduction.

6.3. Individual level

Strengthen the digital talent pool. For individuals, they should continuously strengthen their own level. Human capital is an important driving force for the digital economy to empower the manufacturing industry to enhance the energy efficiency of the manufacturing industry, and at present, the level of human capital in China as a whole is still on the low side, so we should not only pay attention to the cultivation of high-end technical talents, but also pay attention to the digital skills training for the middle- and low-skilled labor force, so as to better adapt to the needs of the development of the manufacturing industry.

In addition, residents should do a good job of supervision of new energy enterprises, effective supervision of the "key few" control, in the face of most new energy enterprises, the Supervisory Authority is difficult to supervise one by one in place, which requires us to the people's eyes, really do the role of supervision, so that new energy companies continue to carry out the green development of the road.

In summary, digital infrastructure construction is of great significance for manufacturing enterprises to reduce pollution and emissions and improve efficiency, and through reasonable planning and implementation by the enterprises themselves, it can help them realize the goal of sustainable development, complete the green transformation, improve green efficiency and enhance competitiveness.

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References

[1] ZHAO Man-yi,WANGKe. Research synthesis and outlook on integrated assessment of synergistic effect of pollution reduction and carbon reduction[J/OL]. China Population-Resources and Environment, 2024(02):58-69[2024-05-18].

[2] Di Qianbin,LiangChenlu,ChenXiaolong. Dynamic coordination effects of pollution reduction and carbon reduction and economic development in Guangdong Province[J/OL]. Environmental Science: 1-19[2024-05-18].

[3] LIU Huajun,ZHANGYichen. Generation Logic, Connotation Explanation and Realization Strategy of Synergistic Effect of Pollution Reduction and Carbon Reduction[J/OL]. Contemporary Economic Science:1-14[2024-05-18].

ISSN: 2710-0170

[4] Yue Liping, Yang Xinyi. Industrial transformation and upgrading under the constraints of dual environmental objectives: how to "synergize" pollution reduction and carbon reduction[J]. China Population-Resources and Environment, 2024, 34 (01): 46-58.

[5] GUO Pei,WANGGuangyuan. Synergistic effects and mechanisms of pollution reduction and carbon reduction in digital economy--an empirical test based on prefecture-level city data[J]. Resource Science, 2023,45(11):2117-2129.

[6] SONG Jian,HUXuemeng. How Robot Application Improves the Quality of Green Development of Chinese Manufacturing Enterprises--An Analysis of Index Construction Based on the Dual Objective Constraints of "Emission Reduction" and "Efficiency Improvement"[J/OL]. Macro Quality Research:1-21[2024-05-18].

[7] Jiao Y, Qi Meixia. Digital economy empowers the development of new quality productivity[J]. Economic and Management Review,2024,40(03):17-30.

[8] NING Liang,LIQianrong. The impact of new infrastructure construction on regional green total factor productivity--an empirical study based on inter-provincial data in China[J/OL]. Journal of Ocean University of China (Social Science Edition):1-14[2024-05-19].

[9] ZENG Jianguang, YAN Jiangnan, REN Jie. Strengthening the New Infrastructure of "Double Carbon" and Constructing China's New Energy System under Digital Economy[J]. China Development, 2024,24(02):80-84.

[10] LI Yongjian,LIUZonghao. New infrastructure drives the development of new quality productivity[J]. Science and Technology China,2024(04):18-22.

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Exploration of Challenges and Strategies in Teaching Business English Translation in Higher Vocational Education

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Abstract

This study utilizes a literature review to offer comprehensive insights into the challenges in teaching Business English translation in higher vocational education. It identifies key challenges, including students' weak English foundations (e.g., limited vocabulary, poor grammar, and over-reliance on AI tools), monotonous teaching models (e.g., outdated methods and insufficient cross-cultural training), and the disconnection between textbooks and market demands (e.g., theoretical focus and lack of practical relevance). To address these issues, four strategies are proposed: 1) stratified teaching, involving dynamic grouping and micro-class/flipped classroom models to cater to diverse proficiency levels; 2) project-driven learning integrated with competitions, such as real-world translation projects and certification-aligned curricula; 3) technology empowerment, leveraging translation tools (e.g., Trados, VR) and industry collaboration to bridge skill gaps; and 4) diverse evaluation systems, combining process-oriented assessments and feedback loops for continuous improvement. These strategies aim to enhance teaching quality, foster practical competence, and align education with industry needs, ultimately cultivating translators capable of thriving in global business environments.

Keywords

Business English translation, higher vocational education, teaching strategies, stratified teaching, technology integration.

1. Introduction

In the context of globalization, business English translation serves as a tool for effective international business communication. Its significance within higher vocational education is thus undeniable. However, the pedagogical landscape of business English translation in vocational settings is characterized by a complex array of challenges that demand scholarly attention and innovative solutions. This paper will explore those challenges and propose some solutions for them.

2. Challenges in Business English Translation Teaching

2.1. Insufficient English Foundations and Diminished Learning Motivation

A primary impediment to effective instruction is the frequently inadequate English language proficiency of students entering vocational programs. These students often struggle with both the breadth and depth of their English vocabulary, impeding their ability to establish a firm foundation for advanced knowledge acquisition. Empirical evidence suggests that students in vocational colleges may exhibit weaknesses across several fundamental linguistic domains, including limited vocabulary, an underdeveloped grasp of grammar, and deficits in written and oral communication skills. Moreover, they may present a narrower scope of general knowledge

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and varying degrees of cross-cultural awareness (Duan, 2022). In addition, research indicates that vocational business English students often demonstrate weaker learning aptitudes, possess only average English foundations, and exhibit relatively short attention spans (Zhang, 2024). Deficiencies in grammatical knowledge frequently manifest as fundamental errors in translation at the sentence and paragraph levels.

As a result, students may find it difficult to achieve a nuanced and in-depth understanding of source texts, resulting in translations that are either inaccurate or excessively literal, failing to capture the intended meaning and stylistic nuances. This issue is further compounded by a lack of appreciation for the long-term value and relevance of business English proficiency. Lacking clearly defined goals and a broader understanding of the role of business English in their future careers, students may demonstrate diminished motivation, insufficient investment in their English language studies, and a general lack of enthusiasm for learning (Hu, 2024). Furthermore, their limited foundational skills often deter participation in enriching extracurricular activities such as translation competitions e.g., Business English Translation Test (BETT), the Midwest Foreign Language Translation Competition, or China Accreditation Test for Translators and Interpreters (CATTI), thereby hindering opportunities for practical skill development. The readily availability of online translation software and AI tools may also inadvertently foster over-reliance and discourage the development of independent critical thinking skills, which are essential for success in this field.

2.2. Ineffective Pedagogical Models

The dominance of standardized teaching approaches represents another significant challenge in higher vocational education. Inflexible curricula and large classes can neglect the varied educational requirements of students, causing disparities in academic achievement and hindering efforts to tailor learning experiences to individual needs. (Jing, 2022). Traditional didactic methods, where students passively receive information, can stifle student engagement and reduce overall teaching effectiveness. Research has highlighted the monotonous nature of many higher vocational business English translation courses, characterized by uninspired classroom instruction that disregards individualized learning preferences, resulting in poor student involvement and suboptimal learning outcomes (Cui, 2019). Similarly, scholars have argued that the continued reliance on traditional teaching methods, with limited student participation, negatively impacts engagement and undermines the overall efficacy of instruction (Gao, 2021).

Moreover, outdated teaching methodologies and resources can hinder students' progress. Students may be relegated to engaging in rote translation exercises using teacher-provided materials, with few opportunities for realistic simulation that reflects the complexities of real-world professional demands. In addition, many students struggle to utilize industry-standard translation software or to integrate AI tools effectively into their workflow, hindering their ability to achieve optimal translation efficiency. A further challenge lies in the lack of cross-cultural awareness and specialized knowledge among some business English instructors. As some researchers suggest, instructors with limited cross-cultural understanding may inadvertently overlook the significance of cultural context in effective communication, leaving students ill-prepared to navigate the nuances of diverse cultural settings in professional environments (Hu, 2024).

As noted by Niu (2024), some translation education programs may fail to adequately emphasize the practical application of translation principles, leaving students unprepared to appreciate the subtleties and distinctions between English and Chinese cultures. This can result in unresolved cultural barriers in business English translation, thereby limiting the holistic development of vocational students and their readiness for the global marketplace.

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2.3. Textbooks Disconnected from Market Demands

The absence of relevant and engaging textbook content constitutes an additional impediment to effective instruction. Studies indicate that many textbooks designed for higher vocational business English translation courses lack practicality and fail to capture students' interest (Zhang, 2024). The content is often static and excessively formulaic, focusing on routine language comparisons and translation techniques, with insufficient attention paid to real-world applications and emerging trends in the business and translation sectors (Wang & Wei, 2022).

Furthermore, it has been observed that higher vocational college textbooks frequently prioritize theoretical knowledge over practical application. Translation materials may be overly complex, misaligned with students' fields of study, or irrelevant to their actual professional needs, rendering them ineffective for pedagogical purposes (Duan, 2022).

Therefore, this article aims to address the gaps in the literature and to identify and explore effective strategies for teaching business English translation to vocational students. It is hoped that by addressing these concerns, it will be possible to improve the quality of vocational business English translation education by offering practical methods and actionable recommendations for instructors.

3. Teaching Strategies

To address the aforementioned challenges and enhance the efficacy of business English translation instruction in higher vocational education, this article proposes the following evidence-based pedagogical strategies.

3.1. Implementing Tiered Instruction

This strategy centers on the principle of differentiated instruction, acknowledging the heterogeneity of students' English language proficiency levels.

Diagnostic Assessment and Dynamic Grouping: A "diagnostic assessment + semester ability assessment" mechanism should be implemented to create personalized language profiles based on students' initial English proficiency levels. These profiles, derived from entrance diagnostic tests, will facilitate dynamic grouping, with student levels adjusted each semester based on periodic performance evaluations.

Differentiated Learning Objectives: Students should be divided into "Foundation," "Improvement," and "Intensive" classes based on their English proficiency (encompassing vocabulary, grammatical competence, and translation skills). Differentiated learning objectives should then be established for each tier. For example, the "Foundation" class may focus on strengthening basic English vocabulary and foundational business vocabulary (e.g., trade terms, basic sentence structures), while the "Improvement" class emphasizes accurate vocabulary and sentence usage. The "Intensive" class may focus on advanced translation training using industry-specific texts (e.g., textiles, international trade, international business documents). This approach recognizes that the stratification of teaching methods can lead to differentiation, influencing students' self-confidence and, in turn, affecting their motivation to engage in the learning process (Zhao, 2023). It also aligns with research highlighting stratified teaching as an effective method to teach students in accordance with their individual abilities (Shi et al., 2020).

Micro-Class + Flipped Classroom Model: Introduce a "micro-class + flipped classroom" model, creating micro-class resources or leveraging MOOC platforms for translation teaching (Jing, 2022). Allow students to autonomously choose what to watch after class, satisfying different learning needs (Duan, 2022). During class, students discuss and correct grammar difficulties and practical translations in groups, with teachers providing real-time guidance and assistance. Microteaching can provide focused skill-building practice for ESL/TESOL candidates, fostering reflective and confident language teaching abilities (Monika & Suganthan, 2023). Furthermore,

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implementing micro-classes can broaden students' global perspectives, refresh teaching methodologies, and enhance overall teaching effectiveness (Lu, 2021).

3.2. Integrating Project-Based Learning and Competitive Activities

This strategy focuses on experiential learning and fosters practical skills by incorporating real-world tasks and interactive competitive activities.

Contextualized Learning Through Business Scenarios: Integrate authentic business scenarios into translation instruction using a variety of multimedia resources including images, music, videos, and film clips. This approach aims to improve students' comprehension, recognition, and appreciation of effective translation practices, facilitating in-depth discussions and practical applications (Shu, 2022).

Real-World Translation Projects: Implement real translation projects in the classroom through collaborations with cross-border e-commerce companies, foreign trade organizations, and school-enterprise partnerships. These projects should expose students to a variety of business translation tasks, such as translating company profiles, advertising promotions, menus, and exhibition product descriptions. To simulate professional translation workflows, implement a "translation workshop" system, assigning students roles such as project managers, translators, and proofreaders. By working collaboratively in these simulated environments, students can strengthen their sense of responsibility, develop teamwork skills, and cultivate comprehensive translation competencies relevant to professional settings.

Course-Certification-Competition Integration: Implement a "course-certification-competition integration" model. Higher vocational colleges should follow the "course-certification integration" requirement for English translation teaching to lay the foundation for students' English translation literacy. Teachers should master the direction and changes in higher vocational Business English assessment around CATTI 3, BETT, "1+X" certificate exams, and English translation competitions, and integrate these exams and competitions into teaching content. For instance, teacehrs design a progressive system of "classroom micro-projects - semester comprehensive projects - enterprise real projects" based on BETT competition standards; convert national business English competition questions into classroom teaching cases, such as localizing cross-border e-commerce product descriptions and translating international arbitration documents.

Incentivizing Participation Through a Competition Points System: Establish a "competition scores system" to motivate student participation in translation competitions. Competition scores could be converted into course credits or scholarship points. Publicly showcasing exemplary translations in classes, colleges, or schools can further stimulate student engagement and motivation.

3.3. Leveraging Technology and Industry-Education Collaboration

This strategy highlights the importance of integrating technology and fostering partnerships between educational institutions and industry stakeholders to enhance learning and equip students with necessary skills to meet the challenges of the contemporary work environment

AI-Assisted Translation Training: Integrate AI-assisted translation tools into the curriculum. Offer specialized training in "human-machine collaborative translation," focusing on the operation of computer-assisted translation tools such as Trados. Combine these tools with AI-powered platforms such as DeepSeek and ChatGPT for editing and proofreading. Train students in essential skills such as terminology database construction, translation memory application, and post-editing techniques. For example, use Trados to process long business texts, comparing machine translation with human translation to optimize efficiency. This approach aligns with findings indicating that AI-assisted translation can reduce translation time, improve quality, and decrease cognitive load (Shokoohifar, 2024).

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Virtual Reality (VR) and "Internet+" Teaching: Leverage virtual reality (VR) and "Internet+" teaching methodologies to create highly simulated business environments. Teachers can develop 3D scenarios such as international conferences, business negotiations, contract signings, and simulated cross-border e-commerce customer service interactions. Students can then practice their translation skills in these immersive virtual environments, allowing them to more intuitively experience and address the complexities and challenges of real-world work. This approach addresses the limitations of single scenarios in traditional teaching. VR technology creates vivid situations, constructs immersive learning environments, visualizes abstract knowledge, innovates educational approaches, and assessment methods (Pan et al., 2021).

3.4. Implementing Diverse Evaluation Methods and Continuous Improvement Mechanisms

This strategy underscores the importance of comprehensive assessment and ongoing efforts to refine teaching practices based on feedback and data analysis.

Diverse Evaluation Methods: Implement diverse evaluation methods to provide a holistic assessment of student learning. Teachers should evaluate not only project outcomes but also the learning process itself (Duan, 2022). A composite evaluation system combining "enterprise project scores + competition performance + classroom performance + peer evaluation + final exams" can be used to assess students' translation vocabulary usage, sentence usage, and text translation accuracy, highlighting their overall translation performance and comprehensive practical abilities. Effective language assessment plays a crucial role in ensuring students acquire linguistic competence necessary for success in a globally interconnected world (Winna1 & Sabarun, 2023).

Teaching Quality Feedback Loop: Establish a robust teaching quality feedback loop to facilitate continuous improvement. Learning data should be collected through platforms such as Superstar Learning, combined with feedback from enterprise mentors, and used to adjust the teaching focus of business English translation courses on an annual basis. Feedback is essential for teaching and learning English, promoting language acquisition and facilitating learners' linguistic competence development (O'ktamova, 2023).

4. Conclusion

The exploration of Business English translation teaching in higher vocational education reveals persistent challenges rooted in students' linguistic limitations, outdated pedagogical approaches, and curriculum-market misalignment. To address these issues, the proposed strategies emphasize adaptability, practicality, and innovation. Stratified teaching ensures tailored instruction for students at different proficiency levels, while project-driven learning and competition integration bridge classroom training with real-world demands. The incorporation of AI tools, VR simulations, and industry collaboration equips students with technical and cross-cultural skills critical to modern translation tasks. Furthermore, diversified assessments and feedback mechanisms enable continuous refinement of teaching practices. Moving forward, sustained collaboration between educators and industries, coupled with dynamic curriculum updates, is essential to ensure graduates meet evolving market requirements. By adopting these strategies, higher vocational institutions can transform translation education into a responsive, student-centered system that cultivates linguistically adept and professionally agile translators, ready to contribute to global business communication.

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References

[1] Cui, Q. (2019). On the flipped classroom of vocational business English translation in the Era of Big Data. Journal of Jiujiang Vocational & Technical College, 33-34.

[2] Duan, Q. (2022). An analysis of the current situation and strategies of English translation teaching in higher vocational colleges. Modern Vocational Education, 95-97.

[3] Gao, P. (2020). A new exploration of business English translation teaching in higher vocational colleges. Journal of Liaoning Teachers College (Social Sciences Edition), 62-63.

[4] Gao, P. (2021). On the problems and countermeasures in the translation business English teaching in higher vocational and technical colleges [Master's thesis, Bohai University].

[5] Hu, A. N. (2024). An exploration of the ways to cultivate the translation ability of business English majors in higher vocational colleges. Overseas English, 209-212.

[6] Jing, X. F. (2022). Application research of online and offline mixed teaching mode in English translation teaching in higher vocational colleges. English Square, 101-104.

[7] Karthikeyan, J., Chong, S. T., Vasanthan, R., Nandhini, T. J., Sundari, P. S., & Devi, V. C. (2023). Construction and implementation of English translation simulation training classroom based on deep learning. 2023 Second International Conference on Smart Technologies for Smart Nation (SmartTechCon).

[8] Kolb, A. D. (1984). Experiential learning: Experience as the source of learning and development. Prentice-Hall.

[9] Liu, H. (2021). English translation flipped classroom teaching model based on big data. CIPAE 2021: 2021 2nd International Conference on Computers, Information Processing and Advanced Education, 1215-1218.

[10] Liu, L. (2022). Realization of virtual teaching platform for English translation based on VR technology. 2022 International Conference on Artificial Intelligence of Things and Crowdsensing.

[11] Lu, H. J. (2021). Research on the advantages and application strategies of micro lecture in College English Teaching. Transactions on Comparative Education, 70-74.

[12] Monika, M., & Suganthan, C. (2023). Analysing the Significance of Microteaching in ESL Classroom and Strategies for Fostering Better Language Acquisition. Literary Musings, 19-32.

[13] Niu, M. (2024). Reform of vocational business English translation education oriented by employment demand. Journal of Yan'an Vocational & Technical College, 11-14.

[14] O'ktamova, S. (2023). Importance of Feedback in Teaching English Language. Web of Scientists and Scholars: Journal of Multidisciplinary Research, 73-75.

[15] Pan, Z. G., Sun, Y. W., Yao, Z. W., & Li, M. (2021). Application of Virtual Reality in English Teaching. 2021 3rd World Symposium on Artificial Intelligence.

[16] Rius, H. C., Reverte, A. C., Bernado, B. S., & Areny, J. F. (2021). International Journal for Cross-Disciplinary Subjects in Education. Dual Training in Higher Education - A Professional Development Course, 4460-4467.

[17] Shi, H., Cheung, E. S. T., & Cheung, A. C. K. (2020). The impact of stratified teaching on the academic performance of Chinese middle school students: A meta-analysis. Science Insights Education Frontiers, 7(1), 735-760.

[18] Shokoohifar, M. (2024). Artificial Intelligence-Assisted Translation: A Study of Cognitive Load and Time Through EEG [Master's thesis, Allameh Tabataba'i University].

[19] Shu, Y. (2022). Analysis of business English translation teaching strategies in higher vocational colleges under the background of vocational ability cultivation. Overseas English, 241-242.

[20] Wang, Q., & Wei, R. L. (2022). The translation teaching strategies of business English based on needs analysis. Journal of Liming Vocational University, 78-83.

[21] Wang, Z. L. (2024). Practice of English translation teaching in vocational colleges from the perspective of international communication capacity building. Journal of Shandong Institute of Commerce and Technology, 63-66.

[22] Winna, W., & Sabarun, S. (2023). The Language Assessment In Teaching-Learning English. DIAJAR: Jurnal Pendidikan dan Pembelajaran, 413-419.

ISSN: 2710-0170

[23] Zhang, T. (2024). Empowering business English translation teaching: An exploration of the application of artificial intelligence and large language models. Overseas English, 138-140.

[24] Zhang, W., Li, A. W., & Wu, C. (2025). University students' perceptions of using generative AI in translation practices. Instructional Science, 1-23.

[25] Zhao, M. X. (2023). The Effect of Stratified Teaching on Students' Self-efficacy. Lecture Notes in Education, Psychology and Public Media, 80-87.

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Co-Care for the Elderly and Children: The Challenges and Tactics in Constructing Professional Workforce

-- A Case Study of L City Elderly Care Service Institutions

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Abstract

As the world's population structure is changing, the aging population is becoming more and more prominent, and the number of old people is growing significantly, and the number of new births is decreasing. This demographic change presents new societal challenges, particularly for the elderly and the care of children. Co-care for older people and young people, with the goal of providing "one stop" service for older people and children, has emerged as a new type of service. On the basis of an on-site survey of the co-care facilities in L city, the present study found that, although the co-care model provides comprehensive and effective comprehensive services, such as "double care", "inter-generational interaction," and "resource integration," and some of the challenges associated with caring for older people and children, there are still a number of practical problems in its functioning, especially in developing specialized personnel. Among these problems are the lack of qualified workers, the ageing of the labor force, and the lack of social acceptance, which are the main obstacles to the sustainable and sound development of the country. To solve these problems, the following strategies are proposed: first, to broaden the recruitment channels to attract more young and professional talents; second, to improve the skills and skills of staff; and third, to increase the recognition and acceptance of co-care by the public, so as to improve the professional pride and social status of the service providers. Based on the survey and observation, the author proposed the methods of recruitment, the improvement of the technical training system, and the social acceptance of more.

Keywords

Elderly Social Work; Co-Care Institutions for the Elderly and Young; Talent Development in Elderly Care Institutions.

1. Introduction

1.1. Research Background

In recent years, the world's population, especially in China, has experienced a rapid growth, and the share of the elderly continues to rise. Old people's care has become the focal point of public concern. The National Bureau of Statistics estimates that more than 260 million people are over 60 years old, or 18.7 per cent. Not only does this reflect an increase in the number of older people, but also an increase in demand for older people. At the same time, the steady decline in the number of new births has raised concerns about childcare. Owing to the significant fall in fertility rates, there is an increasing demand for high-quality childcare services for families, especially those with dual income. In this context, co-care institutions for the elderly and young have emerged as an innovative service model, aiming to provide both elderly care and childcare

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services within the same space, offering a one-stop solution for families with both elderly and young members. [1]

On December 31, 2023, the Ministry of Civil Affairs and 11 other departments issued the "Opinions on Strengthening the Development of the Elderly Care Service Talent Team," which explicitly stated that "by 2025, the scale of the elderly care service talent team, with a focus on skilled personnel, will be further expanded, their quality steadily improved, and their structure continuously optimized. The leading and supportive role of talented people in the quality of senior care services will be greatly improved. By 2035, the policy environment, industry environment, and social environment supporting the development of elderly care service talent will continue to improve, and the systems and mechanisms for talent cultivation, utilization, evaluation, and incentives will become more mature and well-established." [2] This opinion proposes methods for strengthening the development of the elderly care service talent team. However, there is still limited research on talent development in co-care institutions for the elderly and young. What challenges does the talent development in these institutions face? What are the solutions to these problems? These problems have a close relationship with the development of social work for older people, the occupation of social work, and social justice and inclusion. Exploring and analyzing these issues has both theoretical and practical significance. [3]

1.2. Research Significance

1.2.1. Theoretical Significance

There is considerable theoretical value in addressing the practical issues of the development of talented persons in joint care institutions for the elderly and youth. The further study of the model can enrich the theory frame of the old people's social work and offer a new angle of view and theory support. Through the analysis of the strategies to enhance human resource development, we can offer empirical support for the development of related theories. In practice, this research can offer scientific guidance for social workers, promoting healthy living for the elderly, safeguarding their rights, and fostering the healthy development of children.

1.2.2. Practical Significance

For example, in L city, the old people's care centers have been merged into kindergartens, moving from child care to senior citizens, where older people and children share a common space for activities. There are, however, a number of challenges, including a lack of talent, an ageing workforce, and a lack of social acceptance. This can be tackled through better skills for older people and young people. The study of co-care mode has a positive effect on the sustainable development of society. Through proper allocation of resources and effective utilization of resources, co-care facilities can meet the needs of older people and young people, and effectively utilize these resources, thus laying a solid foundation for building a green society. In addition, co-care facilities provide a wide range of social and recreational activities for older people, which can improve the quality of life and the well-being of the entire community.

1.3. Research Methods

First, the literature research method. By collecting relevant survey data released by the National Bureau of Statistics, the National Health Commission, and other departments, as well as reviewing a large number of domestic and international research literature on talent development in elderly care service institutions, this study conducts research and analysis based on this foundation.

Second, the comparative analysis method. Based on the literature review at home and abroad, the author compares the theoretical analysis with the practical operation condition to find out the improvement and offer the reference for the family care industry.

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By comparing the theory with the practice, we find out some problems which can not be carried out in practice, and mobilize all kinds of forces to deal with them.

2. Practical Challenges in Talent Development for Co-Care Institutions for the Elderly and Young

2.1. Shortage of Professional Talent

Co-care, an innovative service model designed to meet the needs of older people and children's education needs, has been introduced to ease the burden on families. However, this model places extremely high demands on the comprehensive qualities of practitioners. They must not only master the professional knowledge of elderly care, including the key points of care for common elderly diseases, rehabilitation training techniques, and methods for addressing the mental health of the elderly, but also be proficient in childcare-related skills, covering child psychology, educational principles, and teaching methods and activity designs for children of different age groups, to stimulate children's interest in learning and promote their physical and mental health development. However, the current supply of this kind of talent in the market is not optimistic. Due to the differences in the training system and career path of the elderly and the care of their children, there is a serious shortage of qualified personnel. This imbalance between supply and demand makes it extremely difficult for co-care institutions to recruit qualified professionals, greatly limiting the promotion and development of the co-care model. [4]

2.2. Aging Workforce

The survey shows that in L City, 60% of the population is over 50 years old, and there are fewer young doctors. In terms of long-term system development, there are obvious limitations to an aging care team. Older people's age structure has great influence on service quality. Although people in their 50s may have a wealth of life experience, they often find it difficult to keep pace with the rapid changes in the concepts and techniques of older people. For instance, in the introduction of intelligent elderly care facilities, elderly carers are often unable to master their skills quickly, which prevents them from making full use of the facilities and affects their service experience. Young practitioners, on the other hand, have a strong ability to think and learn, which will enable them to adapt rapidly to a new environment and bring new life to the care industry. However, because of their small share, it is hard to fully exploit their creativity.

Looking at the long-term system development, the ageing workforce is a major constraint. With the gradual retirement of senior care workers, if new talents are not added in time, the organization will face a crisis of talent shortage. Furthermore, young professionals are often very creative, enabling them to develop new services and develop new markets. However, because of the constant aging of the staff, the speed at which the organization innovate and expand the market is slow.

2.3. Low Social Recognition

Nowadays, as an integrated service model, co-care model is still in its infancy. Most people are not familiar with the concept of co-care, how it works and how it works, and how diverse it is. Due to this lack of awareness, the public is not sufficiently aware of the importance of co-care services in addressing the challenges of an ageing society and early childhood education. It is therefore difficult for professionals in the community to receive appropriate recognition and respect from society. In the long term, due to a lack of professional pride and social status, there is a growing psychological gap between professionals and non-professionals. In this context, a lot of people leave the industry and look for work in which they can make a difference and gain external recognition. This has a direct impact on the high turnover of co-care facilities, hampering the healthy and stable development of the sector.

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3. Recommendations

3.1. Broaden Talent Recruitment Channels

1. The establishment of cross-disciplinary programmes in Elderly Care + Child Education, in cooperation with universities, to foster composite talents. On the one hand, the integration of comprehensive knowledge of elderly care professionals, including the prevention, care and recovery of common old illnesses, for example long-term care centre for older people; mental health information for older people, including ways to deal with loneliness and anxiety effectively. On the other hand, include a wide range of specialized and varied programs, for example, on child psychology, to help students understand the characteristics of their mental development at various stages of their life and to develop appropriate education strategies; pre-primary education, which covers teaching methods and curricula for young children, ensuring the mastery of science education skills.

2. The government should invest more in the care of the elderly and give more support to the sector. Regarding the employment support policy, the government can make a concrete policy to provide employment subsidies to the youth who enter the care industry. In addition, in the civil service and public institutions examinations, special posts should be reserved for those who have worked in the senior care sector for some time, thus broadening their career prospects and providing them with more opportunities to develop and improve their future.

3.2. Strengthen the Skill Training System

1. Set up a comprehensive training system of "theory + practice + internship". Theory teaching is carried out by specialists who impart specialized knowledge; practical training is carried out in simulated situations to practice practical skills; an internship is arranged for the students to work in the relevant institutions, where they are exposed to the real world of business, to help them turn knowledge into skills, and to improve their overall competence. Through this cross-disciplinary training mode, not only can supply a lot of specialized composite talents to the co-care industry, but also promote the innovation of academic disciplines, help to solve the social and living problems, and achieve mutual benefit.

2. Regular training of specialists in the field, with the participation of senior health, rehabilitation and psychological guidance specialists. Through case studies and simulation exercises, the staff can apply what they have learned to improve the level of service.

3.3. Enhance Social Recognition

1. Intensify publicity to raise social awareness and acceptance of co-care. Make use of television, internet, and other media platforms to broadcast engaging educational videos and real case reports; organize community workshops; invite experts to answer questions; and organize a comprehensive program of parenting and elderly care in partnership with schools, so that the public can experience this model firsthand, dispel misunderstandings, and recognize this innovative model.

2. Make full use of TV, radio, newspapers, and the Internet to promote the achievements and examples of the co-care industry, setting a standard for the industry and demonstrating their professionalism and dedication. In addition, the establishment of "Best Caregiver", "Most Beautiful Childcare Teacher" and "Professional Pride and Honor" through industry reviews and awards. Through media coverage, documentary, and interview, we will spread the passion and value of co-care to the public, enhance the recognition and respect of the industry, attract more talents, and promote the healthy and sustainable development of the industry.

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4. Conclusion and Outlook

Co-care for old people and young people is a new kind of social service which combines the old and the young, so as to make effective use of social resources and meet the needs of old people and young people. It is a new type of social service with great potential. But talent development is still an important obstacle to the sustainable and sound development of private enterprises. Currently, co-care facilities are often faced with a shortage of qualified staff, a high turnover rate and a low level of social acceptance. In order to solve the shortage of talent, it is necessary to extend the channels for recruiting talents, strengthen the training system, and increase the recognition of society. This includes, for instance, developing special courses in cooperation with universities and vocational schools to foster a pool of talents; the development of a comprehensive staff skill training system to enhance professional competence and service standards; and, in addition, through policy support and social publicity, to enhance social standing and professional recognition in order to attract more talents. In addition, it is necessary to further explore the development model of co-care institutions, for example, to establish career development paths, to improve pay and welfare systems, and to bring in volunteers and social forces to provide reliable human resources for long term development.

References

[1] Xu Hao.How Co-Care for the Elderly and Young Kills Two Birds with One Stone China Social Security, 2024, (10): 84-85.

[2] State Council. 14th Five-Year Plan" National Plan for the Development of Elderly Care Services and the Elderly Care System. 2022.

[3] Xu Xingchun, Jiang Yuzhu. Co-Care for the Elderly and Young: Lessons from Japan's Co-Care Service Model Construction. Journal of Shaanxi Xueqian Normal University, 2024, 40(08): 1-7.

[4] Feng Xieyou. Research on High-Quality Development Strategies for the 'Elderly and Young' Service System—A Case Study of N City. Journal of Qujing Normal University, 2024, 43(04): 50-56.

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Exploring the Role Mechanism of Ideological and Political Education in Social Governance

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Abstract

Ideological and political education plays an important role in social governance, and its mechanism of action deserves in-depth investigation. Based on the intrinsic unity of ideological and political education and social governance, this paper analyzes the functions of ideological and political education in promoting social harmony, enhancing citizens' moral literacy and regulating social behavior. Through combing relevant literature and analyzing from multiple perspectives, it explores how ideological and political education can play an effective role in the context of contemporary social governance through value leadership, behavioral norms and psychological regulation. At the same time, the study also points out the challenges and dilemmas faced by ideological and political education in actual operation, and puts forward corresponding countermeasures, with a view to providing new ideas and practical paths for enhancing the effectiveness of social governance. Ultimately, this paper aims to provide reference for the theoretical study of ideological and political education and the practical exploration of social governance, and to promote the deep integration and synergistic development of the two.

Keywords

Ideological and Political Education; Social Governance; Social Harmony; Civic Moral Literacy; Value Leadership

1. Introduction

1.1. Background and significance of the study

1.1.1. Background of the study

Ideological and political education, as a systematic form of education, has an important role to play in social governance. As society develops and changes, social governance faces a variety of complex problems, such as conflicts of interest, social contradictions and the diversification of values. These problems highlight the necessity and urgency of ideological and political education in promoting social harmony and stability. In the context of the new era, the Party and the State have paid increasing attention to social governance, proposing a number of policies and measures that emphasize the important value of ideological and political education in order to enhance the country's governance capacity and level.

In this context, an in-depth study of the relationship between ideological and political education and social governance, focusing on their intrinsic connection, can provide a theoretical basis and practical path for relevant policy formulation and actual operation. At present, ideological and political education should not only focus on the inculcation of knowledge, but also pay more attention to the realization of ideological guidance and value identity. Through diversified ways, it can stimulate the participation consciousness of social members and enhance their sense of responsibility, so that they can play an active and positive role in social governance, thus realizing the common progress of society.

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The modernization process of social governance has also put forward higher requirements for ideological and political education. It needs to better adapt to the needs of social development, integrate the strength of different subjects, and form a good situation of common construction and shared governance. In the future, ideological and political education will play a more active and effective role in social governance, which is not only the requirement of theoretical innovation, but also the inevitable choice of practical development.

1.1.2. Significance of the study

Theoretical significance: At present, there are many literature studies on ideological and political education and social governance, but they mainly focus on the function of ideological and political education and its application in social governance, and there is a relative lack of research on the specific mechanism of the role of ideological and political education in social governance. In this paper, the relevant theories of ideological and political education and its development are summarized, and it helps to deepen the understanding of the relationship between ideological and political education and social governance. Through the literature research method, it draws the conclusion that ideological and political education promotes the efficiency of social governance and strengthens the cohesion of social members, which provides effective theoretical references to help promote the development of ideological and political education in social governance, and pave the way for the subsequent related research.

Practical significance: The research in this paper is based on the analysis of the current status quo of social governance, through the questionnaire survey and empirical research methods, to reach the empirical conclusion that ideological and political education can play a positive role in social governance. This study can improve the effectiveness of social governance, promote the harmonious development of society, and improve the contradictions and conflicts in social governance. The research in this paper can provide relevant management and researchers with certain references and lessons, so it has important practical significance.

1.2. Current state of theory and research

1.2.1. The intrinsic link between ideological and political education and social governance

There is a deep intrinsic connection between ideological and political education and social governance, which is reflected not only in the intersection of concepts, but also in their common goal of synergistically promoting social development. Ideological and political education, as an important means of ideological education, has an irreplaceable role in cultivating socialist core values and enhancing social cohesion. Social governance, on the other hand, is concerned with how to realize effective management and guidance of social affairs through multi-party collaboration and integration of social resources. The combination of the two provides important support for the modernization of the national governance system and governance capacity.

In concrete practice, ideological and political education plays a guiding and regulating role in social governance by strengthening the ideological and moral cultivation of citizens and promoting a sense of responsibility and participation among members of society. This role is manifested in the unity of thought, behavioral norms and psychological adjustment and other levels. Ideological and political education can not only enhance the public's enthusiasm for participation through the construction of a favorable social atmosphere, but also coordinate and integrate multiple interests in the process of social governance, ensuring social harmony and stability.

The intrinsic links between ideological and political education and social governance are mutually reinforcing. The in-depth combination of the two provides a new path for promoting the common development of the whole society and creates a good ideological foundation for

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realizing the goals of social governance. This connection not only enhances the effectiveness of ideological and political education, but also strengthens the overall effectiveness of social governance, thus laying a solid theoretical and practical foundation for building a harmonious society.

1.2.2. Current status of domestic and foreign research

(i) Current status of research in the country

1. Research on the function of ideological and political education in social governance

Xu Xiaofang (2022) conducted a more systematic study of the social governance function of ideological and political education, clear that its characteristics include the unity of political and social, the specific function covers the integration of ideas, leadership, coordination and other functions, but due to the concept of the concept, carriers and other factors such as the existence of control thinking is obvious and other issues [8]. Lin Shichang (2022) proposed that ideological and political education has the function of social governance such as value leadership, moral education, etc., which has the unity of individuality and sociality and other characteristics of the pluralistic, as an example, research in a place in Shandong found that it is effective in propaganda policy and other aspects, but faced with the dilemma of inconsistency of values and other dilemmas [9]. Wang Qi (2024) in-depth analysis of ideological and political education social governance function, defined from the thought, behavior and psychological level, specifically expressed as social thought control function, through the questionnaire research found that it has a positive role in the propaganda of mainstream thinking, but faced with ideological pluralism and other challenges [2]. Wang Fang (2022) believes that ideological and political education has an irreplaceable role in social governance, and should disseminate the concept of governance, etc., and explores the performance of its function enhancement in terms of individual and social functions, and at the same time points out that there is a lack of internal motivation and other problems [10]. These studies comprehensively and deeply analyze the function of ideological and political education in social governance from different perspectives, clarifying the functional characteristics, specific performance, and the problems and challenges faced, and laying a solid theoretical foundation for subsequent studies.

2. Research on ideological and political education to enhance the effectiveness of social governance and value leadership

Chen Qian (2023) proposes that ideological and political education can enhance the effectiveness of social governance based on the subject, process, and result in three dimensions, and boost the social governance subject co-construction, process co-rule, and result sharing by stimulating and cohesion of the subject's power [3]. Peng Jun (2023) pointed out that ideological and political education in colleges and universities has an intrinsic fit with social governance, and can help promote social governance to build value consensus and cultivate moral norms [4]. Li Jinhe (2023) studies the value-led function of ideological and political education in social governance, explores its connotation, analyzes the reality of the dilemma, and puts forward powerful measures to strengthen the political guarantee and other aspects [5]. This part of the study focuses on the enhancement of the effectiveness of ideological and political education on social governance and value leadership, provides specific directions and ideas for how to better play the role of ideological and political education in social governance, and emphasizes the positive significance and practical paths of digging out its positive significance from different dimensions and levels.

3. Integration of ideological and political education into social governance and related research in higher education institutions

Wang Meijun (2022) discusses the internal logic of ideological and political education into social governance, believes that it is the need for the development of the times, etc., and puts forward the construction of innovative models and paths with the goal of creating a social

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governance community [7]. Lv Huijun and Chen Dan (2022) focus on ideological and political education in colleges and universities in the perspective of social governance, pointing out the existence of problems such as the lack of a close connection between the ideological and political courses in colleges and universities and society, and proposing improvement measures [6]. Yang Frost (2025) studies the social governance value of ideological and political education from the perspective of co-creation, but the elaboration is relatively brief [1]. This part of the study focuses on the overall logic of the integration of ideological and political education into social governance as well as the important field of colleges and universities, pointing out the problems in the process of integration and the direction of the combination of ideological and political education and social governance in colleges and universities, and providing a direction of thinking for further exploration of the practice of integration of the two.

Summarizing and analyzing the research literature at home and abroad above, the current research around the role mechanism of ideological and political education in social governance has gradually been paid attention to, and scholars have achieved rich research results in this field. Various aspects have been explored from theoretical construction, empirical analysis and policy recommendations, providing important theoretical support and practical experience for promoting the integration and development of ideological and political education and social governance. Most of the domestic scholars agree with the positive role of ideological and political education in enhancing social cohesion and promoting social harmony, and believe that in order to realize the modernization of social governance, it is necessary to start from the innovation of educational content, the diversity of educational methods and the guidance of relevant policies. In contrast, the studies of foreign scholars focus on the combination of public governance theory and ideological and political education, emphasizing the role of ideological and political education in promoting the innovation and effectiveness of social governance. These studies show the multiple functions and practical applications of ideological and political education in different social and cultural contexts. Although scholars at home and abroad have studied from different perspectives, presenting a diversified situation, on the whole, the studies have focused on the fields of theoretical exploration and empirical analysis, and in terms of practical research, they have also focused on cases of education, government and social organizations, and have been extensively studied among different groups. Comparatively speaking, domestic and foreign research for specific case studies, covering the type of industry and the type of population, although rich, but in some specific areas of targeted research is still insufficient. Therefore, in-depth studies targeting the intersection of ideological and political education and social governance, as well as localized empirical studies on different social groups, can help to better understand and promote the effective combination of the two.

2. Role mechanisms of ideological and political education

2.1. Value Leading Function

Ideological and political education plays an important value-led function in social governance, the core of which lies in helping members of society to form a correct value identity through the dissemination and practice of socialist core values. Ideological and political education can guide individuals to establish common value pursuits, thus enhancing social cohesion. In the complex social environment, various ideological concepts intertwine with each other, and the diversification of values makes the sense of identity of social members decline. Through ideological and political education, individuals are able to better understand and accept socialist core values, enhance their sense of identity and belonging to society, and provide a basis for strengthening social governance.

Ideological and political education emphasizes moral indoctrination and guides individual moral choices through normative behavior. This leading is not only reflected in self-cultivation

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at the individual level, but is also manifested in the positive influence on social behavior. When members of society are able to consciously practice socialist core values under the guidance of ideological and political education, the overall level of social morality is improved, and social behavior tends to be more harmonious and stable. This is of great significance in reducing social conflicts and promoting social harmony.

Ideological and political education, in the process of value leadership, also enhances the enthusiasm of social members to participate in social governance by improving the public's ideological and moral cultivation and sense of social responsibility. A high level of ideological and moral cultivation can give individuals a greater sense of responsibility and mission when participating in social governance, thus promoting the effective implementation of social governance. Therefore, ideological and political education plays an irreplaceable value-led function at all levels of social governance.

2.2. Behavioral Regulation Function

Ideological and political education plays an important function of behavioral norms in social governance, guiding the behaviors of social members through positive value leadership and moral indoctrination, and promoting social harmony and stability. Ideological and political education can help individuals form good behavioral norms and enhance their sense of social responsibility and participation. In daily practice, through the propaganda and education of socialist core values, people are guided to clarify the relationship between self-behavior and social ethics, so as to promote the fit between individual behavior and social norms.

Ideological and political education effectively contributes to the maintenance of social order by fostering the public's awareness of laws and rules. Through the dissemination of knowledge and the indoctrination of ideology, members of society consciously follow laws and regulations in their actions and establish a correct code of conduct. Such standardized behavior not only helps individuals make rational decisions in their daily lives, but also reduces the probability of social contradictions and conflicts and enhances the effectiveness of social governance.

Ideological and political education in promoting behavioral norms also has the function of cohesion of social consensus. When most members of society can consciously follow common values and behavioral norms, a strong social cohesion can be formed. This cohesion not only improves the moral level of society, but also provides a more solid foundation for social governance, helping to promote the smooth implementation of social governance. In this way, ideological and political education ensures the effective play of the function of behavioral norms and thus realizes the goal of social governance.

2.3. Psychological regulation function

Ideological and political education has an important psychological adjustment function in social governance. This function is mainly embodied in helping individuals adjust their mindset, alleviate their emotions and enhance their psychological resilience. Through systematic ideological and political education, individuals can better understand the pressures and challenges brought about by social changes, so as to optimize their psychological state. By strengthening the dissemination of socialist core values, individuals can establish a correct value orientation and enhance their sense of identity and belonging to society when facing complex social problems and psychological difficulties.

Ideological and political education can also guide individuals to self-regulate their emotions in various ways. For example, the education process can be combined with psychological counseling and group activities to encourage individuals to express their emotions in communication and interaction, thereby reducing their psychological burden and improving their mental health. This kind of emotional sharing and mutual understanding not only helps in the early identification and intervention of psychological problems, but also promotes the

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emotional connection between members of the society, thus forming a harmonious social atmosphere.

In the process of social governance, giving full play to the psychological regulation function of ideological and political education can effectively alleviate social contradictions and conflicts and promote the harmonious development of society. By cultivating the rational thinking and psychological quality of individuals, it enables them to respond positively to the various challenges brought about by social governance, enhances the overall psychological adaptability of society and its ability to withstand risks, and provides strong support for promoting the effectiveness of social governance.

3. The practice of ideological and political education in social governance

3.1. Analysis of the current state of practice

The practice of ideological and political education in social governance has shown a diversified development. In recent years, with the updating of the concept of social governance, ideological and political education has gradually been integrated into all levels of social governance, especially in publicizing public policies, guiding social customs and fostering ethical norms, etc., which has demonstrated its positive role. Many colleges and universities have actively explored combining ideological and political education courses with social services, enhancing students' sense of social responsibility and participation through voluntary activities and community services, and promoting the effectiveness of social governance.

There are also many challenges in the course of practice. On the one hand, the combination of ideological and political education and social governance has not yet been fully penetrated, with some educational activities remaining at the theoretical level and lacking in relevance and effectiveness; on the other hand, the influence of the trend of ideological pluralism on the mainstream ideology has led to a lack of identification with ideological and political education among some members of society, which in turn has affected the role it should play in social governance. Complex interests and prominent social contradictions in social governance have also placed higher demands on the effective implementation of ideological and political education.

In response to the above problems, it is necessary to further optimize the system and methods of ideological and political education and enhance its function in social governance by strengthening research and exploring specific paths. The practical effect of ideological and political education in social governance can be enhanced by constructing a governance mechanism with pluralistic participation, strengthening the synergy of the main parties and optimizing the content of education, so as to realize the harmonious stability and sustainable development of society.

3.2. Challenges and dilemmas

Ideological and political education, which plays a positive role in social governance, also faces many challenges and dilemmas. The influence of the trend towards ideological pluralism on the mainstream ideology has limited the guiding power of ideological and political education. Against the backdrop of the rapid development of information technology, a variety of ideological concepts are widely disseminated in society, and some of these views may run counter to the country's mainstream ideology, thereby interfering with the popularization and implementation of ideological and political education.

The integration of ideological and political education methods has become more difficult, directly affecting its function. Traditional ideological and political education tends to be relatively single and relies on classroom teaching. In the face of increasingly complex social governance needs, relying only on classroom education is obviously no longer able to meet the

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development requirements of the new era. Therefore, it is necessary to explore more diversified educational carriers and methods, combine ideological and political education with social practice, and improve the effect of their participation in social governance.

The plurality of subjects of ideological and political education has brought about a weakening of the coordinating force. The diversity of subjects involved in social governance requires ideological and political education to be able to adapt to the needs of different groups, but in practice, the lack of effective synergistic mechanisms makes communication and cooperation between different subjects difficult. This makes it difficult to fully realize the coordinating role of ideological and political education, and there is an urgent need to establish a more effective mechanism to enhance its overall effectiveness in social governance.

3.3. Countermeasures and Recommendations for Improvement

In order to effectively enhance the role of ideological and political education in social governance, it is necessary to adopt corresponding countermeasures and suggestions for improvement at multiple levels. Strengthen the combination of theoretical research and practice to promote the innovative development of ideological and political education. Universities and research institutions should be encouraged to carry out interdisciplinary and comprehensive empirical research in order to explore the mode of ideological and political education adapted to the new era and to cultivate talents that meet the needs of social governance. Promote its integration with social practice, and encourage students, teachers and all sectors of society to participate extensively in social governance, forming a benign ecology of pluralistic interaction.

(c) Establishing a sound working mechanism and synergistic system for ideological and political education. Governments and social organizations at all levels should jointly build a mechanism for joint participation, integrate resources and strengthen support and guidance for ideological and political education. They can arouse the attention and participation of all walks of life by setting up special funds and carrying out thematic activities. The responsibilities of each participating body should be clarified, and a synergy of co-construction and co-management should be formed so as to enhance the social influence and coverage of ideological and political education.

Enhance the relevance and effectiveness of ideological and political education. In terms of teaching content, emphasis should be placed on combining social hotspots and real-life problems, adjusting the curriculum and teaching methods in a timely manner, and ensuring that the educational content is contemporary and adaptable. Through field research and questionnaire feedback, we can gain a deeper understanding of the needs and expectations of the members of the society, further optimize the education strategy, and enhance the implementation effect of ideological and political education, so as to better serve the social governance.

4. Conclusions and outlook

4.1. Conclusions of the study

Through an in-depth exploration of the mechanism of the role of ideological and political education in social governance, this study reveals the close relationship and internal unity between the two. Ideological and political education is not only an important way to spread socialist core values, but also an important tool to promote social stability and harmony. Studies have found that ideological and political education plays multiple functions in social governance, including ideological guidance, value recognition, behavioral norms, and psychological regulation. The performance of these functions effectively enhances the

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efficiency of social governance and strengthens the public's sense of participation and responsibility.

In addition, through the analysis of existing literature and empirical investigation, this study points out that ideological and political education faces many challenges in the process of implementation, such as the interference of ideological pluralism in the mainstream ideology, the disconnection between educational methods and practice, and the coordination difficulties caused by the diversity of governance subjects. To cope with these problems, policymakers should strengthen the combination of theory and practice in ideological and political education, innovate teaching methods, and broaden the path of participation in social governance in order to enhance the effectiveness of ideological and political education in social governance.

Overall, ideological and political education has important theoretical value and practical significance in social governance in the new era. Future research should continue to explore in depth how to effectively integrate ideological and political education and social governance, and enhance its contribution in realizing the goal of comprehensively building a modernized socialist country. Through further mechanism innovation and practice expansion, ideological and political education is expected to provide more solid support for the modernization process of social governance in China.

4.2. Future prospects

In the context of the new era, the role mechanism of ideological and political education in social governance will face new opportunities and challenges. With the continuous development of society and the increasing diversification of people's ideological concepts and values, ideological and political education needs to pay more attention to adapting to social changes and actively explore appropriate methods and approaches to improve its effectiveness and adaptability in social governance. In the future, ideological and political education should adhere to the people-oriented principle and pay attention to the organic combination of social development and personal growth, so as to enhance its guiding power and coordinating ability in social governance.

Looking ahead, ideological and political education should continue to innovate its content and forms to enhance its compatibility with the actual needs of social governance. Through the introduction of modern technological means, such as online education and online learning platforms, ideological and political education should expand its coverage and influence, so as to deliver mainstream values more effectively. Interdisciplinary research and cooperation should also be an important strategy to promote the progress of ideological and political education, encouraging experts and scholars in different fields to jointly explore the deep-rooted relationship between ideological and political education and social governance, so as to enrich the theoretical basis and practical path.

In conclusion, with the complexity of social governance, the future outlook of ideological and political education should focus on dynamic adjustment and continuous deepening, so as to contribute to the effectiveness and sustainability of social governance by promoting the theoretical innovation and practical development of ideological and political education. Only in this way can ideological and political education play a more important leading role in social governance in the environment of globalization and localization.

Bibliography

[1] Yang Frost. Research on the social governance value of ideological and political education under the perspective of co-creating[N]. Shanxi Science and Technology News, 2025-01-13 (B07).

[2] Wang Qi. Research on the Expression and Realization Path of Social Governance Function of Ideological and Political Education [D]. Lei Lei. Southwest University of Science and Technology, 2024.

ISSN: 2710-0170

[3] Chen Qian. The three-dimensional orientation of ideological and political education to enhance the effectiveness of social governance in the new era[J]. School Party Building and Ideological Education,2023,(19):89-93.
[4] Peng Jun. The Function of Ideological and Political Education in Colleges and Universities under the Perspective of Social Governance and Its Play[J]. Education Review,2023,(05):27-33.
[5] Li Jin-hyuk. Research on the Value Leading Function of Ideological and Political Education in Social Governance [D]. Song Laixin. Beijing University of Chemical Technology, 2023.
[6] Lv Huijun,Chen Dan. Research on Ideological and Political Education in Colleges and Universities under the Perspective of Social Governance[J]. Sanjin Grassroots Governance,2022,(04):91-95.
[7] Wang Meijun. Internal Logic and Realization Path of Integrating Ideological and Political Education into Social Governance[J]. Journal of Shanxi Youth Vocational College,2022,35(02):13-17.
[8] Xu Xiaofang. Research on the Social Governance Function of Ideological and Political Education [D]. Wang Lei. Xihua University, 2022.
[9] Lin S. C. Research on the Social Governance Function of Ideological and Political Education [D]. Niu Yufeng. Shandong Agricultural University, 2022.
[10] Wang Cong. Research on the Enhancement of Ideological and Political Education Functions under the Perspective of Social Governance [D]. Dong J. Zhongnan University for Nationalities, 2022.

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Live Streaming: New Models and Pathways for Adolescent Social and Psychological Education

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Abstract

In the digital age, live streaming has become a transformative force in adolescent social and psychological education. This paper explores the application of live streaming in this field, analyzing its advantages and challenges. Based on the case study of "Youth Guardian Project" and the theory of Strengths and Social Support, this paper demonstrates how live streaming can transcend traditional educational boundaries to provide more accessible and effective psychological-educational services for teenagers. The research highlights how live streaming leverages real-time interaction and wide-reaching dissemination to attract adolescent participation and provide meaningful psychosocial support. However, it also critically examines pressing issues such as content design and privacy protection that must be addressed for effective implementation. Furthermore, this paper proposes actionable new models and pathways for integrating live streaming into adolescent social psychological education. It suggests enhancing adolescent awareness through targeted outreach, fostering collaboration among key stakeholders to create comprehensive support systems, and securing governmental policy and financial backing to ensure ethical and equitable access to these technological resources.

Keywords

Live Streaming; Adolescent Social Work; Psychological Education.

1. Introduction

In the digital age, live streaming has become a popular communication tool with the rapid development of internet technology. It not only changes people's entertainment and consumption methods but also provides new possibilities for various industries, including social work, especially in adolescent psychological education. Traditional psychological education methods, though valuable, have limitations in terms of time, space, and audience reach. They often rely on in-person interactions, which can be constrained by geographical locations and scheduling conflicts. In addition, some adolescents may find it difficult to seek personal help because of privacy concerns or social stigma related to psychological problems.

Live streaming, with its unique features of real-time interaction, wide dissemination, and diverse content presentation, can break through these limitations and provide more extensive and in-depth psychological education services for adolescents. During live streaming sessions, adolescents can anonymously ask questions and share their experiences without revealing their identities, which may increase their willingness to participate. The interactivity of streaming also allows real-time feedback and participation, making the learning process more dynamic and participatory. Additionally, live streaming can reach a broader audience simultaneously, regardless of their physical locations, thus expanding the coverage of psychological education.

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This article will discuss how to make use of live streaming in the innovation of adolescent social psychology education, and put forward a new mode and path. By examining the current situation and challenges of adolescent psychological education, analyzing the application of live streaming in social work, and providing theoretical frameworks, this study aims to offer valuable insights for social work practitioners, policymakers, and technology developers. The "Youth Guardian Project" will be used as a case study to demonstrate the practical application and effectiveness of live streaming in adolescent psychological education, followed by a comprehensive conclusion that summarizes the key findings and provides recommendations for future development in this field.

2. Literature Review

2.1. Current Situation and Challenges of Adolescent Psychological Education

Adolescents face a multitude of psychological challenges that have been exacerbated by the rapid changes in society and technology. Academic pressure remains one of the most significant stressors, with an increasing number of students experiencing anxiety and burnout due to high expectations and intense competition. Interpersonal problems affect many adolescents who face peer pressure, bullying, and social dynamics in both physical and online environments. Their development path is further complicated by emotional turmoil as they navigate the turbulent waters of self-identity, emotional control, and mental health [1].

Traditional psychological education methods, while foundational, fall short in several critical areas. Classroom teaching, though structured, often lacks the flexibility and engagement needed to address individual differences and evolving issues. Individual counseling is resource-intensive and limited by the availability of qualified professionals. Group activities, while beneficial for some, may not appeal to adolescents who are shy, stigmatized, or have scheduling conflicts. These methods also struggle to keep pace with the digital literacy and preferences of the current generation, making it difficult to maintain relevance and impact.

In addition, there are worrying differences between socio-economic and geographical areas in terms of availability and quality of mental education. Urban areas typically have more resources and specialized services, while rural and underserved communities face significant barriers. This disparity contributes to unequal mental health outcomes and limits the potential for comprehensive support systems. The COVID-19 pandemic has further highlighted these vulnerabilities, as in-person services were disrupted and digital alternatives became essential lifelines for many adolescents.

2.2. Application of Live Streaming in Social Work

Live streaming has emerged as a powerful tool in a variety of social work domains, and has revolutionized the delivery and engagement of services. Its ability to transcend physical boundaries has been particularly valuable in reaching marginalized and isolated populations who might otherwise remain underserved. Public health campaigns have used live streaming to raise awareness of key issues like protection of the environment, gender equality, and the rights of people with disabilities, mobilizing public engagement and driving social change [2].

Community services have also benefited from live streaming's interactive capabilities. Virtual town halls, community forums, and skill-sharing workshops have fostered greater civic engagement and empowered residents to take ownership of local development. Volunteer activities have seen increased participation through live streaming recruitment drives and training sessions, enabling organizations to expand their reach and impact [3].

The application of live streaming in adolescent psychological education represents a promising frontier with substantial untapped potential. Initial efforts have shown that adolescents are more likely to engage with mental health content when it is presented in familiar, tech-savvy formats. Live streaming provides a platform for real-time Q&A, peer support, and expert guidance, creating a dynamic learning environment that resonates with digital natives. However, this application requires careful tailoring to address the unique needs and sensitivities of adolescent audiences, ensuring that content is both informative and age-appropriate.

3. Theoretical Framework

3.1. Strengths Perspective Theory

The Strengths Perspective Theory, a key framework in social work, fundamentally shifts the emphasis from a deficit approach towards one that emphasizes the strengths of individual and community. In the context of live streaming for adolescent psychological education, this theory guides social workers to identify and leverage the inherent resilience, skills, and positive qualities of adolescents [4]. By recognizing these strengths, social workers can design live streaming content that resonates with adolescents' self - efficacy, encouraging them to take an active role in their psychological well - being.

For instance, live streaming sessions can be structured to include interactive segments where adolescents share their coping strategies and personal achievements. This not only reinforces their self - confidence but also creates a community of support where peers can learn from each other. The strengths perspective also encourages social workers to view adolescents as active participants in the educational process rather than passive recipients. This can be facilitated through live streaming by incorporating polls, Q&A segments, and collaborative problem - solving activities that allow adolescents to contribute their ideas and experiences.

Moreover, the theory emphasizes the importance of cultural competence and sensitivity to individual differences. In live streaming, this translates to creating content that respects and incorporates the diverse backgrounds and experiences of adolescents. Social workers can achieve this by inviting guest speakers from various cultural backgrounds or by addressing topics that are relevant to different socioeconomic and cultural groups.

3.2. Care Social Support Theory

The social support theory, which stresses the key role of social networks and support systems in maintaining mental health, finds meaningful use in the psychology of adolescents through live streaming [5]. The theory posits that individuals' mental well - being is profoundly influenced by the quality and availability of social connections. Live streaming creates a unique opportunity to build and strengthen these connections in a virtual environment.

Through live streaming, social workers can facilitate the formation of virtual support networks that extend beyond traditional face - to - face interactions. These networks can include peer support groups, mentorship programs, and community - based resources. For example, social workers can organize regular live streaming sessions where adolescents discuss common challenges and solutions, fostering a sense of belonging and reducing feelings of isolation.

The theory also underscores the importance of different types of social support, including emotional, informational, and instrumental support. In a live streaming context, emotional support can be provided through real - time encouragement and validation from both peers and professionals. Informational support is enhanced by the ability to share resources, articles, and expert advice instantly. Instrumental support can take the form of connecting adolescents with relevant services or opportunities through the live streaming platform.

Furthermore, social support theory informs the design of live streaming interventions by emphasizing the need for reciprocity and mutual benefit. Social workers can design sessions to make sure that support flows in multiple directions, and adolescents not only receive help but

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also contribute to the well-being of others. This can be achieved through collaborative projects, community outreach initiatives, and peer - led discussions that are facilitated via live streaming.

4. Case Analysis of Existing Problems and Solutions

4.1. Case Background Introduction

The "Youth Guardian Project" is a psychological education program conducted by a social work organization through live streaming. It aims to help adolescents deal with psychological pressures and promote their healthy growth. The program invites professional psychological counselors and educators to share knowledge and skills on psychological adjustment, emotional management, and interpersonal communication through live streaming, and interact with adolescents in real time to answer their questions.

4.2. Analysis of Adolescent Psychological Education Problems

4.2.1. Privacy and Identity Concerns

Privacy and identity concerns are significant barriers to adolescent participation in live streaming psychological education. Many adolescents fear that their personal information might be exposed or misused during live sessions. This anxiety is understandable given the numerous instances of data breaches and privacy violations reported in the media. Adolescents may fear that their questions or comments could be traced back to them, resulting in social stigma or judgement from their peers. As a result, they might avoid participating in live streaming sessions altogether, depriving themselves of valuable psychological support. Fear of being exposed may be especially acute for those dealing with sensitive issues like mental health, family issues, or personal trauma.

4.2.2. Content Design and Accessibility

The design and accessibility of live streaming content play a crucial role in determining its effectiveness for adolescent psychological education. Some live streaming sessions are structured in a way that does not align with how adolescents learn best. The content might be overly theoretical, using complex terminology that is difficult for younger audiences to grasp. This can lead to disengagement and a lack of comprehension, undermining the educational goals of the program. Additionally, the presentation style might not be engaging enough to hold the attention of adolescents who are accustomed to fast-paced, visually stimulating digital content. Regardless of the adolescent's cognitive and developmental stages, even well-intended live streaming may not be able to offer meaningful mental education.

4.2.3. Lack of Follow-up Support

A lack of follow-up support after live streaming sessions is a critical issue that limits the long-term impact of psychological education programs. Adolescents often need ongoing guidance and resources to reinforce what they've learned and to address emerging concerns. However, many live streaming initiatives end after the session concludes, leaving adolescents without a clear path for further assistance. This lack of continuity can cause adolescents to forget the information provided or feel unsupported when they meet new challenge. Without mechanisms for follow-up, such as additional resources, counseling options, or support groups, the initial benefits of the live streaming session may quickly diminish, leading to an overall reduction in the effectiveness of the psychological education effort.

4.3. Advantages and Effects of Social Work Involvement

4.3.1. Publicity and Mobilization

Social workers are instrumental in raising awareness about live streaming psychological education programs through strategic outreach efforts. They collaborate with schools to integrate program information into school communications, such as newsletters and parent-

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teacher conferences, to ensure that young people and their families are aware of available resources. In communities, social workers organize informational sessions and workshops to explain the benefits and address concerns related to providing mental health support. They also leverage social media platforms and online forums to create a digital presence, making the programs more accessible to tech-savvy adolescents. By establishing trust with local leaders and influencers, social workers can amplify their message and reduce the stigma associated with seeking psychological help, ultimately increasing participation rates and broadening the demographic reach of these essential services.

4.3.2. Interaction and Guidance During Live Streaming.

During live streaming sessions, social workers employ various techniques to facilitate meaningful interaction and guidance. They create a safe and supportive virtual environment by establishing clear guidelines for respectful communication and anonymity. Social workers play an active role in mediating debates, posing thought-provoking questions, and encouraging young people to share their personal experiences, thus promoting community and peer learning. They also provide real-time feedback and clarification on complex topics, ensuring that adolescents grasp key concepts and feel heard. By observing participants' responses and engagement levels, social workers can adapt the content and pace of the session to better meet the audience's needs, making the learning process more dynamic and personalized. Additionally, they can identify adolescents who may require additional support and discreetly follow up with them after the session, creating a seamless transition between live interaction and ongoing assistance.

4.3.3. Follow-up and Support

Post-live streaming follow-up and support are vital components of a comprehensive psychological education program. The social worker has developed a structured follow-up protocol that includes sending out a post-session summary with key findings, additional resources, and practice exercises for teenagers to strengthen what they have learned. They establish dedicated online platforms or mobile applications where adolescents can continue discussions, access supplementary materials, and connect with community support groups. Regular visits or reports enable social workers to monitor the progress of adolescents, deal with new problems and provide support. For those with more serious psychological needs, social workers facilitate referral to specialized services to ensure a smooth transition to higher levels of care. By maintaining consistent communication and offering varied support options, social workers help adolescents internalize the educational content and develop sustainable coping strategies, ultimately enhancing the long-term effectiveness of live streaming psychological education initiatives.

5. Conclusion

Live streaming has transformed adolescent social psychological education by overcoming traditional limitations and offering interactive, accessible learning experiences. While it enhances engagement and reach, challenges like content quality, privacy protection, and sustaining long-term impact must be addressed. To maximise live streaming's benefits, a collaborative approach is essential. Firstly, targeted outreach in schools and communities, combined with relatable content, can boost adolescents' participation. Secondly, effective cooperation among schools, families, communities, and social work organizations can create robust support networks, while tech partnerships enhance platform security and functionality. Lastly, government backing through policies and funding is crucial for ethical guidelines, professional training, and program development. Continuous research and evaluation are also vital for improvement. Long-term impact studies can inform program adjustments and expansion, while feedback from adolescents, parents, and educators helps tailor content to diverse needs. Monitoring technological trends ensures platforms remain user-friendly and secure. Moreover, public awareness campaigns can reduce mental health stigma, encouraging adolescents to seek help. Training for educators and parents can better equip them to support adolescents' mental health through live streaming resources. By tackling these challenges collectively, stakeholders can harness live streaming to significantly support the psychological well-being of adolescents. The future of adolescent psychological education lies in blending digital innovation with human-centered social work values, ensuring accessible, effective, and ethical support for young people's mental health.

References

[1] Wang Yuepeng, Meng Weijie, Yang Ling. The Relationship between Class Bullying Norms and Bullying Followership Behavior: A Moderated Mediating Model[J]. Chinese Journal of Clinical Psychology, 2024, 32(04): 779-783+788. DOI: 10.16128/j.cnki.1005 - 3611.2024.04.011.

[2] Lin Lili. Dissemination Pathways for Ethnic Regional Cultures under the Perspective of "Cultural Awareness": A Case Study of Guangxi Luoyue Culture[J]. Journal of Ancient and Modern Culture and Art, 2025, (09): 115 - 118. DOI: 10.20024/j.cnki.CN42 - 1911/I.2025.09.035.

[3] Yuan Fang. The Operation and Activation Pathways of Grassroots Consultative Democracy in the Digital Era[J]. Zhongzhou Academic Journal, 2025, (02): 21 - 29.

[4] Lu Jiehua, Sun Yang. Youth Development from a Full Life - Cycle Perspective: Theory, Issues, and Reform Pathways[J]. Youth Exploration, 2024, (05): 5 - 16. DOI: 10.13583/j.cnki.issn1004 - 3780.2024.05.001.

[5] Shang Yao, Chen Shanping, Liu Liping, et al. The Impact of Social Support on College Students' Sports Deviant Behavior: The Mediating Role of Intrinsic and Extrinsic Sports Motivation[J]. Journal of Shandong University of Sport, 2025, 41(01): 80-88. DOI: 10.14104/j.cnki.1006 - 2076.2025.01.009.

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Research on the Difficulties and Strategies of the Popularization of Accessible Films from the Perspective of Cultural Equity

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Abstract

As a processed form that allows visually impaired and hearing-impaired people to perceive audiovisual art "without barriers", accessible films are a powerful practice of cultural equality. The author attempts to explore the difficulties in the popularization of accessible films in the context of reality from the cognitive, creative, and institutional levels. Based on the analysis of the above obstacles, innovative promotion strategies are proposed to promote cultural equity and protect the cultural rights of visually impaired and hearing-impaired people.

Keywords

Cultural equality, Accessible movies, Action Path.

1. Introduction

The film "Ne Zha 2" directed by Jiao Zi broke through the encirclement during the Spring Festival in 2025 and created a box office myth of over 10 billion yuan. With the popularity of the film, more and more accessible cinemas have responded to the trend and launched an accessible movie version of "Ne Zha: The Demonic Children Roar in the Sea", accepting nearly 17 million visually impaired people and providing them with an unforgettable cultural feast. Such measures not only break the traditional viewing experience of "delayed viewing" for the visually impaired group, but also reflect the care and understanding of society towards this group. This is undoubtedly a powerful practice related to cultural equality. In the current context, cultural equality is not only a moral responsibility but also an inevitable logic of social development. As a means to break the "able-bodied centered" cultural hegemony through technical means (audio description, sign language translation, etc.), accessible films are playing an important role. Therefore, this article attempts to explore the popularization difficulties and action paths of accessible films from the perspective of cultural equality, in order to promote the realization of cultural fairness and protect the cultural rights of the visually impaired and hearing impaired groups.

2. Theoretical Background: The Cultural Equality Attribute of Accessible Films

2.1. The Real Challenges of Practicing Cultural Equality

According to the data from the second national disability sample survey, there are over 85 million disabled people in China, accounting for 6.34% of the total population. Currently, China implements the "two exemptions and one subsidy" policy for disabled children and adolescents in the compulsory education stage to provide educational guarantees for the disabled. In terms of employment and social security, corresponding laws and regulations have also been enacted to offer a certain degree of care to the disabled. However, there is little attention paid to the cultural life of the disabled, and relevant policies are difficult to implement due to the actual situation of the disabled and the lack of facilities. Article 27 of the United Nations' Universal

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Declaration of Human Rights states that the right to culture is an important part of basic human rights, including the right of everyone to freely participate in the cultural life of the community, enjoy the arts, and share in scientific progress and its benefits. Cultural equality further emphasizes that all people (regardless of physical condition, age, or economic status) have the right to participate in cultural creation and enjoy cultural achievements. It is evident that cultural equality is the cornerstone of eliminating discrimination and achieving social justice.

However, in reality, the disabled often cannot enjoy their due cultural rights due to physical impairments and the lack of complete social infrastructure, creating a significant gap between their cultural life and that of the able-bodied. The implementation of cultural equality in the real world faces significant challenges. Among them, promoting the accessibility of information dissemination and building an accessible physical environment have become important aspects of practicing cultural equality.

2.2. The Practical Significance of Building a "cultural access pathways"

In the 1920s, the disability rights movement emerged, and the concept of "accessibility" was subsequently extended to the cultural field, giving rise to early practices of cultural equality such as sign language news and Braille publications, which significantly promoted the recognition of the cultural subjectivity of disadvantaged groups by society. In 2006, the United Nations' Convention on the Rights of Persons with Disabilities explicitly stated the principle of "unobstructed access to cultural products," marking the entry of cultural equality into a stage of institutionalization. Subsequently, various countries have successively introduced relevant laws and regulations. For instance, the Americans with Disabilities Act requires that federally funded cultural projects be accessible. In China, the Third Plenary Session of the 20th Central Committee of the Communist Party of China emphasized the need to "improve the social security system and care service system for the disabled," and to strengthen the construction of an accessible environment to enable people with disabilities or those with special needs to participate in social and cultural life equally, fully, and conveniently. On this basis, renowned director Jia Zhangke has been vigorously advocating for the establishment of standards for accessible films, promoting the development of accessible film industry in our country. Raise awareness among people from all walks of life regarding the special cultural and entertainment needs of the disabled population. In recent years, the accessible film industry has gathered more and more public welfare organizations or related units, bringing positive impacts to the spiritual and cultural life of disabled groups. Therefore, this article attempts to explore the possibility of cultural equality practices from the perspective of promoting accessible films.

The concept of accessible movies originated from the West and is a processed film that is convenient for visually impaired and hearing-impaired people to listen to or watch. It is a vivid process that allows visually impaired individuals to perceive the world of light and shadow without barriers through re editing or adding voiceover commentary, adding subtitles, and sign language commentary. In 2005, Wang Weili founded the first "Mind Cinema" in China specifically for screening films for the blind in Beijing, marking the beginning of China's accessible film industry. The barrier free film creation promoted by "Heart Cinema" is only aimed at the blind population. Volunteers regularly narrate movies to visually impaired people through live narration, which is an early practice of "oral images". Afterwards, there were also some films that were written in text and explained in sign language for the hearing-impaired to watch, enriching the creative types of accessible films and further promoting the new situation of accessible information dissemination in China in the era of digital intelligence. At present, the "Bright Cinema" of Communication University of China has benefited more and more disabled people by producing and presenting barrier free film works, and many streaming media platforms have also participated in it to jointly build a "cultural access pathways". It can be said that accessible films provide equal opportunities for visually impaired and hearing-

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impaired people to participate in cultural life, enabling them to appreciate film works and enjoy cultural achievements like other audiences, with distinct cultural equality attributes.

3. Realistic dilemma: analysis of obstacles to the popularization of accessible films

3.1. Cognitive level: Prejudice towards' charitable gifts', marginalized status

As an important practice to promote cultural equality for people with disabilities, the implementation of accessible films has always been accompanied by a deep game of social cognition, which has caused huge obstacles to the normal promotion and popularization of accessible films. Accessible movies are activities aimed at the visually impaired and hearing-impaired, with strong public welfare attributes. The "Bright Cinema" project launched by Communication University of China is currently the most typical. Since June 2019, the "Bright Cinema" project has been promoted nationwide, achieving public welfare screenings of accessible films in 30 provinces, regions, and municipalities. In recent years, online platforms such as Tencent, Youku, and iQiyi have also opened up accessible theaters to provide public welfare viewing services for people with disabilities. The various measures should have been a manifestation of goodwill, but they have deepened the public's understanding of accessible films, which is only limited to the stereotype of "charitable gifts" rather than "rights realization". The lag and deviation of general social cognition have led to the marginalization of the service supply of accessible films.

At the 2024 conference organized by the State Administration of Radio, Film and Television, the Ministry of Civil Affairs, and the China Disabled Persons' Federation to ensure public cultural services for people with disabilities and promote the "Bright Cinema", data showed that the "Bright Cinema" provided a total of 210 accessible films, which is one-quarter of China's total film production in 2024. In addition, the public welfare screening of "Guangming Cinema" has been included in the fixed public welfare screening unit of the Beijing International Film Festival, which subtly obscures the fact that watching movies is a basic right of the disabled population. Even more subtly, only 0.07% of film research papers involve accessible adaptations (according to CNKI database statistics), and the neglect of academic production further exacerbates the marginalized position of accessible films in the academic system. Therefore, only by establishing the correct concept among the public that accessible films are a basic right of disabled groups and a concrete practice of cultural equality, can we help address the neglected situation in the promotion of accessible films.

3.2. Creative level: Lack of artistic self-awareness, rough and crude works

Based on the stereotype that accessible film services are only limited to "charitable gifts" rather than "rights realization" among the public, the concern of art practitioners for accessible film production is also lackluster, mainly reflected in the lack of professional production talents and the lack of artistic consciousness of creative subjects. Accessible films generally add sign language, subtitles or commentary on the basis of the original film, and then are professionally synthesized for visually impaired and hearing-impaired people to watch. This requires the production of accessible films to have professional text writers, commentators, editors, and other talents. However, current universities do not offer relevant training programs, and most accessible film producers are concentrated in public welfare organizations and volunteer teams. The training period is short and the professionalism is relatively lacking, which may lead to difficulties in meeting market demand for the production and quality of accessible films, making it generally challenging. Secondly, there is currently no technical standard for accessible film production in China, and the lack of unified and standardized constraints may lead to uneven quality of works. The standard vacancy makes it impossible to assess the professional skills of

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the production personnel. Moreover, due to the complex production process, the production cost of accessible films is usually high, which makes it difficult for many small and medium-sized institutions to afford and also limits the popularity of accessible films.

In addition, whether providing accessible movies to visually impaired or hearing-impaired individuals, they are all based on the conversion of visual symbols to verbal symbols, this process may bring about changes to the essence of film art. For example, a survey conducted by the Shanghai Film Archive shows that 62% of directors believe that voiceover narration will disrupt the language system of the camera. Therefore, for accessible film works, how to use artistic consciousness to balance the proportion of verbal symbols in the film process and maximize the preservation of the artistic quality of the film is a question that practitioners need to consider. It is precisely the lack of artistic consciousness among practitioners towards accessible film works that leads to an imbalance in the artistic quality of the works, which may bring low-quality viewing experiences to disabled groups and further influence the wider popularization.

3.3. At the institutional level: copyright issues constrain and dissemination is difficult

Currently, the popularization of accessible films in China is hindered by the maze of copyright authorization systems, reflecting the institutionalized dilemma of protecting the cultural rights of disabled groups. On May 5, 2022, the Marrakesh Treaty on Facilitating Access to Published Works for Blind, Visually Impaired or Other Print Disabled Persons officially came into effect in China, which to some extent solved the practical dilemma of difficulty in obtaining copyright and also provided more development possibilities for public welfare service organizations related to accessible films, for example, the "Bright Cinema" of Communication University of China has innovated the types and models of accessible information publishing and dissemination based on this foundation, and has played a good leading role in promoting the implementation of the Marrakesh Treaty in China through practical actions, which has led many university organizations and public welfare institutions to follow suit.

However, in terms of the adaptation of accessible films, the current implementation rules of the Copyright Law have not yet clarified the statutory licensing scope for accessible film adaptations. Article 24 of the Copyright Law limits the production of accessible format versions to "people with reading disabilities", resulting in the systematic exclusion of film adaptation rights for visually impaired groups. The narrowness of this legal concept directly causes nearly 80% of accessible film projects to fall into copyright difficulties, and it is precisely the ambiguity of the definition of "reasonable use" that has further sparked many controversies. For example, an APP operator provided an online playback service for the accessible version of the movie "I Am Not Pan Jinlian" to an unspecified public through the APP without authorization, and was sued for infringement by the copyright owner of the movie to the court. It can be said that the operator's original intention was good faith, but without corresponding legal and regulatory support, it violated the relevant provisions of the Copyright Law, which greatly affects the enthusiasm and initiative of accessible film practitioners in producing accessible films, and restricts the development and promotion of accessible films. Therefore, only by breaking through structural constraints through institutional innovation can accessible films shift from an exceptional state of cultural governance to a normalized mechanism for safeguarding rights. This is not only an inherent requirement for cultural fairness, but also a historical inevitability of the evolution of institutional civilization.

4. Popularization strategy: Action path for promoting accessible films

4.1. Social advocacy: Reshaping cultural cognition and enhancing social participation

At present, the public's understanding of accessible films still remains at the stage of "charitable gifts", lacking a correct understanding of accessible films as a "basic right" for disabled groups. This gap reveals the value of social advocacy in reconstructing cultural rights awareness. Firstly, it is crucial to reshape public discourse and make the public aware of the cultural equality attributes of accessible films. This can be achieved through public education methods, such as broadcasting relevant documentaries and using social media to promote the cultural equality significance of accessible films. Schools can also offer corresponding courses and collaborate with major universities to launch the "Accessibility Film Popularization Action", striving to reshape the public's understanding of accessibility films from "charitable gifts" to "basic rights", in order to form a social synergy.

In addition, it is necessary to increase the participation of all sectors of society, allow accessible film screenings to enter the community, expand the public's correct understanding of accessible films, and further eliminate prejudice. Currently, accessible films have entered communities in first tier cities such as Shanghai and Beijing, providing convenient viewing opportunities for disabled audiences through fixed screening points and regular screening activities. Such behavioral practices have earned respect for the disabled community and effectively enhanced their sense of belonging. For example, Shanghai has established a barrier free cinema line in the Disabled Persons' Federation community, allowing more visually impaired people with mobility difficulties to enjoy movie watching services at their doorstep, achieving high-quality entertainment experiences right at their doorstep. When accessible movies enter the community, they can also be accompanied by themed salons or workshops, attracting different groups to discuss social issues and promoting cross group interaction. For example, the "Silent Caf é" integration project has been established in areas such as Chengdu and Beijing, which expands employment opportunities for the hearing-impaired population through sign language teaching interaction between healthy listeners and hearing-impaired audiences. In addition, when the accessible film project enters the community, able-bodied audiences can also share the viewing space, subconsciously understand the needs of people with disabilities, and further understand the cultural equality connotation that needs to be practiced in the process of promoting accessible films.

4.2. AI Empowerment: Reducing Production Costs and Innovating Watching Experiences

AIGC (Artificial Intelligence Generated Content) is a technical capability that has moderate generalization ability to generate relevant content by learning and recognizing existing data patterns. This technology can generate various forms of content such as text, images, audio, and video, and can achieve conversion and combination between different modalities of content. Generally speaking, in order to provide a better viewing experience for blind audiences, producing a complete accessible audiovisual work requires repeated polishing at various stages. If a 120 minute accessible movie is to be completed, it would require a month of time and effort from the staff, which is a huge workload. When AIGC technology enters the field of accessible film production, it not only improves production efficiency, but also brings innovative viewing experiences to visually impaired and hearing-impaired people.

Firstly, in the process of empowering accessible film production with AI, advanced natural language processing technology (NLP models) can be used to automatically generate text information closely related to the movie content. Then, through machine learning algorithm training, the required commentary segments for the video can be identified, achieving precise

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fitting. Currently, with the assistance of Tencent AI technology, the editing and production cycle of accessible films by Tencent Video has been shortened to about 10 days. Throughout the process, production personnel only need to watch about 5 times (usually at least 15 times), greatly improving the production of accessible films. According to the 2024 inventory report released by Tencent Video's accessible theater, the accessible theater has released 193 accessible film and television works with a total duration of nearly 400 hours, covering various genres such as comedy, action, biography, animation, etc. With a cumulative total of over 1 million views.This undoubtedly brings a richer viewing experience to the disabled population, and at the same time, streaming media platforms also provide more convenient online services for the disabled population, allowing them to experience viewing services without leaving their homes.

Secondly, AI enabled accessible movies can achieve intelligent translation of sign language content through the application of sign language digital humans. In the future, with the advancement of technology and algorithms, natural motion and expression capture can be achieved through intelligent algorithms, providing hearing-impaired users with a better viewing experience and connecting users' emotional resonance. It can be said that the empowerment of accessible films by AI technology for disabled groups can achieve higher quality spiritual and cultural experiences, further implementing the practice of cultural equality.

4.3. Policy promotion: Simplify authorization process, refine laws and regulations

Looking back, the development of accessible film industry is largely constrained by copyright issues. Firstly, due to the limitations of the Marrakesh Treaty (which only applies to works published in print), the copyright issue of films cannot be included in the treaty. Secondly, the Copyright Law does not provide clear regulations on copyright issues that may arise during the production of accessible films, and the jurisdiction of the accessible film industry is relatively blank. Generally speaking, accessible filmmakers often need to obtain permission from the film rights holder before starting production, they are in a relatively passive creative state, which highlights the importance of adding accessible film related sections to the Copyright Law. In this way, many unnecessary troubles in the process of making accessible movies can be simplified, and the boundaries between feasibility and infeasibility can be clearly defined. For example, can we add a "fair use" clause for accessible adaptations in the Copyright Law, simplify the authorization process, make the production process more standardized and convenient, and simplify the communication between accessible film producers and film rights holders.

Furthermore, as a powerful practice of cultural equality, can relevant departments clarify the mandatory proportion of accessible versions required for the launch of film and television works, in order to resolve the current marginal position of the accessible film industry and enhance the awareness of accessible films among film and television practitioners. At the same time, in order to increase the enthusiasm of people from all walks of life for the barrier free film industry and promote the future development of the barrier free industry, can the government provide moderate financial incentives, such as tax reductions and special fund subsidies for enterprises producing barrier free versions. Another point that needs special attention is that AI technology is currently deeply penetrating the accessible film industry, bringing about significant changes. The content of accessible films generated by AI may involve controversies over algorithm copyright and other related issues. In response to this, it is also necessary to keep up with the times, establish relevant mechanisms, and clearly define the ownership standards of "human-machine collaboration" to avoid unnecessary disputes. Only by reasonably regulating the laws and regulations of the accessible film industry and filling the current gap can the promotion and popularization of accessible films truly achieve accessibility.

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5. Conclusion

Overall, the popularization and promotion of accessible films is a long-term and arduous task that requires joint efforts from various parties such as the government, social organizations, and practitioners. We are well aware of the importance of cultural equality, therefore, as an accessible film that effectively practices cultural equality, its promotion and popularization are crucial. In the future, we can reshape public perception by strengthening publicity and education. At the same time, empowering the production of accessible films through AI technology can enrich film content and innovate viewing experiences. Finally, it is necessary to cooperate with the formulation and regulation of relevant policies to address the practical challenges of accessible films.

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References

[1] Huijuan Dong: The Current Situation, Obstacles, and Solutions of the Development of Accessible Films in China, Electronics Intellectual Property, (2023) No.5, p.31-45.

[2] Xianghui Pan,Dongxiao Li: Vivid Depiction: The Current Development Status and Prospects of Accessible Films in China, Journal of Zhejiang Academy of Social Sciences, (2013) No.4, p.188-198.

[3] Hui Qiu: The Blind Film Narrator and His 40,000 Fans, China Report, (2022), No. 6, p. 48-52.

[4] Xiaohong Gao, Xingang Chen: Guangming Cinema: Research and Practice of Barrier-Free Audiovisual Communication, China Editing, (2019), No. 3, p. 4-7.

[5] Xiaohong Gao, Yu Cai: Obstacles and Breakthroughs: An Exploration of the Current Situation of China's Accessible Film Industry, Chinese Journal of Journalism & Communication, (2020), No. 1, p. 19-30.

[6] Zhang, Shuai: From Vision to Hearing: A Study on the Cross-Modal Transformation Path of Accessible Films, Movie Literature, (2025), No. 2, p. 135-140.

[7] Haizheng Fu, Yue Pan: Background, Pathways, and Models: Exploring the Development of Barrier-Free Information Publishing and Dissemination in China, Chinese Journal of Journalism & Communication, (2022), No. 6, p. 145-154.

[8] Baiyang Li, Yun Bai, Xini Zhan, Gang Li: The Technical Features and Morphogenesis of Artificial Intelligence Generated Content (AIGC), Journal of Documentation, Information & Knowledge, 2023, 40(01).

[9] Qian Wang: The Marrakesh Treaty and Accessible Films, China Copyright, (2021), No. 6, p. 11-12.

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Bidirectional Association Between Sleep Quality and Mental Health: Correlation Analysis of DASS and MHC Indicators Among College Students

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Abstract

Objective: Based on the dual-continua model of mental health, this study aimed to explore the relationship between sleep quality and college students' mental health, while examining differences in association strength with negative psychological symptoms and positive mental health indicators. Methods: The study included 948 college students, with 832 valid samples after data cleaning. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), negative psychological symptoms were measured with the Depression-Anxiety-Stress Scale (DASS), and positive mental health was evaluated using the Mental Health Continuum–Short Form (MHC-SF). Spearman's correlation analysis was employed to examine variable relationships. Results: PSQI total scores showed significant positive correlations with all DASS dimensions: DASS total score (rho = 0.50, p < 0.001), DASS stress (rho = 0.51, p < 0.001), DASS anxiety (rho = 0.49, p < 0.001), and DASS depression (rho = 0.47, p < 0.001), indicating that poorer sleep quality was associated with higher psychological distress. Conversely, PSQI scores exhibited significant negative correlations with MHC dimensions: MHC emotional well-being (rho = -0.398, p < 0.001), MHC total score (rho = -0.395, p < 0.001), MHC psychological well-being (rho = -0.392, p < 0.001), and MHC social well-being (rho = -0.31, p < 0.001), suggesting that worse sleep quality correlated with lower positive mental health levels. The study found that PSQI correlations with DASS dimensions were slightly stronger than those with MHC dimensions. Among DASS subscales, stress showed the strongest association with sleep quality, while in MHC, emotional well-being had the strongest link, and social well-being the weakest. Conclusion: The quality of sleep exhibited a bidirectional relationship with the mental health of college students, showing a positive correlation with negative psychological symptoms and a negative correlation with indicators of positive mental health, with varying degrees of strength across different dimensions. These results lend support to the dual-continua model of mental health, underscoring the significant role of sleep quality in the overall mental well-being of college students. This evidence provides a vital foundation for mental health education and intervention strategies on college campuses. In efforts to promote mental health, it is essential to focus on sleep-related issues, particularly their connection to stress and emotional well-being, as enhancing sleep quality may reciprocally improve the mental health of college students.

Keywords

Sleep quality; College students; Dual-factor model of mental health; Psychological distress; Positive mental health; PSQI; DASS; MHC-SF.

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1. Introduction

Sleep is a vital component of human health, occupying nearly one-third of human life. With the accelerated pace of modern life and increased use of electronic devices, sleep issues have become increasingly prevalent and a global public health concern. Statistics indicate that approximately 150 million people worldwide suffer from sleep problems, with about 17% of the population in developing countries and 20% in developed countries experiencing sleep-related issues [1]. Sleep quality not only impacts physiological functions but is also closely linked to mental health. In recent years, researchers have adopted a more holistic perspective to explore the bidirectional relationship between sleep quality and mental health, examining both its connections to negative psychological symptoms and its associations with positive mental health indicators.

The relationship between sleep quality and negative mental health symptoms has been extensively studied. Experimental research demonstrates that improving sleep significantly alleviates symptoms of depression and anxiety, with the effect size proportional to the degree of sleep quality enhancement (a dose-response relationship), suggesting a causal link between sleep and mental health [2]. Systematic reviews indicate that sleep disorders (e.g., insomnia) are potential contributing factors to various psychological disorders, and sleep interventions can not only independently improve sleep issues but also effectively alleviate other psychological symptoms [3]. Notably, studies reveal that distinct types of sleep problems (e.g., difficulty falling asleep and sleep maintenance disorders) are strongly associated with depressive symptoms [4]. However, prior research has primarily focused on clinical populations, leaving a relative gap in understanding the differential associations between sleep quality and dimensions such as stress, anxiety, and depression in the general population.

In contrast, research on the relationship between sleep quality and positive mental health indicators remains relatively limited. In recent years, with the development of positive psychology, researchers have begun investigating the connection between sleep and positive aspects of mental health. Large-scale studies show that circadian rhythm stability (reflecting sleep quality) is significantly correlated with subjective well-being, independent of mood disorder symptoms such as depression or anxiety [5]. Daily tracking studies reveal that good sleep quality significantly enhances positive emotions the following day, with this effect stronger than the reverse influence of emotions on sleep [6]. Further research confirms that high-quality sleep may reduce anxiety and depression, thereby improving subjective well-being [7]. Nonetheless, there remains a lack of systematic investigation into the differential associations between sleep quality and emotional, psychological, and social dimensions of well-being.

Despite the valuable insights provided by previous studies, several critical limitations remain. First, most research has either focused on the relationship between sleep and negative psychological symptoms or examined its connection to positive mental health, lacking attempts to integrate both within a unified research framework. This fragmented approach hinders the revelation of a holistic picture of sleep quality across the mental health continuum. Second, relatively small sample sizes have reduced the statistical power and generalizability of findings. Finally, few studies have explored the differential strengths of associations between sleep quality and distinct dimensions of mental health, limiting deeper mechanistic understanding of the sleep-mental health relationship.

The dual-factor model of mental health provides a theoretical framework for synthesizing various research perspectives. This model asserts that mental health is characterized not merely by the absence of negative symptoms but also by the presence of positive emotions and effective functioning [8] .In support of this theory, a meta-analysis has indicated that enhancements in sleep quality have a significant moderate impact on mental health outcomes.

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Specifically, improvements in sleep quality are associated with reductions in symptoms of depression, anxiety, and stress, as well as an increase in overall mental well-being, thereby underscoring the essential role of sleep quality in both dimensions of mental health [9].

This study aims to address the limitations of prior research by employing a large-sample design (n = 832) to explore the comprehensive relationship patterns between sleep quality and mental health. Grounded in the dual-factor model, the investigation simultaneously examines sleep quality's associations with negative psychological symptoms (DASS: Depression, Anxiety, Stress Scales) and positive mental health indicators (MHC: Mental Health Continuum), while comparing differences in association strengths across dimensions. Specifically, the study hypothesizes: (1) Sleep quality will show significant positive correlations with all DASS dimensions (depression, anxiety, stress); (2) Sleep quality will demonstrate significant negative correlations with all MHC dimensions (emotional, psychological, and social well-being); (3) The strength of associations between sleep quality and distinct DASS/MHC dimensions will vary. Through this integrative approach, we aim to provide more comprehensive evidence supporting the multifaceted value of sleep interventions in mental health promotion.

2. Organization of the Text

2.1. Research subject

This study collected data through questionnaire surveys from 948 Chinese college student participants. During data cleaning, missing values and outliers were addressed, resulting in a final valid sample of 832 participants.

2.2. Research tools

2.2.1. Pittsburgh Sleep Quality Index(PSQI)

The PSQI was employed to evaluate the sleep quality of participants. This instrument assesses various dimensions related to sleep, encompassing subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, the utilization of sleep medication, and daytime dysfunction. Elevated total PSQI scores are indicative of diminished sleep quality.

2.2.2. Depression-Anxiety-Stress Scales(DASS)

The DASS was used to evaluate participants' negative emotional states, comprising three subscales: depression, anxiety, and stress. This scale distinguishes the core symptoms of these three negative emotional states and provides total scores as an indicator of overall psychological distress. Higher total DASS scores and subscale scores reflect greater levels of the corresponding psychological distress.

2.2.3. Mental Health Continuum-Short Form(MHC-SF)

The MHC-SF was used to measure participants' positive mental health, comprising three dimensions: emotional well-being, psychological well-being, and social well-being. Higher total MHC-SF scores and subscale scores indicate better mental health levels.

2.3. Statistical Analysis Methods

Given the distributional characteristics of the study variables, Spearman's rank correlation analysis was employed to examine the relationships between PSQI scores and dimensions of DASS and MHC-SF. All statistical analyses adopted a significance level of $\alpha = 0.05$. Correlation strength was interpreted based on the magnitude of the correlation coefficient (ρ): $|\rho| < 0.3$ indicated weak correlations, $0.3 \leq |\rho| < 0.5$ indicated moderate correlations, and $|\rho| \geq 0.5$ indicated strong correlations. Significance levels were denoted using asterisks, with representing *** $p < 0.001$.

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3. Results

3.1. Relationship Between Sleep Quality and Psychological Distress

As illustrated in Figure 1, the results of Spearman's correlation analysis demonstrated significant positive correlations between the total scores of the Pittsburgh Sleep Quality Index (PSQI) and each of the subscales of the Depression, Anxiety, and Stress Scales (DASS). This suggests that diminished sleep quality is linked to elevated levels of psychological distress. The specific findings are detailed as follows:

The PSQI showed a strong positive correlation with total DASS scores ($\rho = 0.50$, $p < 0.001$), demonstrating a significant association between sleep quality and overall psychological distress.

The strongest positive correlation was observed between the PSQI and the DASS stress subscale ($\rho = 0.51$, $p < 0.001$), highlighting sleep quality's close relationship with perceived stress.

A moderately strong positive correlation emerged between the PSQI and the DASS anxiety subscale ($\rho = 0.49$, $p < 0.001$), suggesting poorer sleep quality correlates with more pronounced anxiety symptoms.

Similarly, a moderately strong positive correlation was found between the PSQI and the DASS depression subscale ($\rho = 0.47$, $p < 0.001$), linking worse sleep quality to heightened depressive symptoms.

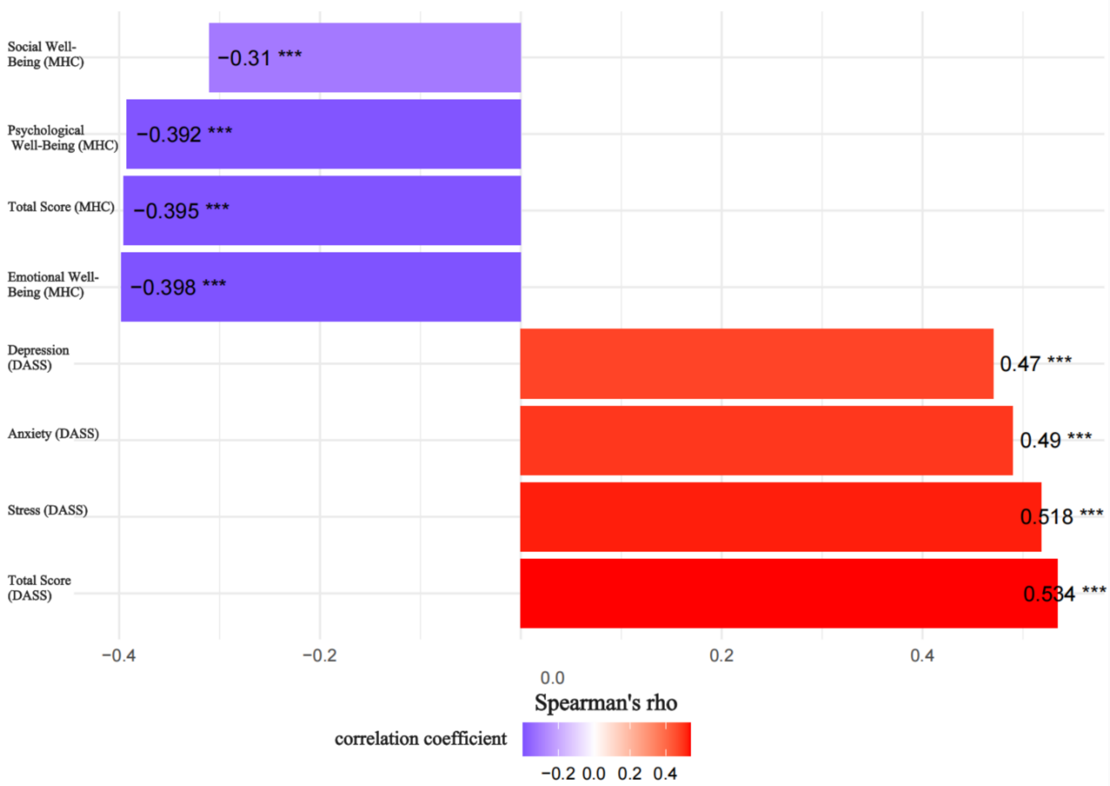

Figure. 1 Spearman correlation coefficients between PSQI total scores and different mental health variables

3.2. Relationship Between Sleep Quality and Positive Mental Health

As illustrated in Figure 1, the results of Spearman's correlation analysis demonstrated significant negative correlations between the total scores of the Pittsburgh Sleep Quality Index (PSQI) and all dimensions of the Mental Health Continuum-Short Form (MHC-SF). This suggests

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that diminished sleep quality is linked to reduced levels of positive mental health. The specific findings are detailed as follows:

The PSQI exhibited a moderate negative correlation with the MHC-SF emotional well-being subscale ($\rho = -0.398$, $p < 0.001$), representing the strongest association between sleep quality and any MHC-SF dimension.

A moderate negative correlation was observed between the PSQI and total MHC-SF scores ($\rho = -0.395$, $p < 0.001$), demonstrating that sleep quality significantly relates to overall positive mental health.

Similarly, a moderate negative correlation emerged between the PSQI and the MHC-SF psychological well-being subscale ($\rho = -0.392$, $p < 0.001$), suggesting that poorer sleep quality corresponds to diminished psychological well-being.

The weakest association was found between the PSQI and the MHC-SF social well-being subscale ($\rho = -0.31$, $p < 0.001$), though still statistically significant.

4. Conclusion

The findings of this study reveal a bidirectional association pattern between sleep quality and mental health:

Bidirectional Pattern: Sleep quality showed positive correlations with negative psychological symptoms (DASS) and negative correlations with positive mental health indicators (MHC-SF), indicating its critical role across both dimensions of mental health.

Strength Discrepancy: The correlation coefficients between PSQI and DASS subscales (0.47–0.51) were slightly higher than those between PSQI and MHC-SF subscales (0.31–0.398), suggesting that sleep problems may have a marginally stronger association with negative psychological symptoms than with positive mental health indicators.

Dimensional Differences: Among negative symptoms, the stress subscale exhibited the strongest association with sleep quality ($\rho = 0.51$).

Among positive mental health indicators, emotional well-being showed the strongest inverse link to sleep quality ($\rho = -0.398$), while social well-being had the weakest association ($\rho = -0.31$).

These results underscore the value of sleep quality as a pivotal marker of mental health and highlight the potential of sleep interventions to improve distinct mental health dimensions.

The findings of this study carry significant implications for both clinical practice and public health policy. In the realm of clinical work, it is essential for mental health professionals to incorporate sleep assessment and intervention into standard treatment protocols, particularly in cases related to stress. Within the public health domain, there is a need to enhance sleep health education to elevate public awareness regarding the significance of sleep quality and to recognize sleep-related issues as a vital entry point for early mental health interventions. Furthermore, this research underscores the importance of conceptualizing mental health not only as the absence of negative symptoms but also as the presence of positive functioning, which is crucial for a thorough evaluation and enhancement of individual mental health.

5. Study limitations

There are several limitations to this study. First, the cross-sectional design cannot determine causality, and the relationship between sleep quality and mental health indicators may be bidirectional. Second, reliance on self-report measures may introduce common methodological biases. Third, potential confounding variables such as age, gender, physical health, etc., are not taken into account. Finally, the sample may not be fully representative, limiting the generalizability of the results. Future studies could use longitudinal designs to explore the time-series relationship between sleep quality and mental health indicators, use a variety of

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measures (e.g., EEG, wrist kinemography) to obtain objective sleep data, examine possible moderating and mediating variables (e.g., coping strategies, social support, lifestyle), and develop and evaluate the impact of interventions for sleep improvement on mental health.

References

[1] H. Berhanu, A. Mossie, S. Tadesse, and D. Geleta, "Prevalence and Associated Factors of Sleep Quality among Adults in Jimma Town, Southwest Ethiopia: A Community-Based Cross-Sectional Study," J. Sleep Res., 2018, doi: 10.1155/2018/8342328.

[2] A. J. Scott, T. L. Webb, M. Martyn-St James, G. Rowse, and S. Weich, "Improving Sleep Quality Leads to Better Mental Health: A Meta-Analysis of Randomised Controlled Trials," Sleep Med. Rev., vol. 60, p. 101556, 2021.

[3] D. Freeman, B. Sheaves, F. Waite, A. G. Harvey, and P. J. Harrison, "Sleep Disturbance and Psychiatric Disorders," Lancet Psychiatry, vol. 7, no. 7, pp. 628–637, 2020.

[4] A. Stickley, M. Leinsalu, J. E. DeVylder, Y. Inoue, and A. Koyanagi, "Sleep Problems and Depression Among 237,023 Community-Dwelling Adults in 46 Low- and Middle-Income Countries," Sci. Rep., vol. 9, no. 1, p. 12011, Aug. 2019, doi: 10.1038/s41598-019-48334-7.

[5] L. M. Lyall et al., "Association of Disrupted Circadian Rhythmicity with Mood Disorders, Subjective Wellbeing, and Cognitive Function: A Cross-Sectional Study of 91,105 Participants from the UK Biobank," Lancet Psychiatry, vol. 5, no. 6, pp. 507–514, 2018.

[6] S. Triantafillou, S. Saeb, E. G. Lattie, D. C. Mohr, and K. P. Kording, "Relationship Between Sleep Quality and Mood: Ecological Momentary Assessment Study," JMIR Ment. Health, vol. 6, no. 3, p. e12613, 2019.

[7] T. Li et al., "Sleep Quality and Subjective Well-Being in Healthcare Students: Examining the Role of Anxiety and Depression," Front. Public Health, 2023. [Online]. Available: https:// www.frontiersin. org/journals/public-health/articles/10.3389/fpubh.2023.1281571/full. Accessed: Apr. 4, 2025.

[8] S. M. Suldo and E. J. Shaffer, "Looking Beyond Psychopathology: The Dual-Factor Model of Mental Health in Youth," Sch. Psychol. Rev., vol. 37, no. 1, pp. 52–68, Mar. 2008, doi: 10.1080/ 0279 6015.2008.12087908.

[9] A. J. Scott, T. L. Webb, M. Martyn-St James, G. Rowse, and S. Weich, "Improving Sleep Quality Leads to Better Mental Health: A Meta-Analysis of Randomised Controlled Trials," Sleep Med. Rev., vol. 60, p. 101556, Dec. 2021, doi: 10.1016/j.smrv.2021.101556.

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Writing of Personal Hygiene in Great Expectations and Its Moral Metaphor

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Abstract

In the Victorian period, sanitary reform and religion combined to endow personal hygiene with ethical and moral significance, forming a dichotomy marked by dirt that dirt became a criterion for judging cleanliness and filth, virtue and depravity. In Great Expectations personal hygiene is the measure by which Pip measures the ethics and morality of others, the external representation of Miss Havisham's moral degradation, and the tool by which Mrs. Joe and Mr. Jaggers whitewash themselves. The writing of personal hygiene in the novel presents the Victorian ethical imagination and ethical structure, reveals the hypocrisy of the society and the ethical predicament in that period, implies the arbitrariness and unreliability of personal hygiene discourse, and shows Dickens' reflection on sanitary reform and the demand for new ethical criteria.

Keywords

Great Expectations; personal hygiene; moral metaphor; sanitary reform.

1. Introduction

On the way to his hometown, Pip had met two prisoners and given a detailed description of appearance "their coarse mangy ungainly outer surface, as if they were lower animals" (*Great Expectations,* 1860-1861) and he "felt the convict's breathing, not only on the back of my head, but all along my spine" (246). From this, it is clear that dirt and smell are one of the main concerns of the author, which could deprive men of their humanity and morality, thereby degrading them into lower animals. In this sense, the issue of personal hygiene is not only, physically, about the appearance of cleanliness, but also become a discourse or metaphor. To understand the construction of the metaphor of personal hygiene, we need to go back to Victorian era when Charles Dickens lived to explore what combined forces formed the discourse of personal hygiene and how he used it to shape his characters.

Dickens has long paid attention to issues of personal hygiene and public health, and especially the urban health environment has been his focus. Karl Smith Ashley holds the view that personal hygiene in *Oliver Twist*, *Dombey and Son*, and *Bleak House* shares the same structure that neither body nor spirit can get rid of the penetration of dirt and then get degraded (63-73). The urban filth in *Bleak House* indicates the trigger for the spread of epidemics, and it intertwines with people's physical health and moral problems, and exposes the "internal contradictions and institutional problems of the city" to the public directly (Luo 123). However, the study of hygiene in Dickens' novels mostly focuses on the macro level of urban health environment, while the micro level of personal hygiene involving body, clothing and house-keeping is rarely mentioned. Franziska Quabeck's Dickens' Dirty Children is one of the few studies to look at personal hygiene in Dickens' novels. In this essay, by illustrating the connection between the child and dirt in *Dombey and Son*, *David Copperfield*, and *Bleak House*, Quabeck (131) demonstrates the metaphorical meaning of dirt, that is, the characterization of identity and character, and criticizes the arbitrarinessof this metaphorical meaning. In fact, there are many descriptions of personal hygiene in *Great Expectations*,

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whether it is Mrs. Joe in an apron engaged with washing in the house, Pip's getting well washed and dressed before entering the manor, or the smell of soap on Mr. Jaggers' hands, all of which highlight the importance of personal hygiene in the novel. This paper takes the relevant plots of personal hygiene as the entry point to analyze how personal hygiene is related to moral issues, how this connection affects the process of exclusion and inclusion of social power, and what Dickens thinks about this order of power. By a culture study approach, this paper try to indicate that the depict of personal hygiene in *Great Expectations* presents the Victorian ethical imagination and ethical structure, reveals the hypocrisy of the society and the ethical dilemma caused by it, and implies the arbitrariness and unreliability of personal hygiene discourse.

2. The Connection Between Personal Hygiene and Morality

In the Victorian period, personal hygiene has long gone beyond the category of animal nature and entered the social field. Sanitary reform, religion and other factors as a joint force gave personal hygiene morality and class character, and constructed the discourse related to personal hygiene.

The very point of sanitary reform is that reformers did not primarily battle against dirt out of aesthetic revulsion, but rather because dirt was incontrovertibly linked to disease and death. From 1801 to 1841, London's population increased by one million, 42 towns had populations of more than 25,000, and by 1861 there were six cities in England with populations of more than 250,000 (Porter 112). However, urban planning was far from keeping up with population growth, and sanitation facilities designed for low population densities were under enormous pressure, from water supply to sewage, to near-collapse. What this led to was that "an unprecedented volume of waste matter overflowed from cesspools, rotted in out-of-the-way streets, and flooded the River Thames, (Allen 1)", which brought about the "stench" becoming a prominent feature of 19th century English towns (Porter 113). The Victorian people, who were suffering from cholera, typhus and tuberculosis in smoggy, stinky England, found that there seemed to be a link between sanitation and the spread of disease. During the cholera epidemics of 1831 and 1832, for example, "it soon became apparent ... that the disease sought out the poorest districts, the places where sanitation was most neglected, the areas most befouled by excremental filth and other accumulated dirt. (Rosen 184)" In these circumstances, the hope that industrialization and urbanization would increase happiness was shattered by dirt and disease, and the recognition of cultural and social order was eroded, and a sanitary reform was urgently needed.

In fact, in nineteenth-century England, when sanitary reform entered the public eyes, moral reform was also in full swing, and the two were not running in independent tracks, but were complementary and intertwined. sanitary reformers seek inspiration from a range of reform reports and social statistics to make people believe "the sanitary reform movement ... emerged to tackle the issues of 'moral and physical' degradation", among which is "most powerfully publicised by Edwin Chadwick in his *Report on the Sanitary Condition of the Labouring Population of Great Britain* (1842). (Robert 158)" This report conclusively established the incontrovertible link between environment and disease, and is usually taken by historians as the marker which signals the start of an age of public health reform, albeit halting, piecemeal and very uneven in its effects in different localities. The immorality caused by grime refers especially to slums and their inhabitants: "chaotic and sinful slums degrade the people who live there physically, mentally and morally. (qtd. in Steinbach 13)" Besides, in that period, "cleanliness was claimed as an absolute good in its own right, and was used (often, it seems, unconsciously) as a sort of symbolic shorthand for a whole host of other 'goods', from respectability and ordered domesticity, to thrift, financial probity, honesty and sexual purity. Conversely, cleanliness's opposite, dirt, was seen as an evil in itself and was used to represent all sorts of other evils. (Kelly, 37)" Therefore, where dirt has been driven out, purity and enlightenment have found a congenial home; and it has always been found that to become clean is to take the first step in becoming good, wise, and great. Apparently, Dickens himself agreed with this statement.

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Whether it is the "Jacob's Island appears as the dirtiest part of the metropolis whose revolting truths lie hidden from the general view" (Schulting 49) in the slums of *Oliver Twist*, or the suggestion in *Bleak House* that "it is almost impossible to ask people to be religious and moral when basic cleanliness and health cannot be guaranteed" (Luo 127), it shows that "criminals, the paupers, and the houses ... are alike in their filthiness, their wretchedness, and their deformity." (Schulting 49) It is understandable, then, that health reformers hope to reduce the spread of epidemics through improved urban and personal hygiene, but as Reverend Charles Girdlestone wrote in 1853, "Health ... is not the only gain which sanitary reformers aim at", but "moral[ization] of the population" and "a harmonious social order" (Allen 2) were their ultimate aspirations.

Sanitary reform guided people to fulfill their moral responsibility through the improvement of personal hygiene from the practical level, but religion, as an ideology, also entrusts personal hygiene with morality. By shaping cultural consciousness, religion has formed the understanding of the dichotomy between body and dirt, that people have been removing inorganic and disordered dirt on the organic and ordered body by various means. Religion emphasizes the unity of body and spirit, and the purity of spirit needs to be premised on the cleanliness of body. In the church and chapel, preachers repeated the old saw, popularised by Wesley, that "Cleanliness is next to Godliness" (Jackson 138). This was not only spiritual metaphor - the echo of spiritual purity in physical cleanliness - but practical moral instruction. In Genesis, God created the image of human beings in his own image. Attaching importance to personal hygiene is the restoration of his own image and the return to God's sacred image, while neglecting personal hygiene is blasphemy against God and " diminish[s] one's faith in the eyes of others" (Jackson 138). Coincidentally, this proverb also appears in *Great Expectations*. In the novel, Mrs. Joe becomes almost the face of cleanliness. She "almost always wore a coarse apron, fastened over her figure behind with two loops" (7) and "is a very clean housekeeper" (22). Pip disapproves of this, claiming that she "had an exquisite art of making her cleanliness more uncomfortable and unacceptable than dirt itself" (22, but Dickens intervenes intentionally later in the story, arguing that Mrs. Joe attention to hygiene is justified: "cleanliness is next to Godliness, and some people do the same by their religion." (22) To sum up, from what has been mentioned above, it can be concluded that "religious purity has played a unique role in the history of personal hygiene. " (Smith 24)

As Sullivan puts it, "the challenge of shaping dirt and negotiating with its mobile grit functions as a metaphor for the project of modernity. "(526) Sanitary reform can not only incorporate the body into the management system to reduce the spread of infectious diseases and make it a "life politics", but also improve the status of the people morally, thus improving the civilization of the whole society. Both these aspects are in line with the expectations of modernity. However, the exclusion of dirt from the social order makes dirt a health, moral, and status marker, and people with poor personal hygiene become potential pathogens, major forces of crime, arrogant and dangerous classes, who are naturally excluded from mainstream society.

3. The Acceptance of the Moral Metaphor of Personal Hygiene in Great Expectations

When moral and physical dirt are associated, dirt breaks out of the material category and becomes a "cultural construct and relative to the social system which produces it. " (Quabeck 121) In this cultural construct, line is drawn "between defilement and purity, clean and filthy. " (Quabeck 121) Those who strive to maintain this order attain high status through personal hygiene and are accepted into mainstream society, while those covered in dirt are disdained and excluded from mainstream society.

Havisham made use of personal hygiene to achieve her own self-marginalization. When Pip first enters the Satis, he gives a detailed description of Miss Havisham's image. Miss Havisham has been wearing a white wedding dress for many years, which "had been white long ago" (60) and "was

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faded and yellow" (60) already, and her clothes, the flowers she wore, and even herself "had withered" (60) and "without this arrest of everything, this standing still of all the pale decayed objects, not even the withered bridal dress on the collapsed form could have looked so like grave-clothes, or the long veil so like a shroud." (63) All of these indicate that "Miss Havisham has built a life, or a living death, around her own passion" (Easley 216). As an upper-class Miss Havisham should have enjoyed a luxurious life, but she used the neglect of personal hygiene and the disregard of personal image as a means to achieve the stillness of her own time and cut off the contact with the outside society. She definitely knows what bodies society prefers and what images society dislikes. "Bodies are never 'just themselves' in any meaningful way," (Gilbert 16) but belong to the whole society. The interpretation and attitude towards the body are affected by the overall social culture, and the body that is preferred by the social culture can be respected, while the one that is contrary to it will be hated. Therefore, The body is a social body, and it is in social conditions and in the "interweaving with subjectivity" (Gilbert 15) that the body takes on discourse and meaning. And it is by going against the body and hygiene discourse of the time that Miss Havisham achieves his self-isolation.

Miss Havisham's yellow wedding dress not only hides her broken heart, but also suggests that her morals have fallen. Miss Havisham's expression, her voice, and her dress are remarkably consistent--a representation of her death of heart. Her face is always sunken, showing an air of contemplation. Her face could not smile, even her smiling is a "weird smile" (107). Her voice is also so low that no one could feel any vitality in her. "Altogether, she had the appearance of having dropped body and soul, within and without, under the weight of a crushing blow." (64) Young Pip also seems to understand the relationship between appearance and heart, from Miss Havisham's external performance has been able to pry out her inner degradation, he does not realize at the moment that he is walking into Miss Havisham's trap, a victim of her hatred and moral degradation.

Miss Havisham's death is also linked to the yellowing dress. By the time of her death, Miss Havisham is apologetic and remorseful for hurting Pip, speaking to Pip in a tone of voice full of rare compassion, and even kneeling down to ask Pip's forgiveness for the hurtful thing she has done. When Pip left the Satis, the fire from the fireplace set the dress on fire, and the flames wrapped her body. David Penn holds the view that "*Great Expectations*, (is) a novel not at all lacking in just such lurid instances of 'divine justice'. "(Penn 130) Miss Havisham's death due to the burning of her wedding dress is the best example of "divine justice", and it is in the punishment of Miss Havisham that makes Pip's forgiveness possible. To some extent, this interpretation is reasonable, but an important question is ignored in this kind of interpretation: why did the burning of the dress cause Miss Havisham's death and not the other way? Perhaps the moral metaphor of personal hygiene can offer an alternative interpretation. Miss Havisham's dirty house and the corpse wedding dress she wears cut her off from the world and "in seclusion, she had secluded herself from a thousand natural and healing influences;that, her mind, brooding solitary, had grown diseased." (431) Frustrated love makes her neglect personal hygiene, thus achieving self-isolation, and the deliberate neglect of personal hygiene even reinforces her moral degradation. Although spiritually she confesses, chagrins, to show her moral awakening, physically she needs to complete a ritual to complete a disintegration. The burning of the wedding dress makes her completely break with her former life, and reborn in the bath of fire, which also makes her walk out of the dirty house for the first time in the novel, even if it is for help. In treating Miss Havisham, the author also places special emphasis on the "white cotton wool" wrapped by the doctor and the "white sheet" (435) covered, although this makes her still dressed like a bride, but this pure white also allows her to return to the time before her self-isolation, to the time before moral degradation. All in all, Miss Havisham's tragic fate begins with wearing the wedding dress, falls in the yellowing of the wedding dress, and ended in the burning of the wedding dress. Her wedding dress from white to yellow witnesses her moral ups and downs.

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4. The Critique of the Moral Metaphor of Personal Hygiene in Great Expectations

Dickens' personal hygiene writing can not be simply understood as material and realistic writing, but is wandering between body and spirit, as well as description and metaphor. Personal hygiene in Victorian period not only distinguishes between clean and dirty, but also forms a power order, a dualistic order that separates the two different bodies. This order does not care what class the body is attached to, what is good and what is evil, because it is already preconceived, through the dirt to confirm the identity of the person, and become a tool of inclusion and exclusion. "In this sense, its dangers are twofold: it may well be a source of infection and contagion, but its symbolic power is no less life-threatening" (Quabeck 131).

Mrs. Joe is a steadfast practitioner of personal hygiene, and the description of Mrs. Joe appearance is enough to show that she attaches great importance to hygiene. Mrs. Joe "with black hair and eyes, had such a prevailing redness of skin" (7). In fact, "Victorian painters and novelists put great aesthetic emphasis on the translucent 'bloom' of the female skin--simple 'natural' beauty from soap and water, with shining, well-brushed hair." (Smith 289) The word "prevailing" is an emphasis on women's translucent skin, indicating that Mrs. Joe not only knew the aesthetic at the time, but also used soap and water to approach the aesthetic trend. However, it seems that Mrs. Joe pays too much attention to cleanliness, and her skin is so clean that Pip cannot help thinking "whether it was possible she washed herself with a nutmeg-grater instead of soap" (7). Nutmeg is hard, not as smooth as soap, and if you wash her face with nutmeg, of course, her complexion will be particularly red. Of course, young Pip does not understand the mystery of women's washing, and here the writer is obviously using the perspective of a child to satirize the cold and indifferent heart hidden under the clean appearance of Mrs. Joe. In addition, another characteristic of Mrs.Joe was "always wore a coarse apron" (7), cooking, cleaning the house almost occupied the whole life of Mrs. Joe. Women's housing is an important motif in 19th century literary writing. "It was predominantly women's role to create not just a physical but also a moral and an emotional environment for the family" (Kelley 104), and the physical, moral and emotional environment they create is unified. Cleanliness can not only improve the material environment of the family, but also demonstrate the virtues of women's diligence and self-discipline, and create a warm emotional environment for family members, so in the Victorian period. Soap gave Mrs. Joe red skin; apron is her representation of hard-working household; and the attention to personal hygiene had helped her secure her family status, and also been an important reason for the neighbors to praise her.

Another character in the novel who is always accompanied by the smell of soap is the lawyer Mr. Jaggers. Pip notices the first time he sees Mr. Jaggers that "I was glad of, for his hand smelt of scented soap" (88). The next time he sees Mr. Jaggers, Pip checked and identified him not only by his appearance, but also by "the smell of scented soap on his great hand" (146). In Little Britain, Pip explained the reason for Mr. Jaggers' love of washing his hands: when Mr. Jaggers had "been engaged on a case of a darker complexion than usual" (227), he went into the bathroom to wash his hands, face, and mouth; and after finishing washing, "he took out his penknife and scraped the case out of his nails" (227). As a lawyer, Jaggers does not have to seek the truth; his job is to exonerate people, even if he knows they're guilty. But Jaggers obviously has a conscience, he knows that although his behavior meets the professional requirements, but often challenges the bottom line of personal morality, so unconsciously formed the habit of washing hands with soap, in order to hide the inner guilt. After washing, "there was something so conclusive in the halo of scented soap which encircled his presence" (227), and the anxious people had no choice but to stop the idea of approaching him. As Harold Bloom once said, "as such we can understand the obsessive need to wash himself in scented soap at the end of each day--Dickens knew as well as Freud what was the classic ritual symbol of guilt." (Bloom 93) In addition, the removal of dirt implied the stability of middle-class morality, making his exterior more in line with the requirements of middle-class morality, and

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making his heart seem to be sublimated, which signaled "to others, as well as to [himself], a supposedly secure rank in their social order" (Quabeck 122).

It is worth mentioning that "he had a closet in his room, fitted up for the purpose, which smelt of the scented soap like a perfumer's shop. " (226) This closet not only separated the office area from the hand-washing area, but also separated the filth on the outside from the cleanliness on the inside. The functional division of Victorian rooms was itself not only a reflection of class, but also of morality: having a separate bathroom was the necessary way to achieve true self-respect because "every improvement in the house is an improvement in morality" (qtd. in Steinbach 13), "every important function of life required a separate room," and that to proceed otherwise was "unwholesome [and] immoral." (qtd. in Steinbach 21) Therefore, from washing hands to the functional zoning of the room, Mr. Jaggers has built a good image by strictly adhering to middle-class hygiene and ethics.

However, the more Mr. Jaggers tried to assert his image and moral status, the more the filth of the past that dominated his world, and the guilt he cannot be got rid of, which led him to an obsessive, pathological pursuit of personal hygiene. When he was done with a few cases, "he would wash his hands, and wipe them and dry them all over this towel" (226); when Pip and the other people left, Pip "found him in his dressing room surrounded by his stock of boots, already hard at it, washing his hands of us" (233); he washed his hands after he helped Pip with his letter; and even he washed his hands after he met Estella. Fear of contamination is one of the causes of obsessive compulsive disorder, which leads to those behaviors including excessive cleaning, disinfecting, hand washing, bathing, and any other things that helps prevent the spread of contamination. The habit of washing hands was a response to Mr. Jagger' inner unease, a culture-imposed choice, and a process in which he could make him calm down and solidify his middle-class status.

At the same time, Mr. Jaggers' obsession with hand-washing illustrates the arbitrariness and uncertainty of the dichotomy marked by dirt. Personal hygiene, by utilizing of its relevant discourse "to charm the subject, help stabilize and construct the subject's identity" (Han 95), makes the identity of subject more confusing. Under the neat appearance, it could be either the violent Mrs. Joe or Mr. Jaggers, who cannot get out of a dirty case. This implies the failure of the moral metaphor of personal hygiene and the unbalance of social order--the morally depraved man easily achieved a moral leap with personal hygiene.

5. Conclusion

For a long time, scholars, who do research on Dickens himself and Dickens' novel, have focused on public health, and paid little attention to personal health related to body and house-keeping. By exploring the personal hygiene issues in *Great Expectations*, it is not difficult to find that Dickens takes Pip's growth history as a bright line, and runs through the personal hygiene issues to create a distinct character image. As a middle class writer, Dickens could not get rid of the cultural metaphor of personal hygiene in the Victorian period, and deeply intertextualized reality and fiction, making the character and fate of the characters influenced by personal hygiene. As a reformer and politician, he also reflected on the ideological impact of health reform, keenly aware of the arbitrariness and uncertainty of the dichotomy marked by dirt, and called for objective and scientific evaluation criteria for morality. Although the novel is more than 160 years old, the clue of personal hygiene is still worth revisiting. From this novel, it can be concluded that some people get in line with the moral metaphor of personal hygiene, but the danger is that morally corrupt people whitewash themselves with the help of such discourse, which leads to a world of hypocrisy and a ethical predicament that the discourse of personal hygiene is alienated as a tool for self-cover-up. However, as Kelly (9) mentions in his work, the rules of personal hygiene are "unconscious" and "potent". By exploring the history we can bring these rules into consciousness and thereby dilute their potency. The writing of personal hygiene in *Great Expectations* brings these rules to the surface and thus weaken even break these rules and the ethical predicament resulted by them.

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Works Cited

[1] Allen, Michelle. Cleansing the City: Sanitary Geographies in Victorian London. Ohio University Press, 2008.

[2] Bloom, Harold. Bloom's Guides: Charles Dickens's Great Expectations. Chelsea House Publishers, 2005.

[3] Dickens, Charles. Great Expectations. The Bobbs-Merrill company, INC., 1964.

[4] Easley, Keith. "Self-Possession in 'Great Expectations'." Dickens Studies Annual, vol. 39, 2008, pp. 177-222.

[5] Gilbert, Pamela K. Disease, Desire, and the Body in Victorian Woman's Popular Novels. Cambridge University Press, 1997.

[6] Han, Qiqun. "The Material Turn: A Keyword in Critical Theory." Foreign Literature, no. 6, Nov. 2017, pp. 88-99.

[7] Jackson, Lee. Dirty Old London: The Victorian Fight Against Filth. Yale University Press, 2014.

[8] Kelly, Victoria. Soap and Water: Cleanliness, Dirt & the Working Classes in Victorian and Edwardian Britain. Bloomsbury Publishing Plc, 2010.

[9] Luo, Can. "Sanitary Reform, Epidemic Diseases and Bleak House." Foreign Literature Studies, no. 3, Jun. 2021, pp. 123-34.

[10] Penn, David. "'Broken … into a better shape': Justice and Mercy in 'Great Expectations'." Dickens Studies Annual, vol. 47, 2016, pp. 127-43.

[11] Porter, Dorothy. Health, Civilization and the State: A History of Public Health from Ancient to Modern Times. Routledge, 1999.

[12] Quabeck, Franziska. "Dickens' Dirty Children." Victorian Surfaces in Nineteenth-Century Literature and Culture: Skin, Silk, and Show, 2021, edited by Sibylle Baumbach and Ulla Ratheiser, Palgrave Macmillan, 2021, pp. 117-33.

[13] Robert, M. J. D. Making English Morals: Voluntary Association and Moral Reform in England, 1787-1886. Cambridge University Press, 2004.

[14] Rosen, George. A History of Public Health. Revised expanded ed., Johns Hopkins UP, 2015.

[15] Schülting, Sabine. Dirt in Victorian Literature and Culture: Writing Materiality. Routledge, 2016.

[16] Smith, Karl Ashley. Dickens and the Unreal City. Palgrave Macmillan, 2005.

[17] Smith, Virginia. Clean: A History of Personal Hygiene and Purity. Oxford University Press, 2007.

[18] Steinbach, Susie L. Understanding the Victorians: Politics, Culture, and Society in Nineteenth-century Britain. Second Edition, Routledge, 2017.

[19] Sullivan, Heather I. "Dirt Theory and Material Ecocriticism." Interdisciplinary Studies in Literature and Environment, vol. 19, no. 3, 2012, pp. 515-31.

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Research on the definition and protection of "Environmental Refugees" from the perspective of international refugee law

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Abstract

Environmental Refugees; International Refugee Law; Protection in international law; Regional cooperation.

Keywords

Global warming has led to a sustained rise in sea levels, severely affecting the living environment of some small island states. This has inevitably led to a particular group called "Environmental Refugees." However, the definition and attribution of this group remain void, leading to a deficiency of its protection under international law. This paper, therefore, uses case and comparative analysis methods to explore the definition and potential protection for "Environmental Refugees" from the perspective of international refugee law. The "Environmental Refugees" concept, with its objective origin, emphasizes the need for international cooperation in providing protection, which is more in line with the core characteristics of this group. Regarding international legal protection, the "Environmental Refugees" concept should be progressively extended to the scope of traditional refugees, clarifying the fundamental principles for determining and hosting this particular group and advocating the "common but differentiated responsibilities" for every host country. Furthermore, international society should promote establishing and improving relief and litigation channels for "Environmental Refugees" within the framework of international refugee law, highlighting the importance of collective action in addressing this issue.

1. Introduction

1.1. The protection dilemma of "Environmental Refugees" under international law

Climate change, a significant issue in international society, has brought the refugee problem to the forefront. The World Meteorological Organization (WMO) data in the "Indicators of Global Climate Change 2022" reveals a more than doubled global average sea level in the past decade [1], a clear sign of the irreversible impact of global warming on sea level rise. The Intergovernmental Panel on Climate Change (IPCC) ''AR6 Synthesis Report: Climate Change 2023'' predicts a rise in the global sea level between 26 to 77 centimeters by 2100 [2], threatening to inundate most low-lying areas and island countries. The urgency of the issue is underscored by the fact that at the beginning of this century, indigenous peoples in some Pacific island countries were forced to become displaced ''Environmental Refugees'' due to rising sea levels. Tuvalu, a typical representative country, has become the first country in the world to plan to immigrate the entire country to New Zealand due to environmental reasons.

However, the urgency of relief for ''Environmental Refugees'' is at odds with the stark reality of the lack of access to redress. The number of ''Environmental Refugees'' who have suffered natural disasters, like the indigenous people of Tuvalu, Kiribati, Maldives, and Marshall Islands, is increasing gradually. On the other hand, there are no binding legal provisions for this group,

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and therefore, their plight has become increasingly prominent under the existing international legal system. The reason is that unlike traditional refugees defined by the 1951 Refugee Convention, refugees caused by climate change are not persecuted due to political or religious persecution, and the international legal definition of the refugees category has not yet incorporated the ''Environmental Refugees'' concept. In other words, under the framework of international refugee law, groups displaced due to environmental changes are not the traditional protection targets. Accordingly, the resulting international legal disputes and litigation cases have intensified the exploration of the ''Environmental Refugee'' issue. As famous legal cases, both the ''Ioane Teitiota case'' and the ''Sigeo Alesana case'' reflect the plight of this particular group in international refugee law.

Therefore, the legal status of "Environmental Refugees" involves protecting displaced groups' rights and the progress of the international refugee law system. At the same time, the protection under international law not only involves the right to survive and thrive but also touches upon the national interests of host countries. Therefore, "Environmental Refugees," a term full of disputes between theory and practice, international obligations, and national sovereignty, must be reconstructed within the framework of international refugee law. Moreover, the "Environmental Refugees" protection path should also be consistent with the core principle of international refugee law.

1.2. Literature review

Given its potential impact, the term "Environmental Refugee" is a matter of significant concern in academic circles. Scholars have presented diverse opinions on the definition and protection of this group under international law. However, the majority recognize the severe situation of the "Environmental Refugee" group in reality and stress that their inclusion in the refugee category is pivotal for addressing the issue.

1.2.1. Current status of Chinese research

The definition of ''Environmental Refugees'' by Chinese scholars includes two attributes - first, the reasons for the group's transnational intentions, which mainly include ''environment'' and ''climate''; second, the reasons for the group's transnational behavior nature, divided into three categories: ''refugees,'' ''immigrants'' and ''displaced persons.'' After a comparative study, some scholars concluded that these definitions are mismatched and advocated that the term ''Environmental Refugees'' should be avoided when studying issues in this field to avoid ambiguity [3]; some scholars are neutral, indicating that the core driving force behind migration is primarily due to the environment [4]. In addition, Chinese scholars have discussed the protection of ''Environmental Refugees'' involving the core principles and customary laws of international refugee law, human rights law, and climate change law. However, it is essential to note that some scholars have also focused on resolving controversial approaches in judicial practice but have been subject to the limitations of litigation cases by varying degrees, highlighting the challenges in the field.

1.2.2. Current status of global research

"Environmental Refugees" was coined in the 1970s by Lester Brown [5]. Later, it began to be used by international organizations, but some criticized it. For example, two scholars, McGregor and Kibreab, severely criticized this term for its confusion, arguing that it oversimplified the complex reasons for migration and could lead to neglecting other important factors [6]. Some scholars have tried to replace it with "eco-migrant," but with little success; the United Nations Refugee Agency (UNHCR) proposed the concept of "environmentally displaced persons" in 2007 [7], but this has remained the exact status of the academic debate. Regarding the issue of "Environmental Refugees" under the international legal framework, some scholars advocate the establishment of an independent international organization to protect "Environmental Refugees" and the signing of a particular international convention to address this

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issue [8]. Some also advocate optimizing refugee identification procedures and tools [9]; some believe that the solution should not be limited to defining refugee status but lies in the decisive role of environmental variables in shaping population mobility decisions [10].

1.2.3. Research methods and innovations

This article innovates in research perspectives and viewpoints by using literature research, case analysis, and comparative analysis. It is committed to determining and exploring the definition and protection issues of "Environmental Refugees" from the perspective of international refugee law.

2. Debate over the definition of "Environmental Refugees"

2.1. The "Tetiota Case"

After Lester Brown first proposed the concept of "Environmental Refugees" in 1976, the United Nations began to officially use the term in the title of its "1985 Environmental Plan Report" [11]. The definition and status of "Environmental Refugees" are also reflected in typical cases from then on. Among them, the "Tetiota case" is a landmark case, which, for the first time, legally confirmed the development dilemma of "Environmental Refugees" and triggered a discussion in the academic community on the status of this group.

2.1.1. Overview of the "Tetiota Case"

Tetiota was a wave erosion and destruction victim in Kiribati and the world's first "Environmental Refugee" [12]. 2007, Tetiota and his wife moved to New Zealand on a work visa. The couple had three children four years later. However, at that time, Kiribati was already facing irreversible environmental damage. After understanding the fact, the couple appealed to the New Zealand government to extend their visas when they expired. Their lawyers also believed this would eventually evolve into a question about "the making of a climate refugee" [13]. However, no matter how often Tetiota applied to seek refugee status for his family, his appeals were rejected by the New Zealand High Court and Court of Appeal. At the same time, a New Zealand court determined that the Tetiota family did not belong to the category of "refugees" and eventually deported Tetiota and returned them to Kiribati. After that, although he applied to the United Nations Human Rights Committee, believing his human rights were violated, the organization ultimately did not support his claim [14]. This case has attracted academic attention to the rationality and legality of "Environmental Refugees." It has also become a discussion on a new definition of refugees within the framework of international refugee law.

2.1.2. The dilemma of defining "Environmental Refugees"

The core dispute in the ''Tetiota Case'' ultimately involves the issue of whether ''Environmental Refugees'' can be classified as ''refugees'' under the 1951 Refugee Convention. The 1951 Refugee Convention and the 1967 Protocol, a supplementary document that extends the scope of the Convention, are essential legal documents that define refugees and determine their rights and obligations. The Refugee Convention defines a ''refugee'' as ''a person who has a well-founded fear of persecution on account of race, religion, nationality, membership of a particular social group or political opinion, and who is outside [their] country of nationality and who, because of that fear, is unable or people unwilling to take advantage of the country's protections'' [15]. Although internally displaced persons caused by climate and environmental change do not currently fall under the definition mentioned above of ''refugees,'' ''Environmental Refugees'' can still be defined according to their constituent elements as ''due to the permanent deterioration of the living environment, resulting in the individuals or groups who are forced to seek permanent relocation in a transnational manner due to severe threats to their right to existence and life.''

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2.2. Analysis and selection of concepts related to "Environmental Refugees"

Concepts similar to "Environmental Refugees" include "Climate Refugees," "Climate Immigrants," "Environmental Immigrants," and so on. These terms are derived from the same context as "Environmental Refugees" and have different emphases, but each has a certain rationality and progress. What is certain is that the current academic debate on the definition of "Environmental Refugees" mainly involves the following two points: first, "environment" or "climate"; second, "refugee" or "immigrant."

2.2.1. "Environment" is better than "Climate"

The controversy between "environment" and "climate" calls for a paradigm shift in our understanding of the origins of this particular category of internally displaced persons (IDPs). The reason for preferring to use "climate" in naming is that it reflects the natural reasons for the displacement of particular groups, that is, the irreversible destructive effects of global warming, such as rising sea levels. This view has a certain rationality, but this article argues for a change and chooses the word "environment" for three reasons:

First, based on conceptual connotation, "environment" is closer to human beings' necessary right to survival. Although "environment" and "climate" are related and interact with each other, in this discussion, global climate warming is one of the indirect causes of permanent damage to the environment. On the contrary, permanent damage and irreversible changes to the natural environment, such as seawater submerging the country and desert covering the territory, can be said to be the most direct cause of large-scale IDPs and the greatest threat to their right to survival.

Second, based on conceptual extension, the external scope of the word "environment" is impressively comprehensive. Unlike the term "climate," which is limited to natural ecological systems, the concept of "environment" can be extended from the primary natural environment to the social environment category. This comprehensive scope informs about its broad applicability and the addition of more flexible factors in the specific practice process.

Third, based on conceptual adaptability, using "environment" is more conducive to being accepted by the existing logic of refugee definition. The use of the term "environment" in the field of refugees will, on the one hand, expand the scope of refugees with some limitations; on the other hand, its denotative concept of social environment will also be well adapted to the original international refugee law system.

2.2.2. "Refugee" is better than "Immigration."

The dispute between "refugees" and "immigrants" involves core principles determining whether this group is accepted by international refugee law. The term "Environmental Migrants" or "Climate Refugees" has been put forward under pressure from some perspectives, and some scholars have expressed concerns about the consequences of misuse of this concept [16]. Therefore, concepts such as "Environmental Migration" have seemingly become the "best choice" to avoid the tendentious and controversial concept of "refugee."

However, in a world where climate change is becoming increasingly severe, the large and growing number of people displaced by environmental change should not be ignored. This article tends to classify "displaced groups caused by permanent changes in the environment" into the category of "Environmental Refugees," mainly for the following two reasons:

First, the term "refugee" places greater emphasis on the group's involuntary forced displacement due to changes in the environment. Under the current framework of international refugee law, becoming a "refugee" requires the following five elements:

There are sufficient specific reasons for forced relocation.

Permanent or temporary relocation.

Crossing national borders.

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Actively or passively give up the protection of the country of original nationality.

If they continue to live in the country of their original nationality, their life will be seriously threatened.

Among them, ''forced migration'' (the involuntary movement of people from their homes due to environmental factors) and ''serious threat to life'' (a situation where the basic right to survival and health is seriously jeopardized) are the critical and necessary conditions for determining refugees. Accordingly, the term ''Environmental Refugees'' meets the ''forced migration caused by permanent changes in the surrounding living environment.'' The two core elements are ''due to the deterioration of the living environment'' and ''the basic right to survival and health has been or is being seriously threatened.''

Second, the "Environmental Refugees" concept clarifies that this group should receive equal protection for refugees under the existing international refugee law framework, which helps to increase the international community's attention. Unlike "immigration," which involves seeking better economic conditions, "refugee" has serious political overtones. In addition, most countries where IDPs frequently occur are underdeveloped countries in the world economy and need more land and advanced infrastructure systems. This series of negative factors highlights the plight of "Environmental Refugees" who lack protection under international refugee law. As mentioned, the preferential use of "Environmental Refugees" will promote the importance of this concept in the international refugee law system and even be entirely accepted by the definition of "refugee."

3. The protection dilemma of "Environmental Refugees" under international refugee law

In addition to the issue of definition and attribution of "Environmental Refugees," the dilemma of the absence of legal principles and the unclear responsibilities of the host countries of "Environmental Refugees" cannot be ignored. Although the negative impacts of environmental change have attracted the international community's attention, at the legal level, international refugee law still lacks explicit provisions and consensus on protecting this particular group. It has also triggered a series of contradictions and dilemmas between the term and relevant international law subjects under the law system.

3.1. The legal absence and contradictory expressions of "Environmental Refugees."

The central dilemma regarding "Environmental Refugees" under the international legal framework lies in the apparent absence of legal principles and contradictory statements about them in international treaties.

3.1.1. The apparent absence of status quo at the legal level

The absence of "Environmental Refugees" at the legal level is mainly reflected in the current international legal system's lack of legal application principles and legal normative provisions on the legal status, fundamental rights, and protection methods of "Environmental Refugees." The cause of this term lies in irreversible environmental changes under the influence of climate. International environmental conventions and declarations based on this have reached a consensus on the negative impact of environmental change on the population of environmentally fragile areas, especially in developing countries. However, concrete elaboration on the special refugee groups created by the environment still needs to be made. Specifically, the primary source of the problem of "Environmental Refugees" is climate change. Correspondingly, Article 4 of the United Nations Framework Convention on Climate Change (UNFCCC), the primary Convention on international climate change and environmental

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governance, mentions possible adverse impacts of changes on small island countries and countries with low-lying coastal areas [17].

However, the Convention's failure to acknowledge the inevitable causal link between climate change and irreversible environmental deterioration for climate-displaced groups, and its omission of the term ''Environmental Refugees,'' presents an opportunity for change. Using proper terms such as ''refugees,'' we can call on the international community to pay more attention to this particular group and provide exceptional protection. Recognizing ''Environmental Refugees'' could significantly improve in their legal status, fundamental rights, and protection methods.

In addition, the "1951 Refugee Convention", which examines the fundamental disputes over the protection of "Environmental Refugees," does not include any climate or environment-related expressions in its second part of the normative provisions on protecting the basic rights of refugees. Therefore, the fundamental rights of "Environmental Refugees" are not protected at the legal level under the current framework of international refugee law, and disputes represented by the "Tetiota Case" and the "AD (Tuvalu) Case" controversial judgments also followed [18].

In short, "Environmental Refugees" are subject to disputes over the suitability of the definition of objects protected by traditional international refugee law under the current framework and have been absent from the seat of international legal theory.

3.1.2. Contradictory expressions in international treaties

The broad expression of ''Environmental Refugees'' in international law implies an inevitable contradiction between theory and reality. In response to these contradictory statements, this article does not entirely deny the efforts made by international law to promote the protection of ''Environmental Refugees'' but instead elaborates on the practical contradictions and dilemmas from the specific perspective of ''Environmental Refugees'' caused by permanent environmental changes. It also highlights the potential for improvement in the legal framework, offering hope for a more effective system.

On the one hand, international treaties related to refugees and migration increasingly focus on the catalytic effect of the environment in accelerating the process of refugee formation. For example, "The Global Compact for Migration" states the severe threats to the climate and environment, calls on countries to confront the current situation of migration flows and promote international cooperation [19]; on the other hand, current legal dilemmas faced by "Environmental Refugees" and the IDPs have not been clearly stated and defined.

In addition, as a comprehensive framework convention in response to the global refugee issue, "The Global Compact for Migration" not only states that climate, environment, and natural disasters do not constitute the essential elements of the concept of refugees but also recognizes that the "two factors" of the environment have an essential role in causing the refugee crisis. The driving influence of refugee displacement continues to grow.

Today, the international community is paying increasing attention to climate-displaced persons and "Environmental Refugees," the driving factors of climate and environment for "Environmental Refugees" have gradually emerged. However, these protections are only principled discussions in nature and do not involve explicit expressions of the permanent threats to "Environmental Refugees," the status quo of forced displacement, and the absence of legal principles.

3.2. The legal responsibilities of host countries for "Environmental Refugees" have not yet been clarified

Another dilemma closely related to the absence of legal principles for "Environmental Refugees" is that the current international law has not clearly defined the responsibilities of

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host countries for "Environmental Refugees." Specifically, this limitation is reflected in the "macro-solicitation of the scope of the host country's responsibilities" and "blurring of the size of the responsibilities between host countries."

3.2.1. Macro-solicitation of the scope of responsibilities of host countries

The principled conventions under the current international refugee law system determine the definition of the host country's scope of responsibility, which needs to be more accessible and refined. In the face of global environmental changes, the international community continues to call on countries to seek cooperation to prevent and resolve legal issues caused by large-scale transnational population movements. However, the responsibilities of host countries still need to be clarified. For example, the "New York Declaration on Refugees and Migrants" not only considers the issue of population mobility under climate and environmental change but also actively encourages host countries to provide assistance based on national capabilities and international legal obligations [20]. Admittedly, this Declaration promotes the definition of the overall responsibility of refugee-hosting countries under international law. However, issues such as whether host countries are obliged to accept "Environmental Refugees" and the specific content of their obligations need to be further clarified and refined. It is undeniable that the division of labor and cooperation of the international community is also one of the crucial ways to solve the current plight of "Environmental Refugees." However, the complexity and randomness of the actual situation far exceed the scope of theoretical discussion. The legal responsibilities of the host country should not only be comprehensively Constraints should be defined and divided in detail.

3.2.2. The blurring of responsibilities between host countries

Given the long-term and arduous nature of the "Environmental refugees" problem, the division of host countries and the size of their responsibilities constitute the premise and are critical to international cooperation. Compared with international environmental issues, "Environmental Refugees" involve more international social entities and more complex stakeholders, mainly including the source countries of "Environmental Refugees," possible cross-border countries, and the host countries. However, considering the equality of national sovereignty of host countries, the differences in national capabilities, and the reality of ensuring internal security, current international law does not strictly constrain and divide the responsibilities of "Environmental Refugees."

The most representative of these is the "Global Compact on Migration," which pioneered the principle that countries should decide on their own whether to admit cross-border populations. However, this Convention lacks a legally binding force and reflects the current international law's responsibilities to each country, which remain different. In addition, as rising sea levels erode and submerge their territories, the "Environmental Refugees" countries of origin are also encountering difficulties in seeking international cooperation. The fact that their territories are gradually submerged also poses severe challenges to international law [21]. Therefore, under the temporary absence of the protection issue of "Environmental Refugees," it is crucial for the international community to divide the responsibilities of the host countries of "Environmental Refugees" and how to stipulate the international obligations to assist the countries that produce "Environmental Refugees."

3.3. Lack of legal remedies and appeal channels for "Environmental Refugees."

Another essential problem "Environmental Refugees" currently faces is the lack of adequate legal remedies and appeal channels consistent with the international legal system. This dilemma is first reflected in the classic international appeal cases of "Environmental Refugees." As a pioneering lawsuit against "Environmental Refugees," the "Tetiota Case" reflects this group's particular legal protection dilemma and demonstrates the lack of legal relief and channels for international judicial complaints. Although Tetiota filed a complaint with the

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UNHCR, it failed due to a lack of persuasive evidence. Influenced by the "Tetiota case," the New Zealand government also considered trying to create a "climate refugee visa" for "Environmental Refugees" from Pacific island countries in 2017 [22]. However, this move cannot fundamentally provide sustainable legal protection for "Environmental Refugees," nor does it apply to the current situation of all host countries. Given the differences in the objective development status and political and judicial systems of various countries, not all countries have the ability to host "Environmental Refugees," and not all countries where "Environmental Refugees" apply for "climate refugee visas" can be included in the hosting countries. Therefore, balancing the needs of "Environmental Refugees" and potential host countries in legal relief and appeal channels is difficult.

Coincidentally, domestic groups on the edge of "Environmental Refugees" also encounter relief and appeal bottlenecks in climate complaints. Driven by climate and environmental degradation, a group of Indian tribes in the United States submitted a petition to 10 United Nations special rapporteurs in 2020 [23]. This is essentially a domestic lawsuit brought by the "Environmental Refugee" group in the climate field, and this type of litigation will continue to grow along with environmental changes. Additionally, in the "2022 case of Pabai Pabai and Guy Paul Kabai v the Australian Government", the Gudamalulgal Nation of the Torres Strait Islands Aboriginal people have challenged Australia's failure to reduce greenhouse gas emissions, claiming the Government's inaction will force them into climate migration [24]. Although many climate and environmental appeals cases are mentioned above, none touch on the impact of "Environmental Refugees." The issue of international legal relief for these groups has not fundamentally contributed to environmental compensation or even permanent resettlement assistance for climate-displaced persons.

4. The protection path of "Environmental Refugees" under international refugee law

After analyzing the three practical dilemmas "Environmental Refugees" currently encounter under international refugee law in the above chapters, this article believes that we can "formally incorporate into the international refugee framework" "determine the principles of accommodation and the responsibilities of potential host countries," and "broaden relief and appeal channels under international law." "Three aspects will expand the international legal protection channels for "Environmental Refugees."

4.1. Officially incorporate "Environmental Refugees" into the international refugee framework

As climate warming and sea levels continue to rise, the living environment of indigenous peoples in small island countries has suffered permanent damage. However, international refugee law does not explicitly include "Environmental Refugees" in the legal protection system. Therefore, clarifying the international legal status of "Environmental Refugees" and incorporating "Environmental Refugees" into the international refugee law framework will not only help respond to the "definition dispute" in Chapter 2 but also help to straighten out "Environmental Refugees" at the level of international law— contradictions and dilemmas of conservation.

4.1.1. Gradually expand the definition of refugees, starting from regional provisions

First, incorporating "Environmental Refugees" into the international refugee framework does not happen overnight, but we should gradually expand the coverage of the current refugee definition. The constituent elements and complete "Environmental Refugees" definition should first be incorporated into the regional refugee supplementary document and then appropriately incorporated into the Refugee Convention when sufficient conditions are met.

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It is not yet feasible to directly include "Environmental Refugees" in the definition of the Refugee Convention. Specifically, there are two reasons:

First, directly expanding the refugee definition of the Refugee Convention is complicated and unreasonable. Although the Refugee Convention and its Protocols serve as introductory provisions of international refugee law and play a decisive role in solving the problem of "Environmental Refugees" problem, they are very strict in determining refugee status and only involve factors related to politics and religion. The traditional refugee status has yet to be revised since 1951. Moreover, the Refugee Convention and its Protocol are essential legal documents and are unlikely to be directly modified or overturned.

Second, extensive case support is lacking for including "Environmental Refugees" in the Refugee Convention. Although there are currently transnational cases of "Environmental Refugees" applying for visas, such as the "Tetiota case" and the "AD (Tuvalu) case," such cases do not involve all regions of the world. However, they are mainly concentrated in Pacific island countries, and the cases near Oceania in the southern hemisphere still need to be as global and widespread as the cases. In addition, the current academic community still needs to fully accept the concept of "Environmental Refugees." Therefore, there is excellent practical resistance to directly incorporating "Environmental Refugees" into the "Refugee Convention."

On the contrary, it is more feasible to first expand the core components and complete concepts of "Environmental Refugees" in the regional supplementary document on international refugees, which is in line with the development law of international refugee law and is also conducive to solving the problem of "Environmental Refugees." By reviewing the international refugee law system, the definition of refugees shows a "concentric circle" development model-taking the definition in Article 1 of the Refugee Convention as the core and interpreting the definitions of specific regional instruments outwards. For example, regional instruments in Africa and Latin America set precedents: Article 1 (2) of the 1969 OAU Convention Governing Certain Particular Aspects of Refugee Problems in Africa expanded the core definition of the Refugee Convention to include external aggression and public Disorder [25]; Furthermore, Conclusion 3 of the 1984 Cartagena Declaration expands the core definition of the Refugee Convention to human rights violations [26]. The regional instruments listed above provide practical breakthroughs and reference precedents for including "Environmental Refugees" in the international refugee law framework.

Since "Environmental Refugees" occur mainly in the Pacific and its adjacent areas, these small island countries can lead regional cooperation. In the process of striving for the formal inclusion of "Environmental Refugees" into the international refugee framework, countries where "Environmental Refugees" are located may wish to refer to the above-mentioned supplementary instruments in Africa and Latin America, relying on the Alliance of Small Island States and the Pacific Islands Forum, actively cooperated with the International Refugee Agency to expand the core definition of refugees and incorporate "Environmental Refugees" into the international refugee law system.

4.1.2. Enhance the uniformity and standardization of the expression of "Environmental Refugees" in international treaties

Given the current situation, where the expression "Environmental Refugees" in international treaties is inconsistent and somewhat contradictory, this article recommends enhancing its uniformity.

First of all, the primary task of promoting the standardized expression of "Environmental Refugees" is to deeply explore the relationship between "environmental degradation" and "forced migration" and clarify the objectivity and forced nature of the "Environmental Refugee" issue. Although the "Global Compact on Refugees," as a framework convention on international refugee law, has stated that the root cause of refugee problems caused by global climate,

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environmental, and natural disasters lies in the country of origin of refugee flows, the fundamental reason for the flow of "Environmental Refugees" remains unclear. However, there needs to be more elaboration, and the above discussion is only partially consistent with the objective causes of this problem - global climate warming and sea level rise, rather than the initiative of the refugee source country. The "Global Compact on Refugees" also did not clearly explain the causes of "Environmental Refugees" and how to protect them in its follow-up program. Therefore, international refugee law should optimize the objective explanation of the causes of "Environmental Refugees" and promote unified and standardized expression in international treaties.

Furthermore, establishing a specialized international treaty on the issue of "Environmental Refugees" under international refugee law is the proper means of coordinating the expression of "Environmental Refugees" in international treaties. Reviewing the current international refugee law and relevant treaties, when it comes to the phenomenon of "migration and refugees" caused by environmental degradation and climate change, it is inevitable to invoke the core treaties under the international climate change law framework. However, this move did not truly explore the issue of "Environmental Refugees" in depth within the framework of international refugee law. For example, Section 1, Article 18 of the "New York Declaration on Refugees and Migrants" only mentions the "Sendai Framework for Disaster Risk Reduction 2015-2030". The two major international conventions on climate change, "the Paris Agreement," only point to the "provisions on refugees and migrants" in the "Addis Ababa Action Agenda of the Third International Conference on Financing for Development" when it comes to the issue of "Environmental Refugees"; Article 39, Clause 2, of the "Global Compact for Safe, Orderly and Regular Migration (Global Compact on Migration)" takes the 2030 Agenda for Sustainable Development as the solution path. It emphasizes the relationship between international cooperation and the promotion of irregular migration caused by environmental disasters. The above international climate and environmental change framework documents focus not on the refugee issues caused by "environment and climate." Even if such issues are involved, they are limited to the level of principled protection, international legal status, and specific protection of "Environmental Refugees." The method is vaguely explained.

Therefore, given that the issue of "Environmental Refugees" is essentially a refugee protection issue, it is necessary to elaborate on and provide for it in the form of a special convention within the framework of international refugee law. Specifically, a global conference of parties should be convened with the International Refugee Agency as the center to promote the final formation of the "Environmental Refugee" contracting party framework and enhance the unity of this issue within the framework of international refugee law.

4.2. Determine potential host countries' accommodation principles and responsibilities for "Environmental Refugees"

Since the legal responsibilities of host countries for "Environmental Refugees" have not yet been clarified, and the criteria for determining "Environmental Refugees" are relatively vague, it is constructive to stipulate legal principles for the protection of "Environmental Refugees" under international refugee law. Regarding the different international subjects involved in "Environmental Refugees," the "non-refoulement" principle of international refugee law and the "common but differentiated responsibilities" principle of international climate change law can be combined to regulate "Environmental Refugees" by the principles of international law.

4.2.1. Combine the principle of "standardized judgment" with the principle of "non-refoulement"

The issue of "Environmental Refugees" should essentially be classified as a refugee issue. Therefore, determining "Environmental Refugee" standards and the principles of protection are the primary tasks in dividing the responsibilities between the source and host countries.

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This article believes that due to the unique nature of "Environmental Refugees" in terms of refugee status, the protection of "Environmental Refugees" should follow the combination of the "standardized determination principle" and the "non-refoulement principle."

First, establishing standardized determination principles will help the host country identify "Environmental Refugees" and balance the obligations of the host country and the country of origin. This principle arises from the two significant aspects of the current "Environmental Refugees" - the practical troubles of the source countries of "Environmental Refugees" and the identification dilemma of the host countries. The host country reserves the right to determine whether "Environmental Refugees" are eligible to accept refugees; the source country faces the dual crisis of the disappearance of national territory and the continuous relocation of its population. The way to adjust the relationship between the two is to formulate standardized determination principles. Specifically, it convenes international refugee organizations such as the International Refugee Agency to participate in the identification process. It invites "third-party" international organizations or neutral countries to formulate "Environmental Refugees." The standardized determination principles of "refugees" objectively assess the actual situation of the countries where "Environmental Refugees" come from and publish them in research reports in the form of environmental quantitative indicators as the basis for acceptance by each host country.

Secondly, the principle of "non-refoulement" should also apply to protecting "Environmental Refugees." The principle of "non-refoulement" is reflected in Article 33 of the Refugee Convention, which states that "Contracting States prohibit the deportation of refugees for various reasons." It is a core principle of refugee protection and should, therefore, also apply to the issue of accepting "Environmental Refugees." Applying the principle of "non-refoulement" to the "Environmental Refugees" issue has two benefits: first, it promotes the theoretical development of refugee definitions in the international refugee law system; second, it alleviates the practical problems encountered by "Environmental Refugees." As the foundation of the international refugee law system, the principle of "non-refoulement" is the basic principle for fully safeguarding the human rights of refugees. Therefore, whether they are political "traditional refugees" or the "Environmental Refugees" discussed in this article, they all have fundamental human rights that should be protected. The right to immediate repatriation to the country of origin should apply to those not granted asylum.

In short, the combination of the "standardized determination principle" and the "non-refoulment principle" is conducive to determining the core accommodation principles of "Environmental Refugees." It avoids any responsibilities of the relevant host countries in responding to their asylum applications, clarifies the situation, and promotes the compatibility of the protection of "Environmental Refugees" with international refugee law.

4.2.2. Fulfill "common but differentiated containment" responsibilities

The problem of "Environmental Refugees" involves many subjects, and the relationship is relatively complex. However, the reasons for their forced movement are relatively single, mainly climate change and environmental degradation. Therefore, this article recommends drawing on the principles of international consensus in the Paris Agreement on global climate change and dividing the responsibilities of different stakeholders with common but differentiated responsibilities [27].

First, international refugee law should clarify that protecting "Environmental Refugees" is a shared global responsibility. The objective reason for the emergence of "Environmental Refugees" is that some island countries and low-lying coastal areas have objective disadvantages in the geographical environment, and the permanent environmental deterioration caused by global climate warming has accelerated the formation of "Environmental Refugees." The Paris Agreement has stated that global climate warming is a

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global issue for all countries. Therefore, as an international refugee problem derived from global climate change, the responsibility for protecting "Environmental Refugees" should, in principle, belong to the whole world. Countries are jointly shouldering responsibilities as they deal with global climate change.

Second, "differentiated responsibilities" are crucial to hosting responsibilities and one of the best ways to establish justice in hosting "climate refugees." On the one hand, the countries where "Environmental Refugees" come from should actively seek international cooperation and relief, build strategic artificial islands, strengthen coastal baselines, apply for long-term loans from international organizations and the World Bank, or carry out planned regional migration; on the other hand, mainland countries or more economically developed countries that are close to the country of origin of "Environmental Refugees" or in the same natural geographical area should assume more independent responsibilities for protecting "Environmental Refugees." This article believes that due to geographical factors and environmental and climate factors, countries adjacent to submerged islands are more likely to become host countries for "Environmental Refugees" to apply for asylum and "climate permanent visas." Neighboring countries that can accommodate "Environmental Refugees" have relatively low difficulty and cost in assisting the source countries of "Environmental Refugees."

The operation difficulty is also relatively easy. After summarizing the island countries currently threatened by rising sea levels, it can be found that most countries, such as Kiribati, Tuvalu, and Nauru, are located in the central Pacific region adjacent to the northeastern part of Oceania. Correspondingly, Australia and New Zealand are also located in Oceania, which has become the first choice for these Pacific island countries to apply for refugee asylum and immigration. Therefore, mainland countries close to the countries of origin of "Environmental Refugees" should bear more protection responsibilities.

4.3. Establish relief and appeal channels under the framework of international refugee law

Given the lack of adequate relief and special appeal channels for "Environmental Refugees" under the international legal system, this article believes that a particular relief plan and special appeal channels for "Environmental Refugees" should be established under the international refugee law system.

Adding a particular relief plan for "Environmental Refugees" is feasible under the international refugee framework. There is a precedent for extraordinary relief in international refugee relief. In order to assist the Palestinian people, the United Nations General Assembly established the Near East Palestine Refugee Relief and Works Agency (UNRWA), which constitutes an essential international relief project under the international refugee framework. Correspondingly, in response to the increasingly severe problem of "Environmental Refugees," we may wish to refer to the operating mechanism of UNRWA and coordinate the UNHCR and humanitarian aid agencies. On the one hand, we can provide necessary humanitarian assistance to "Environmental Refugees" who have suffered serious harm to their survival. On the other hand, we should provide engineering assistance to the local ecological environment in the countries where "Environmental Refugees" come from to slow down environmental deterioration.

Furthermore, establishing a complaint channel for "Environmental Refugees" under the framework of international refugee law is conducive to dynamically resolving transnational visa disputes and nationality issues for "Environmental Refugees." In addition to the appeal channel of the UNHCR, "Environmental Refugee" groups can complain to potential host countries under the framework of international refugee law and reasonably express their requests for visa extensions; specialized agencies that deal with "Environmental Refugee" issues can later, combined with the comprehensive opinions of the International Refugee

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Agency and the Human Rights Committee, objectively determine whether the complainant has the identity characteristics and constituent elements of an "Environmental Refugee," provide opinions and suggestions for the parties and the host country, and protect the legitimate rights and interests to the greatest extent.

To sum up, the "Environmental Refugees" issue should be discussed in the context of international refugee law. However, establishing unique projects and institutions under the framework of international refugee law requires work. It requires implementing the first two aspects of this chapter and the international community.

5. Summary

The plight of ''Environmental Refugees,'' a consequence of global warming and irreversible environmental degradation, has become a pressing concern for the international community. However, the lack of consensus in academic circles on the definition and identification of ''Environmental Refugees'' has led to the emergence of this term. The current international refugee law system is fraught with theoretical and practical dilemmas, including the absence of legal principles, contradictory expressions, unclear host country responsibilities, and a need for more legal remedies and appeal channels.

Regarding the debate over the definition of "Environmental Refugees," after objectively analyzing the causes and constituent elements, it can be defined as "the permanent deterioration of the living environment that has caused huge consequences to the survival and life rights of Indigenous peoples" individuals or groups who are threatened and thus forced to seek permanent relocation in a transnational form.

Regarding the protection of "Environmental Refugees" under international law, the absence of "Environmental Refugees" in international refugee law reflects the dispute over the suitability of "Environmental Refugees" who are subject to traditional international refugee law under the framework of international refugee law. The expression of "Environmental Refugees" in international treaties reflects certain contradictions and does not involve the core and essence of "Environmental Refugees." In addition, the legal responsibilities of host countries for "Environmental Refugees" have not yet been clarified. The macro scope of responsibilities and the blurring of the size of responsibilities have hindered "Environmental Refugees" from accepting protection in the form of international refugees. Some cases of "Environmental Refugees" also show that there is currently a lack of adequate legal remedies and appeal channels for "Environmental Refugees" under the framework of international refugee law.

Finally, given the three practical dilemmas of "Environmental Refugees," a reasonable path to gradually solve them should be explored based on international refugee law. First, seek regional cooperation channels. In particular, the Pacific Islands region can gradually expand the definition of refugees. Secondly, in terms of standardized expressions in international treaties, the inevitable connection between "environment and climate" factors and "Environmental Refugees" should be clearly stated, and a global conference of parties should be convened to promote the final formation of the "Environmental Refugee" contracting party framework. In addition, the principle of standardized determination should be combined with the principle of "non-refoulement" to fulfill "common but differentiated accommodation responsibilities" and establish core principles for dealing with the issue of "Environmental Refugees." Coordinating UNHCR and humanitarian aid agencies to build relief projects to deal with "Environmental Refugee" issues within the international refugee law framework and expand complaint channels is also constructive.

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References

[1] Forster, Piers M., et al. "Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence." Earth System Science Data 15.6 (2023): 2295-2327.

[2] Lee, Hoesung, et al. "IPCC, 2023: Climate Change 2023: Synthesis Report, Summary for Policymakers. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland." (2023): 1-34.

[3] Yong, Chen. "Some Perspectives on Several Basic Issues in Studies of Environmental Migration." China Population, Resources and Environment (2009): n. pag.

[4] Yan, Bo."Reflection on Environmentally-forced Migration." International Forum (2006).

[5] Brown, Lester R. "Twenty-Two Dimensions of the Population Problem. Worldwatch Paper 5." (1976).

[6] McGregor, JoAnn. "Climate change and involuntary migration: implications for food security." Food policy 19.2 (1994): 120-132.

[7] Goodwin-Gill, Guy S., and Jane McAdam. "UNHCR and climate change, disasters and displacement." The United Nations Refugee Agency (UNHCR), Geneva, Switzerland (2017).

[8] Docherty, Bonnie, and Tyler Giannini. "Confronting a rising tide: a proposal for a convention on climate change refugees." Harv. Envtl. L. Rev. 33 (2009): 349.

[9] Martin, Susan. "The state of the evidence." Forced Migration Review 49 (2015).

[10] Morrissey, James. "Rethinking the'debate on Environmental Refugees': from'maximilists and minimalists' to'proponents and critics'." Journal of Political Ecology 19.1 (2012): 36-49.

[11] El-Hinnawi, Essam. "Environmental Refugees." (1985): 41-41.

[12] Wennersten, John R., and Denise Robbins, eds. "Rising tides: Climate refugees in the twenty-first century." Indiana University Press, 2017.

[13] Weiss, Kenneth R. "The making of a climate refugee." Foreign Policy 28 (2015).

[14] Stojanovic, Bojan. "The view of the Human Rights Committee in the case of Ioane Teitiota v. New Zealand, and its relevance for international law." Collection Papers Fac. L. Nis 87 (2020): 73.

[15] Zimmermann, Andreas, Jonas Dörschner, and Felix Machts, eds. "The 1951 Convention relating to the status of refugees and its 1967 protocol: A commentary." Oxford University Press, USA, 2011.

[16] Neuteleers, Stijn. "Environmental Refugees: a misleading notion for a genuine problem." Ethical Perspectives 18.2 (2011): 229-248.

[17] Sciaccaluga, Giovanni, and Giovanni Sciaccaluga. "The Role of the UNFCCC and of the Global Compacts for Refugees and Migration." International Law and the Protection of “Climate Refugees” (2020): 145-156.

[18] Robertson, Jake. "Climate Change refugees: the extent New Zealand law Protects Migrants displaced by Climate Change." LLB (Hons) Dissertation, University of Otago (2016).

[19] Klein Solomon, Michele, and Suzanne Sheldon. "The global compact for migration: From the sustainable development goals to a comprehensive agreement on safe, orderly and regular migration." International Journal of Refugee Law 30.4 (2018): 584-590.

[20] Atapattu, Sumudu. "Climate change and displacement: protecting ‘climate refugees’ within a framework of justice and human rights." Journal of Human Rights and the Environment 11.1 (2020): 86-113.

[21] Zhipeng, He, Shenqing Xie. "An inquiry into the international legal competence of States whose territories have been completely submerged by the sea." Oriental Law (2014):82-93.

[22] Fiennes, Leandra. "New Zealand’s Climate Refugee Visa, a framework for positive change." (2019).

[23] Alogna, Ivano, Christine Bakker, and Jean-Pierre Gauci, eds. Climate change litigation: global perspectives. Brill, 2021.

[24] Setzer, J., & Higham, C. (2022). Global trends in climate change litigation: 2022 snapshot.

[25] Convention Governing the Specific Aspects of Refugee Problems in Africa Article 1:(2) The term "refugee" shall also apply to every person who, owing to external aggression, occupation, foreign

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domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality.
[26] The Cartagena Declaration on Refugees and the Protection of People Fleeing Armed Conflict and Other Situations of Violence in Latin America, P32-33, Chapter V： The regional refugee definition in the Cartagena Declaration was meant to provide a concise reference point to expand protection while swiftly responding to the growing plight of refugees who did not fulfil the 1951 Convention definition. Proper interpretation of the cause of flight—namely, the prevailing situation in the country of origin and a threat to life, safety or freedom—is key to the appropriate application of the regional refugee definition.
[27] Mingde, Cao. "The Legal Standpoint and Strategy of China to Participate in International Climate Governance: From the Perspective of Climate Justice." China Legal Science 2016(01):29-48.

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Analysis of Online Public Opinion on Ecological Issues in Guangxi Based on the LDA Model

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Abstract

As ecological issues become increasingly severe, public attention and discussions on environmental protection topics have been widely spread through online platforms. This paper focuses on the online public opinion regarding water pollution issues in Guangxi, using video comments from Douyin and Bilibili as the data source. The LDA model is employed to extract the opinion topics, and sentiment analysis tools are used to explore the differences in public emotional tendencies. The study finds that there is little difference in the proportion of positive emotions in the comments on Douyin and Bilibili, while the proportion of negative emotions on Douyin is significantly higher than on Bilibili. Douyin comments tend to express emotions in a more sensational manner, while Bilibili comments place more emphasis on rational discussion and in-depth analysis. The study suggests that factors such as user age, platform comment mechanisms, information dissemination speed, and platform algorithms could be the possible causes of the differences in public opinion tendencies between the two platforms. The paper also discusses the impact of policy factors, media factors, and public participation on online public opinion and provides corresponding suggestions to guide opinion regulation bodies in managing online public sentiment.

Keywords

Online Public Opinion; Water Pollution; LDA Model.

1. Introduction

1.1. Research Background and Significance

As a fundamental national policy of China, ecological and environmental protection plays a crucial role in ensuring the green, healthy, and sustainable development of ethnic minority regions (Liao & Li, 2017). Guangxi serves as a vital ecological barrier in China, boasting unique biodiversity and abundant natural resources (Guo, 2024). However, in recent years, due to factors such as agricultural expansion, excessive mining, and tourism development, the quality of the ecological environment has been continuously declining, and ecological issues have become increasingly prominent. These challenges not only threaten the stability of local ecosystems but also pose severe risks to regional economic development and residents' quality of life.

According to the 55th Statistical Report on China's Internet Development released by the China Internet Network Information Center, 2024 marks the 30th anniversary of China's full access to the global Internet, with the number of Internet users reaching 1.108 billion and an Internet penetration rate of 78.6% [3]. In the digital era, online public opinion analysis has emerged as an innovative research method in the social sciences. Leveraging big data technologies, it can capture public attention on environmental issues, emotional tendencies, and topic distributions, providing essential decision-making references for ecological governance. Driven by mainstream social platforms such as Weibo, Douyin, Bilibili, and Kuaishou, online public opinion has profoundly influenced public perceptions and attitudes toward social issues. These

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platforms not only serve as entertainment hubs but have also gradually evolved into key arenas for public opinion expression and societal discussions (Chen & Huang, 2018).As a leading short-video platform, Douyin caters to the social, entertainment, and informational needs of diverse age groups, reflecting both its broad public reach and the complexity of its user base (Sun & Wu, 2025). With a powerful algorithm-driven recommendation system, Douyin can swiftly disseminate trending topics to a vast audience, generating significant public opinion influence. Although Bilibili initially focused on entertainment and anime culture with limited public engagement, its content has diversified in recent years. In particular, discussions on social issues have gained traction, attracting a growing number of young users to participate.

Given the differences in user demographics between Douyin and Bilibili, a comparative analysis of these two platforms holds substantial practical and academic significance. By analyzing data from these platforms, this study effectively captures how users from different age groups and cultural backgrounds engage with ecological issues, revealing public attitudes, emotional tendencies, and cognitive depth regarding environmental concerns. In Guangxi, a region rich in natural resources, discussions surrounding ecological issues may be particularly prominent. Online public discourse not only reflects societal awareness of ecological problems but also serves as a valuable reference for government agencies and environmental organizations. A deeper understanding of public concerns and demands can facilitate more effective ecological problem-solving, contributing to sustainable development and environmental governance.

1.2. Research Status

Currently, there is a wealth of research on online public opinion conducted by scholars both domestically and internationally. For instance, Wang Xiwei et al. (2018) used the topic of the "Ya'an Earthquake" on Sina Weibo as a data source and employed social network analysis methods to explore the dissemination pathways and network structures of online public opinion regarding natural disasters in the new media environment. Li Yanling et al. (2025) analyzed Weibo discussions on the "7.20" Henan Zhengzhou catastrophic rainfall event, focusing on the thematic evolution of public opinion across different life cycle stages of emergencies and how shifts in public sentiment influenced topic evolution. Zeng Ziming and Chen Siyu (2023) collected Weibo posts related to virus mutation discussions, utilizing the LDA model to extract latent topics and keywords from different stages of public opinion, analyze topic evolution trends, and construct the BEBA model to examine sentiment characteristics and evolutionary patterns at various stages of public opinion. Resch et al. (2018), using earthquake-related discussions on Twitter in the United States as a case study, proposed a novel method combining the LDA topic model and spatiotemporal analysis to assess disaster footprints and damage, providing timely information support for disaster management. Bruno Takahashi et al. (2015), from the perspective of public opinion dissemination, analyzed Twitter's crucial role during typhoon events in the Philippines. From these studies, it is evident that current research on online public opinion predominantly focuses on public health emergencies and sudden natural disasters, with relatively limited exploration of ecological issues. Moreover, media platforms for public opinion analysis differ significantly across regions—domestic research primarily relies on Sina Weibo, while international studies favor Twitter. Thus, this study focuses on online public opinion regarding ecological issues in Guangxi, using Douyin and Bilibili as data sources to extract the key topics related to "Guangxi water pollution." By comparing the emotional trends across these two platforms, this study aims to analyze the underlying causes, summarize the influencing factors of online public opinion on ecological issues, and propose relevant recommendations.

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2. Overview of Ecological Issues in Guangxi

2.1. Characteristics of Ecological Resources in Guangxi

Located in southern China, Guangxi possesses a unique geographical position and diverse topographical conditions, forming a rich and distinctive ecological resource system. Renowned for its picturesque landscapes, Guangxi features an abundance of mountains, hills, rivers, and lakes. The extensive distribution of karst landforms further distinguishes Guangxi from other regions in China. The province's karst topography has given rise to striking natural phenomena such as stone forests, caves, and underground rivers, which not only contribute to its breathtaking scenery but also foster a rich network of hydrological resources. With an intricate river system that includes major waterways such as the Gui River and the Li River, Guangxi enjoys an ample water supply that sustains local ecosystems while supporting agricultural irrigation and urban water consumption.

Guangxi also boasts a high forest coverage rate, with vast expanses of primary and secondary forests. These forests play a vital role in maintaining ecological balance, regulating climate, and sequestering carbon, while simultaneously providing habitats for a diverse range of flora and fauna. As one of China's key biodiversity hotspots, Guangxi is home to numerous rare plant and animal species, as well as unique microbial communities. This biodiversity not only serves as an invaluable resource for scientific research but also generates significant economic and social value in areas such as tourism and ecological conservation.

Beyond its ecological richness, Guangxi's natural resources hold considerable cultural and societal significance. With a long history and a diverse ethnic cultural background, Guangxi seamlessly integrates its natural landscapes with cultural heritage, forming a distinctive "mountain-water culture." This cultural essence is deeply embedded in local traditions, daily life, and festive celebrations, further reinforcing ecological conservation and sustainable resource utilization. In recent years, Guangxi has actively promoted green and sustainable development, capitalizing on its abundant natural resources and strong ecological advantages to achieve remarkable progress in eco-tourism and ecological agriculture (Guo, 2024). By developing green tourism and ecological agriculture, Guangxi not only enhances the protection of its natural environment but also leverages its ecological resources to drive economic growth and social benefits.

2.2. Major Ecological Issues in Guangxi

Despite its abundant ecological resources and unique natural environment, Guangxi faces increasingly severe ecological challenges due to rapid economic and social development, as well as intensified human activities. In recent years, the acceleration of industrialization and urbanization in Guangxi has resulted in the direct discharge of large volumes of untreated industrial and domestic wastewater, leading to severe water pollution in certain areas (Zhao & Huang, 2014). The deterioration of river and lake water quality not only affects the safety of residents' drinking water but also poses a threat to aquatic organisms and the entire ecosystem. In addition to water pollution, air pollution and soil contamination have also adversely impacted the local ecological environment. In some industrial zones and densely populated urban areas, the concentrations of suspended particulate matter and hazardous gases are relatively high, posing risks to public health and ecological balance. Although Guangxi maintains a high forest coverage rate, the long-term overexploitation of forest resources has led to serious ecological consequences. Large-scale deforestation of natural forests to cultivate fast-growing eucalyptus plantations has disrupted vegetation structures and weakened ecological functions. This has resulted in the degradation of forest vegetation and has jeopardized the stability of mountain ecosystems (Tang, 2010). The degradation of forest resources has reduced the stability of regional ecosystems, weakening the forests' functions in

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carbon sequestration, windbreaks, desertification prevention, and soil and water conservation. Guangxi is also one of the regions in southwestern China frequently affected by natural disasters (Zhao & Huang, 2014). Due to the effects of climate change, extreme weather events such as heavy rainfall, floods, and droughts have become more frequent. For instance, in June 2024, torrential rains triggered the largest flood in Guilin since 1998, causing urban waterlogging, the closure of tourist attractions, and the suspension of train and high-speed rail services. This not only endangered lives and property, destroyed farmland and residential areas, but also led to the discharge of large amounts of agricultural pollutants and domestic waste into water bodies, exacerbating water pollution. On the other hand, prolonged droughts have resulted in water shortages, further affecting the survival conditions of flora and fauna within the ecosystem. The increasing frequency of extreme weather events underscores the growing impact of climate change on Guangxi's ecology, with long-term and far-reaching consequences for its ecosystems.

Given the interwoven ecological challenges, Guangxi urgently needs to implement scientific and effective governance measures. The internet serves as a crucial channel for the government to listen to public concerns. Through social media platforms such as Douyin and Bilibili, the public can rapidly disseminate videos and information related to ecological issues, creating a public opinion aggregation effect. Public attention and expressions of concern regarding ecological problems not only foster widespread social discussions but also drive governmental and corporate actions. For instance, certain videos on Douyin exposing environmental pollution have sparked strong reactions, with netizens sharing their experiences and concerns about environmental issues in the comment sections, demanding improvements in environmental protection measures. The widespread dissemination and feedback of online public opinion not only raise social awareness of ecological issues but also prompt relevant authorities to enhance their environmental policies and measures.

3. Research Design

3.1. Overview of the LDA Model

Latent Dirichlet Allocation (LDA) is a widely used topic modeling technique applied in text mining, sentiment analysis, information retrieval, and recommendation systems. It is particularly useful for processing large-scale text data, as it automatically extracts latent topics from documents, unveiling the underlying structure of textual information. LDA is an unsupervised learning algorithm based on Bayesian inference, aiming to derive topic distributions from a large corpus and assign a topic model to each document (Bleidm & Ngay, 2003). As illustrated in Figure 1, LDA assumes that each document consists of multiple topics, with each topic represented by a set of characteristic words. By hypothesizing the generative process among documents, topics, and words, LDA constructs a Bayesian framework to infer the topic distribution of each document. Through probabilistic inference, LDA ultimately assigns a topic distribution to each document and identifies a set of high-probability words for each topic, providing a structured representation of text data.

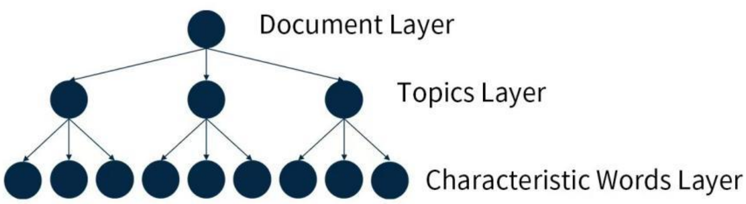

Figure 1: The LDA Model Structure

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The strength of the LDA model lies in its ability to automatically uncover latent topics within texts, reducing the need for manual annotation while providing a systematic analytical framework. In the analysis of online public opinion on social media platforms, LDA helps researchers extract core issues and key information from large volumes of comments, identify different discussion topics, and analyze public sentiment trends and focal points of concern.

3.2. Data Collection and Cleaning

This study collects comment data on the topic of "Guangxi Water Pollution" from Douyin and Bilibili using web scraping techniques in a Python 3.13 environment. The data collection period spans from 2021 to 2024, covering comments from relevant videos posted during this timeframe. The collected data fields include user ID, comment timestamp, and comment content. Given the difference in data volume across platforms, approximately 53,000 words of comment data will be extracted respectively from Douyin as well as Bilibili for analysis.

To improve the accuracy and effectiveness of text mining (Yang, Wang, & Hou, 2019), data cleaning is required after data collection. This study employs Python 3.13 and PyCharm as the primary tools for data preprocessing, following these steps:

Removing irrelevant or non-analyzable data – Eliminating fields such as usernames, timestamps, emojis, and special characters.

Storing valid comments – The cleaned comments are saved as text files in UTF-8 format for further processing.

Building a stopword list – A stopword list is created in UTF-8 format to remove high-frequency but meaningless words during analysis.

Text segmentation – Jieba and Pandas libraries are downloaded for word segmentation.

Executing segmentation – The segmentation code is executed in PyCharm, with necessary parameter adjustments, to generate structured text data for LDA topic modeling.

3.3. Data Processing and Application

Once text segmentation is complete, the LDA topic modeling code is run using PyCharm, with the scikit-learn and pyLDAvis libraries downloaded for model implementation. Necessary parameters are modified before executing the code to obtain topic modeling results.

4. Characteristics of Online Public Opinion on Guangxi's Ecological Issues

4.1. Selection of Topic Numbers

Figures 2 and 3 illustrate the changes in perplexity and coherence scores with varying topic numbers for Douyin and Bilibili, respectively.

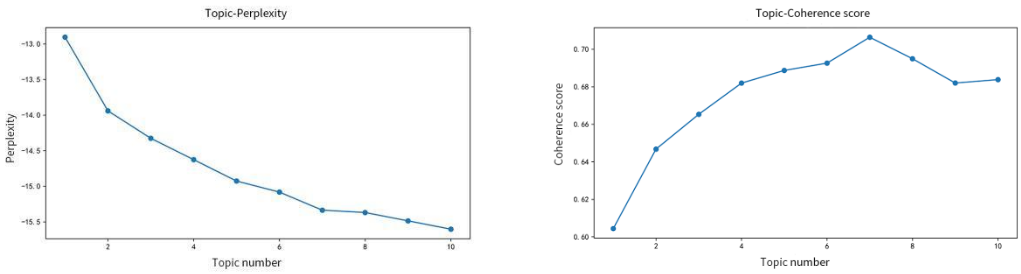

Figure 2: Changes in Perplexity and Coherence Score for Douyin

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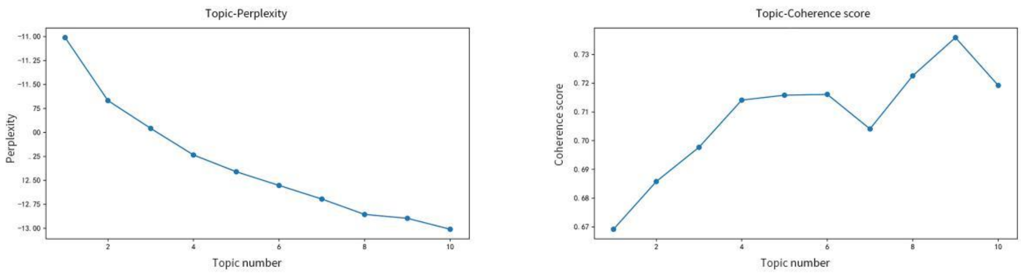

Figure 3: Changes in Perplexity and Coherence Score for Bilibili

As shown in Figure 2, the coherence score reaches its peak when the topic number is set to 7 for Douyin. Similarly, Figure 3 indicates that the highest coherence score for Bilibili is achieved at 9 topics. Therefore, the optimal number of topics is determined to be 7 for Douyin and 9 for Bilibili.

4.2. Topic Discovery in Online Public Opinion on Guangxi's Ecological Issues

To visualize the results of topic modeling, pyLDAvis was used to generate bubble charts. The X-axis (PC1) and Y-axis (PC2) represent the mapping of topics onto a two-dimensional space using multidimensional scaling. This visualization allows for the observation of similarities and differences between topics. Each bubble represents a topic, and the distance between bubbles reflects their semantic similarity—the closer they are, the more similar the topics; conversely, greater distances indicate greater differences. The size of each bubble corresponds to the frequency of the topic in the dataset, with larger bubbles indicating a higher proportion of documents associated with that topic. As shown in Figures 4 and 5, the topics exhibit both distinctions and overlaps.

Finally, a locally deployed deepseek-r1:8b model was used to identify keywords in each topic and assign topic labels. The identified topics related to online public opinion on water pollution from Douyin are presented in Table 1, including social opinion, social supervision, corporate responsibility, sewage discharge, corruption, social responsibility, and misconduct. The topics from Bilibili are summarized in Table 2, covering rural sewage management, water pollution, public safety, water pollution management, public sentiment, environmental supervision, water source protection, wastewater treatment, and technical approaches.

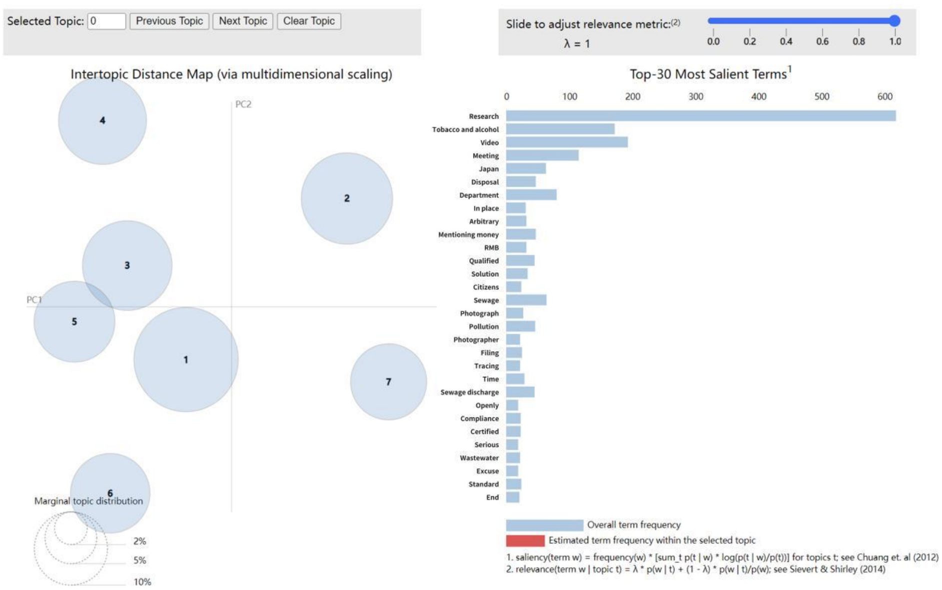

Figure 4: pyLDAvis Visualization of Douyin Data

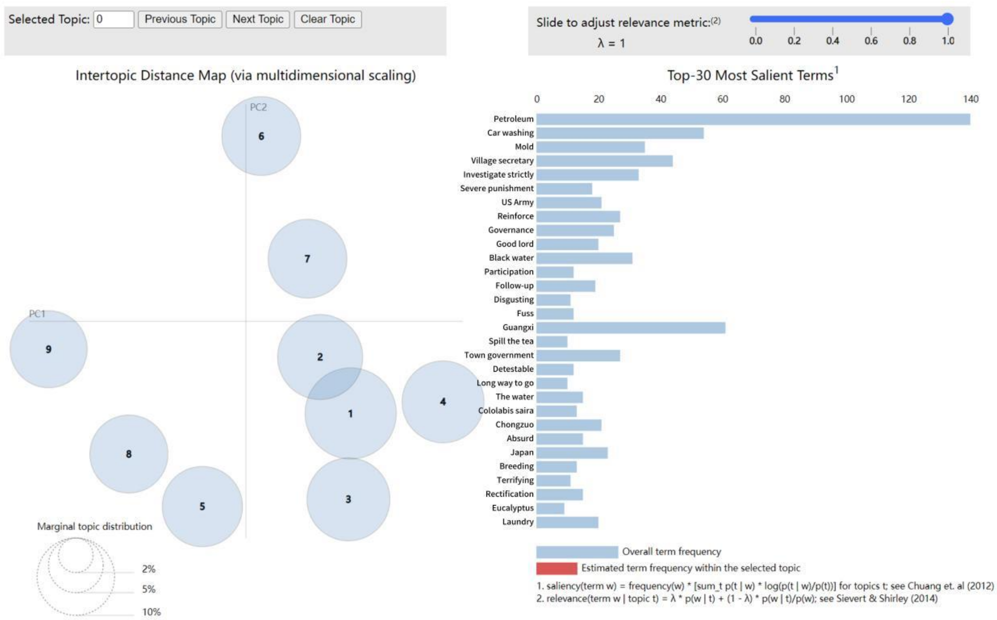

Figure 5: pyLDAvis Visualization of Bilibili Data

Table 1: Topics of Water Pollution Comments on Douyin

Topic	Topic Label	Keywords
Topic1	**Social Opinion**	Research, Ordinary people, Sentencing, Reason, Exposure, News, Video, Department, Deal seriously, Meeting, Influence, Rumor, Unit, Report, Citizens
Topic2	**Social Supervision**	Tobacco and alcohol, RMB, Pay , Fine, Qualified, Snapshot, Severe punishment, Tip-off, Legal Inspection, Coverage, Sewage, Public, Compliance, Life
Topic3	**Corporate Responsibility**	Video, Department, Research, Pollution, Photograph, Certified, End, Rain, Protection fee, Environmental protection, Compliance, Emission, Illegal discharge, State-owned enterprise, Enterprise
Topic4	**Sewage Discharge**	Japan, Sewage, Sewage discharge, Emission, Filing, Standard, Wastewater, Monitoring, Drinking, Water quality, Investigation, Nuclear discharge, Environmental protection, Law, Destruction
Topic5	**Corruption**	Disposal, Arbitrary, Solution, Tracing, Reason, Bribery, Discussion, Stance, Admission, Delaying, Time, Settlement, Negotiation, Life, Mentioning money
Topic6	**Social Responsibility**	Meeting, Citizens, Excuse, Tax payment, Exposure, Farmers, Research, Sentencing, Punishment, Silt, Compliance, Straw burning, Sewage discharge, Environmental protection, Discharge to sea
Topic7	**Misconduct**	In place, Qualified, Unlucky, Upstream, Openly, Scapegoating, Drainage, Guangxi, Unsupervised, Leakage, Secretly, Severe punishment, Pollution, awesome, Straw burning

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Table 2: Topics of Water Pollution Comments on Bilibili

Topic	Topic Label	Keywords
Topic1	**Rural Sewage Management**	Village committee, Village secretary, Murky, Villagers, Town government, Dry season, Water cutoff, Water fees, Pollution, Guangxi, Environmental protection, Sewage, Tap water, Rural, Well water
Topic2	**Water Pollution**	Car washing, Tap water, Red, Laundry, Rust, Pipeline, Color, Daily, Flood, Water body, Chemical plant, Black and smelly, Investigation, Rusty, Solution
Topic3	Public Safety	Petroleum, Mold, Guangxi, USA, Japan, Absurd, Frightening, Source, Wastewater, Qinzhou, Fuyang, Rumor debunking, Odor, Tap water, Report
Topic4	**Water Pollution Management**	Solution, Eucalyptus, Water pipes, Fine, Sewage, Tap water plant, Sewage discharge, Rain-sewage separation, Internal, Diversion, Pipeline, Water connection, Crude oil, Follow-up, Village
Topic5	**Public Sentiment**	Disgusting, Detestable, Guangxi, Liuzhou, Get rich, Toxic, Stinky gutter, Investigation, Brain, Hometown, Happiness, Black, Stench, Disbelief, Originally
Topic6	**Environmental Supervision**	Governance, Sewage, Spill the tea, Long way to go, Water source, Pollution, Groundwater, Accountability, Tap water pipes, Environment, Coal washing plant, Town government, Sewage discharge, Nuclear radiation, Protection
Topic7	**Water Source Protection**	Severe punishment, Qualified, Mineral water, Heavy rain, Soil erosion, Water source area, Country, Environmental protection, Enterprise, Effort, Attention, Biochemical crisis, Interests, Pristine, Geography
Topic8	**Wastewater Treatment**	Rectification, Terrifying, Reason, No rain, Guangxi, Sewage, Sewage discharge, Pollution, Black, Coal mine, Liquid, Dosage, Feedback, Capacity, Wastewater treatment
Topic9	**Technical approaches**	Enhancement, Expert, Geological exploration, Technology, Biology, Factory, Sewage, Rising water, River water, Harmless, Recycling, Filtration, Stage, Sludge, Separation

A comparative analysis of the topics and keywords discussed by users on both platforms reveals some commonalities, particularly regarding accountability for pollution sources and criticism of systemic deficiencies. For example, Douyin's Topic 3 (Corporate Responsibility) and Bilibili's Topic 6 (Environmental Supervision) highlight the public's persistent focus on pollution perpetrators. Similarly, Douyin's Topic 4 (Sewage Discharge) and Bilibili's Topic 3 (Public Safety) use keywords such as "Japan," "United States," "source," and "wastewater", reflecting nationalistic sentiments and concerns over pollution sources.

From Table 1, it is evident that Douyin users tend to discuss water pollution issues from a socio-political perspective, focusing on public opinion dynamics, regulatory conflicts, and corruption. In Topic 1 (Social Opinion), high-frequency words like "sentencing," "exposure," and "rumors" indicate skepticism toward government transparency in handling pollution incidents, alongside widespread irrational information dissemination. Topic 5 (Corruption) features words such as “bribery,” “delaying,” and “settlement”, revealing public suspicions of power-money transactions in grassroots governance, indirectly criticizing local law enforcement inefficacy. These themes suggest that Douyin users are more engaged in the social ramifications and power game surrounding pollution incidents, often expressing distrust toward both government and corporations through emotional discourse, as evidenced by terms like “unlucky” and “awesome”, which has obvious adversarial narrative characteristics.

In contrast, Bilibili users focus on technical approaches and systemic solutions for pollution control, demonstrating greater professionalism and constructiveness. Topic 1 (Rural Sewage Management) includes words such as “village committee,” “water fees,” and “well water”, pointing to concerns over rural infrastructure shortcomings. Topic 9 (Technical Approaches) contains terms like “geological exploration,” “harmless,” and “separation”, showing the depth of user groups' cognition of pollution treatment technology. Topic 7 (Water Source Protection) incorporates interdisciplinary terms such as “soil erosion” and “pristine ecology”, implying that some participants possess knowledge in environmental sciences. Although Topic 5 (Public Sentiment) includes negative expressions like “disgusting” and “Stinky gutter”, they often co-occur with terms such as “investigation” and “hometown”, indicating a blend of emotional expression and rational appeals.

4.3. Sentiment Analysis

Using GooSeeker’s sentiment analysis tool, we processed comment data on water pollution from Douyin and Bilibili, obtaining the respective sentiment distribution results. As shown in Figures 6 and 7, on the Douyin platform, positive sentiment accounts for 29.33%, negative sentiment for 25.61%, and neutral sentiment for 45.06%. In contrast, on Bilibili, positive sentiment accounts for 27.96%, negative sentiment for 17.55%, and neutral sentiment for 54.49%. This indicates that while the proportion of positive comments on both platforms is relatively close, Douyin exhibits a significantly higher percentage of negative comments compared to Bilibili.

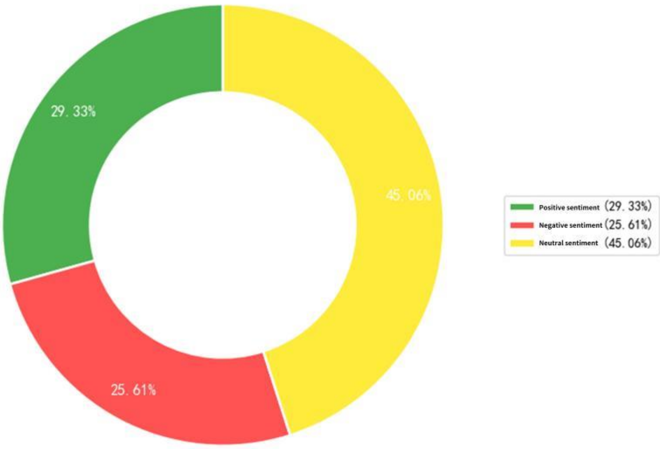

Figure 6: Sentiment Distribution of Water Pollution Comments on Douyin

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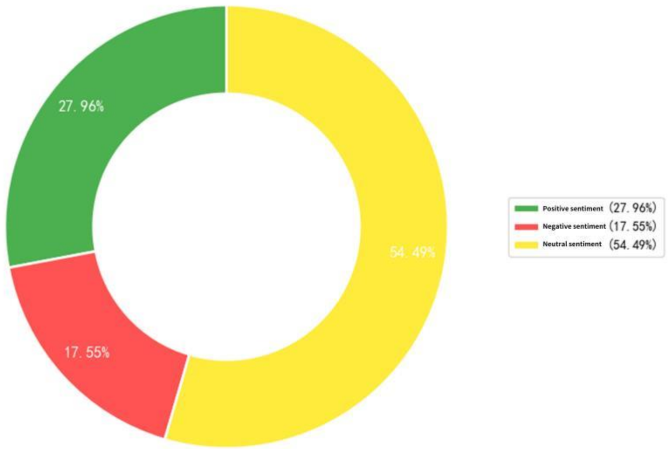

Figure 7: Sentiment Distribution of Water Pollution Comments on Bilibili

Several factors may contribute to this discrepancy:

User Demographics

According to Liu Yan (2024), Bilibili has a higher proportion of post-2000s and post-1990s users, making it a youth-centric, multicultural platform where users tend to adopt an analytical and critical perspective on ecological issues. While negative comments do exist on Bilibili, users are more inclined toward rational expression and often incorporate policy discussions or data analysis, resulting in a relatively lower proportion of negative sentiment. In contrast, Douyin has a larger share of users from lower-tier markets, where firsthand exposure to livelihood issues triggers more emotional responses.

Differences in Comment Mechanisms and Information Dissemination

The comment system and speed of information dissemination on the two platforms may also influence sentiment distribution. Douyin's 15-second short videos encourage fragmented information consumption and make it easier to amplify conflicts. When addressing serious topics like water pollution, users may resort to more extreme or exaggerated emotional expressions, leading to a higher percentage of negative comments. In contrast, Bilibili's longer videos (averaging 12 minutes) allow content creators to delve deeper into issues, fostering a more rational discussion environment.

Algorithmic Influence on Public Opinion

The recommendation mechanisms of both platforms also play a crucial role. Douyin's algorithm prioritizes content based on metrics such as click-through rate and completion rate (Wang & Huang, 2024). As a result, its traffic distribution system favors high-engagement content, making topics with strong emotional tags like "sentencing" and "corruption" more likely to go viral, sparking widespread discussion. Given Douyin's diverse user base, the presence of negative comments infused with emotional intensity is inevitable. Since 2020, Bilibili has been transitioning away from its traditional association with ACG content in an effort to establish itself as a knowledge-sharing platform. Currently, Bilibili features multiple content categories, with its "Knowledge" section being particularly prominent (Sun & Hu, 2025). This algorithmic weighting system prioritizes the visibility of professional content, such as "technical approaches" and "water source protection", catering to an audience that values content depth and quality. This creates a positive feedback loop, encouraging rational discussions over emotional reactions. Consequently, when confronted with negative news, Bilibili users are more likely to engage in objective reflection and discussion—though dissatisfaction is expressed, it tends to be more rational and measured, resulting in a lower proportion of negative comments.

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5. Factors Influencing Online Public Opinion on Ecological Issues

5.1. Policy

An effective policy plays a crucial role in shaping the direction of online public opinion. Government environmental policies and governance measures not only directly influence public perception and attitudes toward ecological issues but also guide online discourse toward rational and constructive discussions through effective policy communication. The transparency and effectiveness of policy implementation determine public trust and satisfaction, which in turn impact the level of online discussion and the emotional tone of public discourse. Public opinion is not merely a collection of private statements, rather, it has an inherently public nature and continuously presents challenges to society (Li, 2024). In the realm of online public opinion, if the public perceives policies as ineffective or lacking transparency, negative sentiment may escalate, potentially leading to widespread social discontent. Therefore, the government must develop forward-looking, scientific, and transparent environmental policies while enhancing their enforceability and supervision mechanisms to positively shape online discourse. Specific policies could include strengthening environmental regulations to ensure legal enforcement, enhancing public environmental awareness through education, increasing funding for ecological conservation, and establishing efficient supervision mechanisms. In addition, publishing policy interpretations and real-time environmental reports can increase transparency and prevent unnecessary public panic caused by delayed or inaccurate information. By fostering positive public discourse, the government can promote a shared social consensus on ecological civilization, ensuring that policies serve as strong guiding forces in shaping online public opinion.

5.2. Media

In the digital age, the landscape of public opinion is increasingly complex (Yin, 2024). As the bridge of information dissemination, the media not only conveys relevant policies and regulations but also acts as a catalyst in the formation, spread, and evolution of public opinion. Consequently, the role and impact of media in shaping online discussions on ecological issues cannot be overlooked. Mainstream media remains a key producer and disseminator of information (Yang, 2024). The stance, depth, and selectivity of media coverage on ecological issues directly influence public perceptions and emotional responses toward environmental topics. Internet-based media, with its rapid dissemination and extensive reach, has become the dominant force in shaping public discourse. However, the rapid advancement of internet technologies has led to the proliferation of self-media, where unregulated actors—in pursuit of traffic and personal gain—sometimes spread misinformation. This not only disrupts the public's access to factual information but also poses a threat to public safety. To ensure responsible reporting on ecological issues, the media should uphold objectivity, fairness, and professionalism, avoiding sensationalism, biased reporting, or unverified information. Doing so prevents unnecessary public panic caused by misinformation while strengthening public trust in media sources, ultimately encouraging broader societal participation in environmental protection. Furthermore, positive media coverage should be leveraged to highlight environmental protection initiatives and achievements, showcase governmental and societal efforts in ecological governance, and promote correct environmental values among the public. By incorporating data visualization and interactive storytelling, the media can further enhance public engagement and awareness, facilitating more rational discussions within the online public sphere.

5.3. Public Participation

The public's engagement and discussions on ecological issues via online platforms reflect societal concerns and demands. Public opinion plays a crucial role in influencing policy

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decisions and driving social action. The goals, modes of expression, and organizational forms of public participation in online discourse vary across different demographic groups, such as age and educational background (Yuan, 2023). Some users are prone to emotion-driven reactions, which may lead to excessive rhetoric or the spread of misinformation. This not only derails rational discussions but also exacerbates social anxiety and dissatisfaction regarding ecological issues. Therefore, the public should enhance self-discipline and cultivate a rational approach to expression—continuing to focus on ecological concerns while maintaining a balanced perspective in analyzing and evaluating issues. When encountering negative news related to environmental protection, the public should seek information from multiple sources to avoid extreme reactions caused by biased information. Additionally, individuals are encouraged to actively participate in environmental protection initiatives, support government and social organizations' ecological projects, and promote positive environmental values online. As digital citizens, individuals should adopt a heightened sense of responsibility when posting comments or sharing information to avoid misleading others or inciting unnecessary panic. When engaging in discussions on controversial issues, it is essential to respect diverse perspectives, maintain rational debate, and refrain from personal attacks or malicious criticism. Encouraging constructive discourse and intellectual exchanges fosters a more rational and productive online public opinion environment.

6. Conclusion

This study employs LDA topic model to reveal the differences in user concerns on Guangxi's water pollution issue between Douyin and Bilibili. The findings indicate that Douyin users focus more on public opinion and regulatory issues, whereas Bilibili users tend to discuss pollution control from a technical and professional perspective. Furthermore, sentiment analysis was conducted to examine emotional tendencies in user comments on Guangxi water pollution videos across both platforms. The results indicate similar proportions of positive sentiment on both platforms, but a significantly higher proportion of negative sentiment in Douyin comments compared to Bilibili. This disparity is primarily attributed to differences in user demographics, comment mechanisms, information dissemination speed, and platform algorithms. Additionally, this study explores the influence of policy, media, and public participation on online public opinion. It proposes that effective policy guidance, objective and impartial media reporting, and rational public engagement can foster constructive discussions and contribute to the resolution of ecological issues. However, this study has several limitations. The analysis was based on a limited data sample, focusing primarily on short-form video comments while lacking an examination of long-form discussions. Moreover, the study only applied topic modeling and sentiment analysis without employing more comprehensive public opinion analysis methods. Future research should address these limitations by expanding the dataset, incorporating long-text analysis, and adopting more extensive analytical frameworks to enhance the depth and comprehensiveness of the study.

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References

[1] BLEIDM, NGAY, JORDAN M I. Latent Dirichlet Allocation [J]. Journal of Machine Learning Research, 2003, 3(4/5): 993-1022.

[2] Chen Chunyang, Huang Xiuling. Research on the Generation Mechanism and Communication Patterns of Weibo Public Opinion [J]. Information Science, 2018, 36(04): 32-37.

[3] The 55th "Statistical Report on China's Internet Development" Released [J]. Media Forum, 2025, 9(02): 121.

[4] Guo Han. Analyzing Guangxi's Ecological Civilization Construction from the Perspective of Green Development Cases [J]. Environmental Protection, 2024, 52(05): 73-74.

[5] Liao Qi, Li Chunyou, Yin Juan. Research on Guangxi's Environmental Protection Issues Based on the Characteristics of Environmental Protection Investment [J]. Economic Research Reference, 2017, (11): 85-90. DOI:10.16110/j.cnki.issn2095-3151.2017.11.019.

[6] Li Hong. The Symbolic Risks of Online Public Opinion and Its Governance Path [J]. Journal of Northwest Normal University (Social Sciences Edition), 2024, 61(06): 62-69.

[7] Liu Yan. Research on User Engagement of Mainstream Media Short Videos on Bilibili: An Empirical Analysis Based on "CCTV News" Bilibili Channel [J]. Journal of Kunming University of Science and Technology (Social Science Edition), 2024, 24(02): 152-160.

[8] Li Yanling, Wu Kexin. Research on the Thematic Evolution and Focus Features of Online Public Opinion in Emergency Events: A Case Study of the "Henan Rainstorm Incident" [J]. Disaster Science, 2025, 40(01): 207-212.

[9] Resch, Usländer, Havas. Combining Machine-Learning Topic Models and Spatiotemporal Analysis of Social Media Data for Disaster Footprint and Damage Assessment [J]. Cartography and Geographic Information Science, 2018, 45(4): 362-376.

[10] Sun Mengru, Wu Fei. Do Platforms Possess Public Attributes?—An Empirical Study on the Public Deliberation Degree of Social Media from the Perspective of Platform Society [J]. Journalism and Writing, 2025, (02): 5-17.

[11] Sun Yuzhu, Hu Ming. The Mediatization of Knowledge Production and Reproduction: The Conjunctural Practices of General Knowledge Short Videos on Bilibili [J]. Journalism Spring and Autumn, 2025, (01): 62-72.

[12] Tang Yan. A Brief Discussion on the Significance of Guangxi's Biodiversity Protection [J]. Science and Technology Communication, 2010, (21): 109+103.

[13] Takahashi B, Tandoc C E, Carmichael C. Communicating on Twitter During a Disaster: An Analysis of Tweets During Typhoon Haiyan in the Philippines [J]. Computers in Human Behavior, 2015, 50: 392-398.

[14] Wang Xiwei, Wen Qing, Zhao Dan, et al. Research on the Public Opinion Communication Path and Network Structure of Natural Disasters in the New Media Environment: A Case Study of the "Ya'an Earthquake" Topic on Sina Weibo [J]. Journal of Intelligence, 2018, 37(02): 110-116.

[15] Wang Yijun, Huang Shiyun. Does Government Response Always Alleviate Public Opinion on Hot Events?—Sentiment Analysis Based on Short Videos [J]. Public Administration Review, 2024, 6(03): 52-75.

[16] Yang Lei, Wang Zirun, Hou Guisheng. Research on Topic Mining of Online Health Communities Based on Q-LDA Topic Model [J]. Data Analysis and Knowledge Discovery, 2019, 3(11): 52-59.

[17] Yuan Wenhua. The Mechanism, Potential Risks, and Normative Pathways of Online Public Opinion Remedies [J]. Ideological and Theoretical Education, 2023, (08): 87-93.

[18] Yin Yungong. Analyzing Deng Xiaoping's Thoughts on the Constructive Criticism Role of Media [J]. Mao Zedong and Deng Xiaoping Theory Research, 2024, (03): 66-72+109.

[19] Yang Guang. The Integrated Management of News Propaganda and Online Public Opinion: Its Contemporary Value, Theoretical Foundation, and Normative Governance [J]. Press Circles, 2024, (12): 15-26.

[20] Zhao Qiguo, Huang Guoqin. On Ecological Security in Guangxi [J]. Acta Ecologica Sinica, 2014, 34(18): 5125-5141.

[21] Zeng Ziming, Chen Siyu. Evolutionary Analysis of Online Public Opinion in Public Health Emergencies Based on LDA and BERT-BiLSTM-Attention Model [J]. Information Theory and Practice, 2023, 46(09): 158-166.

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An Analysis of the Pros and Cons of the Policy of Exempting Veterans from Examinations for Upgrading to Undergraduate Studies and Their Needs from a Macro Social Work Perspective

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Abstract

This paper reviews recent research on the reintegration of retired college students into academic life, focusing on the policy of exempting veterans from examinations for upgrading to undergraduate studies. From psychological, environmental, academic, and employment perspectives, and based on the studies of numerous scholars, this paper identifies issues specific to veterans who benefit from this policy. It objectively analyzes the advantages and disadvantages of the policy, aiming to provide macro-level social work interventions to better assist this special group in adapting to campus life.

Keywords

Veterans; Reintegration; Upgrading to Undergraduate Studies

1. Introduction

On March 17, 2018, the First Session of the 13th National People's Congress approved the State Council's institutional reform plan, officially establishing the Ministry of Veterans Affairs. One of its key responsibilities is to "organize education and training for veterans." In fact, Article 56, Paragraph 3 of the 1984 "Military Service Law of the People's Republic of China" stipulated that "after retiring from active duty, conscripts shall be given priority admission to higher education institutions and secondary specialized schools under equal conditions with other candidates." This marked the beginning of the state's encouragement for self-employed veterans to receive education and training. Today, educational assistance for veterans has transitioned from skill training to a combination of project training and academic education.

On August 21, 2021, Presidential Order No. 95 announced that the revised "Military Service Law of the People's Republic of China" had been passed at the 30th Session of the Standing Committee of the 13th National People's Congress and would take effect on October 1, 2021. This means that starting in 2022, China will conduct two recruitment cycles each year, in spring and autumn. To accelerate the modernization of national defense and the military, and to build a modern people's army capable of winning wars, the state encourages and actively guides college students to enlist. A series of preferential policies, such as tuition reduction, exemption from examinations for upgrading to undergraduate studies, and special plans for retired college students pursuing master's degrees, have attracted a large number of students to join the military with their youthful enthusiasm.

On January 20, 2022, the Ministry of Veterans Affairs issued the "Summary of 23 Policies on Education and Training for Retired Soldiers," of which Article 3 states: 【Upgrading to Undergraduate Studies】Starting from the 2022 admissions cycle, vocational college (junior college) graduates and current students (including new college students) who enlist and complete their vocational college studies after retirement can apply for upgrading to undergraduate studies without taking cultural course examinations. Relevant universities will

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organize vocational adaptability or comprehensive vocational skill assessments, evaluate comprehensively, and admit students based on merit. 【"Notice from the General Office of the Ministry of Education on Doing a Good Job in the 2022 Admissions for Upgrading to Undergraduate Studies" (Teaching Office [2021] No. 8)】. This marks the full implementation of the policy of exempting qualified veterans from examinations for upgrading to undergraduate studies.

Taking Shandong Province as an example, on April 18, 2024, the Shandong Provincial Education Admissions Examination Authority released the "List of Retired College Students Exempted from Examinations for Upgrading to Undergraduate Studies in Shandong Province in 2024," which showed that 7,569 individuals qualified for the policy. Compared to undergraduate students who return to school after military service, junior college students who upgrade to undergraduate studies after at least two years of academic interruption and with relatively weaker academic foundations are more likely to face challenges in adapting to campus life. Given the large size of this group, guiding them to better adapt to campus life, successfully transition from military to civilian roles, improve their scientific and cultural knowledge, and contribute to local economic development has become an important task for social workers.

With the increasing societal expectations for higher education and the improvement of policies encouraging college students to enlist, tens of thousands of veterans enter or return to universities each year. Due to the highly heterogeneous cultural background of the military, whether veterans can smoothly transition to university life, adapt to campus life, and succeed academically remains under-researched in China, and the effectiveness of educational assistance policies is poorly understood. This paper will use the special group of veterans exempted from examinations for upgrading to undergraduate studies to analyze the pros and cons of this policy on their life trajectories and explore how social workers can respond to their needs from a macro social work perspective.

2. Literature Review on the Reintegration of Retired College Students

Current research on the reintegration of retired college students is extensive. As individuals who have dedicated their youth to the country and its people, they often face multiple challenges when returning to campus life due to various reasons. Scholars have analyzed and proposed solutions to these issues from multiple perspectives. Below are the views of several scholars:

Li Hui notes that many studies focus on a single aspect of college students' adaptation to campus life, such as career choice adaptation [1], interpersonal adaptation [2], life adaptation [3], and academic adaptation [4]. Some studies examine the overall characteristics of college students' adaptation, but the research subjects are mainly freshmen, with fewer studies focusing on adaptation throughout the entire college period [5].

Zhu Yan points out that retired college students are a new group that emerged after China implemented the policy of encouraging college students to enlist in 2001. Currently, domestic research on retired college students is limited, and systematic and comprehensive studies are almost non-existent. Existing research mainly follows two lines: school education management and individual students. Practical studies have identified the problems and difficulties retired college students face upon returning to campus. For some retired college students, although they understand the importance of building new interpersonal networks on campus as a form of social capital and a means of integrating into the new environment, rejection and marginalization by new groups often lead to a loss of confidence and enthusiasm for developing emotionally driven peer relationships [6].

Zhang Zaiyun argues that for retired college students, the transition from leaving campus to enlisting and then returning to campus involves two significant life changes. The shift from

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military to campus life not only signifies a change in physical environment but also a profound transformation in their roles from soldiers to students. Current academic research has extensively described the interpersonal adaptation issues of retired college students. Studies have found that under the influence of the highly heterogeneous military culture, retired college students form a distinct subcultural group on campus, frequently encountering difficulties in adaptation and integration [7].

Wang Weiping notes that although veterans face high costs and psychological pressure when pursuing higher education, recent research confirms that, compared to others, their military service experience has a significant and long-term positive impact on their employment income [8]. With the increasing societal expectations for higher education and the improvement of policies encouraging college students to enlist, tens of thousands of veterans enter or return to universities each year. However, due to the highly heterogeneous cultural background of the military, whether veterans can smoothly transition to university life, adapt to campus life, and succeed academically remains under-researched in China, and the effectiveness of educational assistance policies is poorly understood [9].

3. Analysis from Psychological, Environmental, Academic, and Employment Perspectives

3.1. Psychological Perspective

Lack of Independent Thinking: The military emphasizes obedience, which may hinder retired college students from developing independent and creative problem-solving skills in academic settings.

Collective Patriotism: The military's emphasis on collectivism and collective honor may make it difficult for retired college students to express individual values and innovative thinking in academic environments.

Adaptation Issues: The significant differences between military and academic life may lead to adaptation issues, including academic pressure and disciplinary transitions.

Discipline and Obedience: Retired college students, having undergone rigorous discipline training, are more likely to follow rules and maintain academic discipline.

Team Collaboration: The military's emphasis on teamwork makes retired college students more adept at collaborating with peers in academic settings.

Sense of Responsibility: Military service fosters a strong sense of responsibility, which is advantageous for academic success and active participation in campus life.

3.2. Environmental Perspective

Age Differences: The age gap between retired college students and their younger peers may lead to social difficulties and challenges in integrating into peer groups.

Academic Knowledge Gap: Retired college students may face significant gaps in academic knowledge due to their military service, leading to academic challenges.

Social Barriers: The unique nature of military life may create barriers to social interaction, making it difficult for retired college students to integrate into academic circles.

Cultural Differences: The differences between military and academic cultures may require retired college students to spend time adapting to academic norms and communication styles.

Rich Life Experience: Retired college students often bring diverse life experiences, enriching campus culture and providing unique perspectives.

Maturity and Stability: Older retired college students tend to be more mature and stable, contributing to a positive learning environment and better adaptation to academic pressures.

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Team Collaboration: Military training fosters teamwork, making retired college students more effective in building cooperative relationships with peers.

3.3. Academic Perspective

Academic Knowledge Gap: The gap between military life and academic knowledge may require retired college students to make extra efforts to catch up, especially in challenging or interdisciplinary fields.

Adaptation Time: The unique nature of military life may require retired college students to spend time adapting to the demands of advanced or interdisciplinary studies.

Academic Pressure: Advanced or interdisciplinary studies often come with greater academic pressure, requiring retired college students to develop better time management and learning strategies.

Decision-Making Skills: Military experience enhances decision-making and problem-solving skills, which can help retired college students tackle academic challenges.

3.4. Employment Perspective

Decline in Academic Performance: The unique nature of military life may lead to academic challenges, resulting in lower grades and reduced competitiveness in the job market.

Limited Career Choices: The policy of exempting veterans from examinations for upgrading to undergraduate studies may limit their career options, reducing flexibility in the job market.

Stereotypes: Some employers may hold stereotypes about retired college students, believing they are only suited for certain careers, which may create biases in hiring.

Adaptation Issues: Poor adaptation to academic life may affect academic performance and future career competitiveness.

Rich Experience: Retired college students often bring valuable practical experience, which is an advantage in job applications, especially for roles requiring leadership and teamwork.

Higher Education Level: The policy of exempting veterans from examinations for upgrading to undergraduate studies enhances their education level, increasing their competitiveness and lowering employment barriers.

4. Discussion

When retired college students return to campus, their former classmates may have graduated or are about to graduate. Those who upgrade to undergraduate studies after retirement will face entirely new faculty and classmates, initially experiencing a sense of unfamiliarity and loneliness. The diversity of campus culture and the relatively free and unstructured campus life may clash with the political responsibility and discipline emphasized in the military. The psychological 落差 after retirement hinders their reintegration into campus life and affects their academic progress. Therefore, schools and social workers should jointly provide psychological counseling for this group, strengthen their role as students, encourage active adaptation to campus life, and help them successfully complete their studies.

Due to at least two years of military training, retired college students who upgrade to undergraduate studies often face challenges in reacquainting themselves with professional knowledge and bridging the gap between their previous knowledge and the current curriculum. They must not only relearn foundational courses but also take on new, more advanced courses, which can be particularly difficult for those with weaker academic foundations or self-study skills. As a result, many retired college students who upgrade to undergraduate studies perform below average academically. As a social worker, I call on schools to establish targeted support groups for retired college students, involving faculty and high-achieving students to provide tutoring and help them pass challenging courses.

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Retired college students who upgrade to undergraduate studies face numerous psychological and academic obstacles. Some may lose motivation and become disengaged from their studies after experiencing academic setbacks. Schools should take appropriate measures to激励 retired college students, reigniting their motivation to learn and enabling them to fully utilize their military qualities of perseverance and determination. Writing a personal career development plan upon upgrading to undergraduate studies and revising it annually based on实际情况 can effectively guide retired college students in completing their studies systematically and achieving their goals. Offering timely career guidance courses and encouraging students to attend job fairs early can help them identify gaps between their qualifications and employer requirements, motivating them to improve and overcome academic challenges.

5. Conclusion

Retired college students typically possess practical experience gained from military service, including leadership, teamwork, and adaptability, which are often more valuable than purely academic backgrounds. The policy of exempting veterans from examinations for upgrading to undergraduate studies provides a more flexible pathway to higher education, increasing their opportunities for advanced degrees and enhancing their competitiveness in the job market. This policy is a form of societal for veterans' service to the country, reflecting society's care and respect for military personnel. Integrating veterans into higher education helps cultivate diverse talents, enriches campus culture, and promotes among individuals from different backgrounds.

The policy of exempting veterans from examinations for upgrading to undergraduate studies helps. In its implementation, it is necessary to establish, including academic training and career guidance, to ensure their smooth integration into higher education and the workplace. Overall, the policy of exempting veterans from examinations for upgrading to undergraduate studies has more advantages than disadvantages for the life trajectories of retired college students.

As a social worker, I also reflect on the limited research on social work interventions for retired college students. Currently, their adaptation to campus life mainly relies on counselors and class advisors, who, due to their other responsibilities, often fail to conduct comprehensive and systematic investigations into the issues faced by this group and adjust accordingly. I considered using the strengths perspective theory to help group members improve interpersonal relationships, but I wonder if other theories, such as resocialization theory, might be more effective. Additionally, establishing permanent social work stations on campuses and collaborating with veterans' affairs bureaus could provide more timely and effective support for retired college students, helping them better adapt to campus life and alleviate age and employment anxieties.

References

[1] Cong Jianwei. Analysis of College Students' Career Choice Psychology and Measures to Promote Career Success [D]. Harbin Engineering University, 2005.

[2] Wu Dan. Analysis of Contemporary College Students' Communication Psychology and Adjustment of Communication Barriers [D]. Harbin Engineering University, 2005.

[3] Zhao Bo. On College Students' Life Adaptation Issues and Countermeasures [J]. Journal of Nanjing University of Posts and Telecommunications (Social Science Edition), 2002(02): 34-38.

[4] Feng Tingyong, Li Hong. A Preliminary Study on Contemporary College Students' Learning Adaptation [J]. Psychological Exploration, 2002(01): 44-48.

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[5] Li Hui, Zhu Lifen, Li Mei. A Review of Research on College Students' Campus Adaptation [J]. Journal of Yunnan Normal University (Philosophy and Social Sciences Edition), 2006(02): 125-127.

[6] Zhu Yan, Fan Minglin. From Barracks to Campus: A Life Course Study of Retired College Students [J]. Contemporary Youth Research, 2020(01): 108-114.

[7] Zhang Zaiyun, Luan Zhengwei, Zhang Hefeng. Identity and Distinction: A Study on Interpersonal Adaptation of Retired College Students [J]. Youth Studies, 2021(04): 74-84+96.

[8] Duncan G J, Hoffman S D. The Incidence and Wage Effects of Overeducation [J]. Economics, 2002, 9(1): 1-16.

[9] Wang Weiping, Shang Xiaoming, Zhang Tianjiao. From "Policy Coordination" to "Transition Support": A Review of U.S. Veterans' Transition from Military to College Students [J]. Fudan Education Forum, 2019, 17(02): 85-93.

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The Fengqiao model in promoting social harmony in the new era and Misdemeanor Governance: Realistic Challenges and Path Innovations

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Abstract

The revision of the Criminal Law reflects the importance that the legislature attaches to the issue of misdemeanor crimes; at present, the threshold for misdemeanor crimes in China has been lowered, and it has become more difficult for crimes to be committed, and there has been a shift in the system of governance from "strict, but not strict" to "both strict and strict". Fengqiao model in promoting social harmony in the new era contains the value of fairness, efficiency and order, and misdemeanor governance has a unified purpose and position, misdemeanor governance in China has a reference significance. The Fengqiao model in promoting social harmony in the new era is a vivid practice of modernizing social governance. To build a perfect path for misdemeanor governance in China, the Fengqiao model in promoting social harmony in the new era should be used as a theoretical guide, giving full play to judicial activism, strengthening procuratorial hearings, reducing arrests and prosecutions, and ensuring prudent detention; promoting criminal reconciliation and strengthening the governance of the source of the lawsuit; and adjusting the allocation of penalties and reducing the number of people in detention.

Keywords

The Fengqiao model in promoting social harmony in the new era, misdemeanor management, prosecutorial hearings, criminal reconciliation, penalties.

1. Introduction

Standing at the strategic height of promoting the modernization of the national security system and capacity, the Twentieth Party Congress has made new deployments to improve the social governance system, emphasizing the need to improve the social governance system and raise the level of the rule of law in social governance. With the significant changes in the structure of criminal offenses in China in the new era, misdemeanor governance has become a proposition of the times that concerns the country's long-term stability and peace, the construction of the rule of law and the overall situation of national governance. For a long time, misdemeanor governance has always been a key issue of general concern to the legislature and the judiciary, and there has been a great deal of discussion at the social level as well. The revision of some articles in the Amendment (XI) to the Criminal Law of the People's Republic of China (hereinafter referred to as "Amendment XI") once again demonstrates the legislature's attention to the issue of misdemeanor crimes, and may lead to the emergence of a large number of "misdemeanor crimes" in the future judicial practice. [1]

Admittedly, when new problems arise in social governance, the creation of new crimes in the criminal law to participate in social governance, this way of governance seems to be a manifestation of China's criminal law governance shifting from "crime-fighting" to "social governance", which has the effect of "effectively combating and standardizing social governance". "Effective crackdown, standardize the social order" role, but with the expansion

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of misdemeanor crimes, due to the lack of effective procedures for the system of crime and the elimination of the system of previous convictions, the expansion of misdemeanor crimes brought about by the increase in the number of cases, aggravate the pressure on the judiciary to handle the case of inappropriate consequences of the penalties attached to the consequences of the phenomenon, resulting in "easy to incriminate, it is difficult to get out of the crime "In fact, the mode of governance of minor and major crimes is no different, and even makes the system of crime governance change from "strict but not strict" to "strict and strict", which is contrary to the original intent of the governance of minor crimes. Therefore, how to choose a practical theory to guide the construction of the misdemeanor governance system is the current urgent problem.

Fengqiao model in promoting social harmony in the new era is the inheritance and development of Fengqiao experience, focusing on "mobilizing and relying on the masses, insisting on resolving conflicts locally instead of handing them over", with a view to realizing the principle of The goal of "fewer arrests and better law and order" coincides with the concept of misdemeanor governance, and is of great significance for the improvement of the system of misdemeanor governance, both in terms of crime and incrimination. The Fengqiao model in promoting social harmony in the new era can not only realize the effective management of misdemeanor, but also is a vivid practice of modernization of innovative social governance. This paper analyzes the real situation of misdemeanor governance in China, describes the value implication of "Fengqiao model in promoting social harmony in the new era", and combines the intrinsic connection between "Fengqiao model in promoting social harmony in the new era" and the misdemeanor governance in China, in order to integrate the idea of "Fengqiao experience" into the misdemeanor governance in the new era, and to make the new era "Fengqiao experience" into the misdemeanor governance. Experience" in the new era into the governance of minor crimes, put forward China's minor crimes governance path construction, so as to realize the social construction, sharing and common governance and 'self-governance, rule of law, moral governance' of the trinity.

2. Realistic challenges to the governance of petty crime in the country

The pattern of crime in modern society is changing rapidly and dramatically, not only entering the era of statutory offenses, but also gradually bidding farewell to the era of natural offenses. Crime statistics in recent years also show that China has entered the era of petty crime and is slowly leaving the era of serious crime. Trends in the severity of crimes have changed even more dramatically. According to statistics, between 1999 and 2019, the number of serious violent crimes prosecuted by procuratorial organs fell from 162,000 to 60,000, an average annual decline of 4.8%; the proportion of those sentenced to more than three years' imprisonment fell from 45.4% to 21.3%. At the same time, there was an increase in new types of crime (especially in the majority of minor crimes), with the most significant increase in dangerous driving crimes, a 19.4-fold increase in crimes of disrupting the market order, a 34.6-fold increase in crimes of producing and selling shoddy goods and a 56.6-fold increase in crimes of infringing on intellectual property rights. The decline in serious violent crimes and the rate of serious sentences reflects the continued improvement in the social security situation, with the people reaping the benefits of a real sense of security. The rise in the rate of minor crimes and light sentences also reflects the remarkable changes in crime patterns in the new era.

For a long time, the modesty of the criminal law has been frequently emphasized, and the launching of the criminal law has a supplementary safeguard nature, so that the criminal law shall not be easily applied unless as a last resort. As a result, criminal law has faced greater resistance in its application than other sectoral laws. In recent years, however, criminal law has played a major role in social governance. The establishment of misdemeanor crimes such as the

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crime of throwing objects from a height, the crime of obstructing safe driving, and the crime of dangerous driving while intoxicated is a concrete manifestation of the criminal law's concern for social reality and its response to the people's voices. At the same time, in the context of the risk society, the criminal law has to adopt the logical way of legal interest protection, i.e., to prevent the occurrence or expansion of crime by advancing the crime node. It is undeniable that the active participation of criminal law in social governance is prone to the criticism of heavy-handed governance. [2]However, if we do not punish those behaviors that increasingly jeopardize public safety, we are afraid that it will be difficult to curb the increasing number of crimes in the society, and we will not be able to give full play to the value of criminal law in punishing crimes and protecting human rights. The active participation of criminal law in social governance is the highlighting of the instrumental value of criminal law, and is also the proper meaning of the normative purpose of criminal law to combat crime and defend society, as well as a practical path to enhance the public's sense of security. Before misdemeanor crimes were legislated, judicial practice was often confronted with the problem of “innocence” and “felony”, and the application of pocket crimes became increasingly widespread. The addition of misdemeanors has made up for the legislative gap, solved the problems of judicial practice to a certain extent, and avoided the abuse of pocket crimes. The creation of misdemeanors in the criminal law network tightened at the same time, but also for related crimes to realize the possibility of punishment for the crime. Whether it is the addition of misdemeanors or sentencing on the types of penalties set at multiple levels, are designed to promote the crime and punishment system to lighten, the formation of “strict but not severe” crime and punishment system.

“Strict but not severe” mainly refers to the ‘tight legal network’ and ‘light penalties’; ‘severe but not severe’ refers to the ‘harsh penalties’. “harsh penalties” and ‘a lax legal network’, where ‘harshness’ is reflected not only in the death penalty but also in the tendency towards a heavy-handed penal policy. [3] Amendment (XI) to the Criminal Law created eight new misdemeanors, but at the same time substantially increased the statutory maximum penalty for many crimes, such as the crime of job appropriation, which was raised from “more than five years” to “life imprisonment”, and also created many new felonies, such as one of the following in Article 236 “The maximum penalty for the crime of sexual assault by a person with caring duties is more than 10 years' imprisonment. If divided according to the dichotomy of “strict” and “severe”, the creation of new misdemeanors undoubtedly belongs to “strict”, while the increase in statutory penalties belongs to the policy of felonies, which is “severe”. The increase in the number of minor offences is undoubtedly “strict”, while the increase in the level of statutory penalties belongs to the policy of heavy penalties and is “strict”. This seemingly “strict but not severe” system of crimes and penalties is essentially “strict and severe” in nature, and it is difficult to provide reasonable legislative guidance for misdemeanour legislation. China's current basic criminal policy is leniency and severity, “leniency” and “severity” is a relatively clear boundary of a pair of categories, which can cover the dual guidance of crime and punishment, “leniency” While “leniency” at least does not prohibit decriminalization legislation, except in the case of lighter penalties, “strictness” promotes continuous criminalization and closes the exit to criminalization. The greatest value of “strict but not severe” is to advocate “decriminalization”, but before the old habit of “severe” punishment is lifted, the pursuit of legislation oriented to the tightening of the legal net of misdemeanorization is bound to result in the “re-criminalization” of crime. But before the old habit of “severe” penalties is lifted, the pursuit of legislation oriented to the tightening of the legal net and lightening of penalties will inevitably result in a “strict and severe” structure of crime and punishment. [4]This tendency to be “harsh and severe” is mainly reflected in the two aspects of entry and exit.

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2.1. Expansion of the crime and lowering of the threshold of incrimination

With the development of a risky society and the emergence of new types of crime, traditional means of social governance are no longer able to adapt to the new types of social risk, and a moderate expansion of the criminal circle is justified; however, once the criminal law is over-expanded and criminalizes acts that do not require criminal law regulation, it will undermine the majesty of the criminal law, and even infringe upon the personal freedom and rights of citizens. In the short term, criminal law has achieved remarkable results in social governance, and the public has curbed the commission of dangerous behaviors based on the majesty of criminal law, but criminal law is by no means the primary choice. In the long term, if the criminal law is overly active and overstretched, it may easily give rise to negative effects, as some people who have been subjected to criminal sanctions, as well as their family members and relatives, may easily become discontented, and may then turn to hatred and retaliation against society. [5]As mentioned above, the greatest value of “strict but not severe” is to advocate “de-penalization”, but under the influence of the current view of active criminal law, China's criminal law still shows a tendency towards heavy penalties. Amendment (XI) to the Criminal Law still builds a tight legal net by adding new crimes, changing the elements of criminal constitutive elements, and lowering the age of criminal responsibility. [6]The tightening of the legal net is in comparison to the leniency of the penalties, i.e., only when the overall penalties are on the lighter side, the tightening of the legal net can achieve the optimal effect. On the other hand, if new crimes are constantly added under the premise of heavy penalties, then the criminal law structure will be “strict and harsh”. A one-sided emphasis on expanding the circle of criminality may lead to the expansion of the State's public power and the restriction of citizens' individual rights, to the detriment of economic development and social progress. Particularly in the context of a risk society, the expansion of the criminal circle could easily lead to a proliferation of penalties, and it is important to guard against the omnipotence of the criminal law and to avoid excessive reliance on the criminal law and heavy penalties, which could easily lead to the abuse of penal power and jeopardize the legitimate rights and interests of citizens.

2.2. Minimization of penalties and increased difficulty in getting out of jail

Theoretically, there are two paths to substantive and procedural exculpation. In the field of substantive law, scholars advocate the exclusion of minor offenses from the criminal circle, or their judicial exoneration through purposive doctrinal interpretations of the law. In the field of procedural law, scholars advocate that misdemeanors be exculpated through the discretion of judicial officers and through procedural mechanisms such as failure to prosecute. The two paths to exculpation have the same purpose of mitigating crime and penal overkill, but there are differences in legal basis, operational application, legal effects and other aspects, and there are controversies over how to choose to apply them in practice. [7]In the current context of misdemeanor governance, the relevant criminalization system has not been fully established. The addition of misdemeanor offenses has led to a rise in the number of cases and aggravated the pressure on the judicial authorities to handle cases. China continues to increase the number of misdemeanor crimes, the expansion of the crime circle will inevitably lead to an increase in the number of cases, and at this time and advocate through the criminal procedure summary procedures or additional misdemeanor trial procedures to achieve the felonies, misdemeanors, simple and complex diversion. [8]But the summary procedure does not mean that the efficiency of the case can be qualitatively improved. The ideal model of misdemeanor management, with light penalties for minor offenses and quick closure for minor offenses, also fails to serve the purpose of education and rehabilitation. On the one hand, the threshold of the crime is severe; on the other hand, the penalties are lenient, and the cases of misdemeanor cases are set to be closed quickly, which is a stereotyped, assembly-line mode of handling cases, in fact, it is

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difficult to give full play to the criminal law for the offenders to accurately recognize their own behavior, as well as repentance, education and reform. The leniency of the penalties does not achieve the goal of lightening the penalties for minor crimes. The creation of minor crimes means the expansion of the criminal circle, and the inclusion of minor crimes in the criminal law system through criminal legislation, although the penalties imposed are light, however, in the current criminal justice system, even light penalties such as detention and fines will still bring serious criminal consequences, i.e., prior convictions. “Man is born free, but he is always in chains”, and for the offender, the adverse consequences of his crime are not limited to the penalty itself, but extend to other adverse consequences resulting from his ‘criminal record’ after the penalty has been served. Examples include occupational restrictions and the impact on social relations. No matter how light the penalty for a misdemeanor may be, as long as it is compounded by adverse consequences other than the penalty, the misdemeanor can hardly be said to be “not severe”.

3. The value implication of the Fengqiao model in promoting social harmony in the new era

In the early 1960s, the cadres and masses of Fengqiao Town, Zhuji County, Zhejiang Province, created the “Fengqiao Experience” of “mobilizing and relying on the masses, insisting on resolving conflicts locally instead of handing them over”, and realizing the principle of “fewer arrests and better law and order”. Fengqiao Experience”. [9]In October 1963, Comrade Mao Zedong gave a personal instruction to “follow the example of the Fengqiao Experience in various places and promote it after a pilot program”. [10]In 2013, General Secretary Xi Jinping made an important instruction on adhering to and developing the Fengqiao model in promoting social harmony in the new era, and in November 2020, the Central Conference on Comprehensive Rule of Law made an important deployment. In November 2020, the Central Working Conference on the Rule of Law in All Aspects made the important deployment of adhering to and perfecting the “Fengqiao Experience” in the new era, promoting more rule of law forces to guide and divert efforts, improving the preventive legal system, improving the comprehensive mechanism for the prevention, mediation and resolution of social conflicts, and promoting social harmony and stability. After 60 years of development and change, the “Fengqiao Experience” has adapted to the development situation in different periods, and has accumulated a wealth of governance concepts and experience. The value of the Fengqiao model in promoting social harmony in the new era is reflected in the following aspects.

3.1. Justice value: resolving conflicts and disputes

Justice is the common ideal pursued by mankind and the core value of law. It is based on interests and is a legitimate distribution of interests. Justice is the fundamental motive for the development and progress of law. From the birth of the “Fengqiao model in promoting social harmony in the new era”, adhering to fairness and justice and resolving contradictions and disputes have always been its unchanging essence. The core idea of “mobilizing and relying on the masses and insisting on resolving conflicts locally without referring them to the authorities” in the “Fengqiao Experience” is a vivid embodiment of people's mediation. The Fengqiao model in promoting social harmony in the new era emphasizes people's mediation, and the justice value of the Fengqiao model in promoting social harmony in the new era often becomes an important basis for interpreting the law in mediation. People's mediation, as the main way to resolve disputes, plays an important role in maintaining fairness and justice. People have close relationships with each other, and the use of mediation to resolve conflicts and disputes is conducive to maintaining ex post facto relationships between people, promoting social harmony and stability, enabling the public to feel fairness and justice in resolving conflicts, and facilitating the resolution of various conflicts through flexible intervention.

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3.2. Efficiency value: adherence to source management

Efficiency is the rate at which a society or an individual maximizes its returns from a given input. The value of efficiency is the value that the law has or should have in promoting the growth of social wealth and the facilitation of activities, and in meeting people's material needs and conveniences. The Fengqiao model in promoting social harmony in the new era emphasizes the management of contradictions at the source, adheres to the principle of prevention, regularly investigates contradictions and disputes, and establishes the most efficient grass-roots model in promoting social harmony in the new era. At the same time, various mediation organizations have been established, and for conflicts that have not yet formed into disputes, they insist on catching them at an early stage, catching them small, and catching them at an early stage, focusing on the prevention of key events that are closely related to the production and life of the people, and formulating a plan for preventing and resolving them, so as to properly control them by means of persuasion and guidance. In response to disputes that have already arisen, mediation work is carried out in a positive manner, and efforts are made to resolve contradictions and prevent intensification. Improve the mediation mechanism for multiple conflicts and disputes, establish and improve the working system of linkage between all parties, and form the overall synergy of the work of comprehensive governance. [11]The Fengqiao model in promoting social harmony in the new era is guided by new experience in resolving conflicts and disputes, and through the creation of a working mechanism centered on prevention, the first signs of conflict are nipped in the bud in a timely manner, thus promoting social development and a good interaction between efficiency and stability.

3.3. Orderly values: maintaining social stability

Good social order is the basis for social progress. The establishment and maintenance of good social order through the law is an important prerequisite for promoting reform and construction. Legal order is the state of relative stability, harmony and orderliness between people and people, and between people and society, established through legal adjustment. On the one hand, the law helps to resolve social disputes and contradictions, reduce conflict and chaos, and maintain normal social order; on the other hand, order is a basic frame of reference for dissolving and moderating social contradictions and conflicts. Order not only adjusts and resolves social conflicts and disputes from a negative perspective, but also encourages social cooperation and promotes social harmony from a positive perspective. The social situation in China has undergone significant changes, and many new social conflicts and disputes have emerged, which have led to problems of social order and governance. The Fengqiao model in promoting social harmony in the new era has always adhered to the modernization of the governance system and governance capacity as the core to achieve good governance at the grass-roots level, providing a sustainable path for grass-roots society to move towards good governance. The Fengqiao model in promoting social harmony in the new era adheres to the principle of multi-principle co-rule and the unity of “self-governance, rule of law, and morality”, and has constructed a major mediation system that combines people's mediation, administrative mediation, and judicial mediation, and promotes the participation of lawyers and judicial professionals in the grassroots work. [12]

In addition, the Fengqiao model in promoting social harmony in the new era has strengthened the role of the rule of law as a safeguard for governance, establishing a multi-level system of mediation of social conflicts and disputes, as well as multi-city mediation committees and people's mediation organizations, so as to effectively nip conflicts and disputes in the bud, prevent them from expanding, and safeguard the order and stability of society.

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4. The logical connection between the Fengqiao model in promoting social harmony in the new era and the governance of misdemeanor crimes in China.

The "Fengqiao Experience" is an advanced model established in the practice of comprehensive social security management at the grassroots level. 60 years ago, with the rapid development of China's socialist construction, the main contradiction in society has been changing, the "Fengqiao Experience" has been given new contents and deepened its connotations at different stages of history. With the rapid development of China's socialist construction, the main contradictions in society have been changing, the "Fengqiao Experience" has been given new contents and deepened in different historical stages. The core essence of the Fengqiao model in promoting social harmony in the new era includes adhering to the people-centered approach, adhering to the leadership of the Party, promoting the integration of self-government, rule of law, and morality, and building a peaceful and harmonious society. [13]

Clarifying the intrinsic connection between the "Fengqiao model in promoting social harmony in the new era" and misdemeanor governance is the first condition for the "Fengqiao model in promoting social harmony in the new era" to guide misdemeanor governance. Misdemeanor management is a way of social governance, and the Fengqiao model in promoting social harmony in the new era is a program of social governance, both of which have the same position and purpose. [14]

4.1. Conceptual resonance: adherence to a people-centered stance

The essence of the Fengqiao model in promoting social harmony in the new era lies in the people's nature, always adhering to the people as the center and relying on the people. Misdemeanor management is a manifestation of our country's shift from "crime-fighting" to "social management", and is a concrete embodiment of the criminal law's response to social hotspots and the protection of the people's interests. China's current criminal law penalty system of mitigation reflects the "people-oriented, the law for the people" sentiment, highlighting the temperature of the legislative, judicial and law enforcement agencies and bear. This coincides with the Fengqiao model in promoting social harmony in the new era, which requires that "social governance is for the people, social governance relies on the people, and the fruits of social governance are shared by the people".

4.2. Functional Fit: Promoting Effective Resolution of Conflicts and Disputes

The Fengqiao model in promoting social harmony in the new era requires that conflicts be resolved at the grass-roots level. Misdemeanors are managed in order to better regulate public behavior, create a harmonious and peaceful social environment, insist on resolving social conflicts, and deter potential offenders by criminalizing acts that impede social harmony and order. The lightening of penalties for minor crimes reflects the spirit of judicial tolerance. Judicial leniency is an effective way to achieve social harmony centered on judicial harmony and thus social justice. For the vast majority of minor crime cases, a tolerant judiciary is a bridge of "reconciliation" between the parties involved, and between the parties involved and the State, as well as respect for human nature and the value of pluralism. China's criminal policy of "leniency with severity" carries the spirit of tolerance in modern justice, and when the rule of law becomes a consensus, the highest ethical goal of judicial tolerance is social harmony. Leniency and severity, is the misdemeanor governance version of the "maple bridge experience" of the proper meaning, for the realization of "when leniency is leniency, the punishment is appropriate to the crime", "prudent punishment and prudent punishment", "Justice for the people" are of great practical significance, conducive to promoting social harmony and stability. [15] Since it is necessary to achieve timely and efficient conflict resolution, the management of minor crimes should not be confined to the means of criminal trials, but should diversify the

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use of mediation and conciliation and other means to meet the interests of individuals in a timely manner, promoting social harmony in the new era of the Fengqiao model in promoting social harmony in the new era.

5. The three paths of misdemeanor governance in China under the guidance of “Fengqiao model in promoting social harmony in the new era”

The Fengqiao model in promoting social harmony in the new era is based on the needs of social governance, and is constantly enriched with the development of the times. In the current situation of misdemeanor governance facing the tendency of “strict and severe”, the Fengqiao model in promoting social harmony in the new era should be used as a theoretical guide, giving full play to the judicial function, and constructing a perfect path for the governance of misdemeanors in China.

5.1. Front End: Strengthening Prosecutorial Hearings, Fewer Complaints and Prudent Prosecution and Prudent Detention

Procuratorial hearing refers to the system whereby the procuratorial organs, before exercising specific procuratorial powers and making corresponding decisions in accordance with the Criminal Procedure Law, listen to the opinions of litigation participants, interested parties, and other specific members of the public on issues such as facts, evidence, and application of the law related to the decisions. The main functions of the Fengqiao model in promoting social harmony in the new era are to resolve contradictions, promote harmony, inspire confidence, and safeguard development. 2020, the Supreme People's Procuratorate promulgated the “Provisions on the Work of People's Procuratorates in Reviewing Cases for Hearing”, which stipulates that people's procuratorates shall review cases by way of hearings in a manner that is objective and fair, and shall be based on facts and the law, and shall not only achieve the objective of hearing cases, but shall also ensure that all cases are heard in a timely manner. The document stipulates that the people's procuratorates shall uphold an objective and impartial stance in reviewing cases by means of hearings, basing their review on facts and taking the law as a guideline, in order to exercise procuratorial power independently in accordance with the law, and at the same time safeguard the people's rights to information, participation and supervision. As one of the most direct channels for the people to participate in the administration of justice, public prosecutorial hearings are an effective measure for prosecutors in the new era to practice the Fengqiao model in promoting social harmony in the new era. Procuratorial public hearing system and the “maple bridge experience” goal fits, the value of the same, aimed at relying on the masses, safeguard the legitimate rights and interests of the people, resolve conflicts, and effectively solve the problem at the grassroots level. Strengthen the prosecutorial hearing, the implementation of the judicial policy of the lesser supplement prudent prosecution prudent detention, is our country to improve the governance of China's misdemeanor effective path. For misdemeanor crimes with minor circumstances, procuratorial organs at all levels can carry out procuratorial hearings and make decisions not to prosecute, which to a certain extent can avoid the expansion of penalties, in line with the content of misdemeanor governance.

To carry out the procuratorial hearing system, first, to standardize staffing. Enhancing the socialization, rule of law, intelligence and professionalism of grassroots governance is a fundamental requirement of the Fengqiao model in the new era. Prosecutorial public hearings should be expanded to increase the scope of selection, enhance the democratic representativeness of the hearing officer, should increase the proportion of grass-roots ordinary people into the hearing officer directory. Second, the public hearing information. Adhere to the autonomy, rule of law, moral rule “three integration”, which is the new era

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"Fengqiao model in promoting social harmony in the new era. Procuratorial public hearing system is the "three rule fusion" in the specific embodiment of procuratorial work. Public hearing information is an important form of realizing the openness of the prosecution, promoting judicial justice, and strengthening self-supervision; it is an important measure to guarantee the correct exercise of the legal supervision function, and an important way to resolve social conflicts and effectively safeguard the legitimate rights and interests of the public. The establishment of "hearing process integration" information disclosure model, to listen to the pre-listening to the preview, listening to the record, listening to the feedback; the establishment of "open + exception" of the procuratorate public hearings mode, to the principle of openness, not open as an exception. [16]Third, to establish a feedback mechanism. Believe in the masses, rely on the masses, for the masses, serve the masses, that is, people-centered, which is the core value of the Fengqiao model in promoting social harmony in the new era. Feedback results should be "comprehensive feedback", that is, for the adoption or non-adoption of the hearing should be feedback, feedback content should be a positive response, detailed reasoning, and listen carefully to the hearing officer on the feedback "feedback", and do a good job of the relevant materials to the file.

5.2. Mid-range: promoting criminal reconciliation and strengthening the governance of the source of complaints

With the development of society and changes in the structure of crime, the concept of restorative justice and the development of victimology have gradually taken their place in the field of criminal law. The adjustment of social relations by criminal law is mainly realized through the power of punishment, but the governance of crime should not be overly dependent on the function of punishment, and should be transformed from a mode of crime control to a mode of crime governance. The logic behind the shift from "control" to "governance" is completely different. Crime governance emphasizes the combined efforts of State and social forces to solve crime problems, with the aim of restricting and eliminating the conditions that give rise to crime in order to prevent, control and reduce crime.

The 2012 amendments to the Criminal Procedure Law established the procedure of criminal reconciliation. Since its inception, the criminal reconciliation system has had the shadow of the Fengqiao model in promoting social harmony in the new era, and should draw on the Fengqiao model in promoting misdemeanor reconciliation and non-prosecution work to promote the new development of the criminal reconciliation system. Specifically, under the guidance of the Fengqiao model in the new era, the procuratorial authorities should be active in promoting social harmony in the promotion of social harmony in the new era, fully connecting with the people's mediation committees, relying on the people's mediators to participate in the reconciliation and mediation process of misdemeanor cases, and strengthening traceability governance and resolving social conflicts. Criminal cases occurring in grass-roots communities are mostly dominated by family conflicts and neighborhood conflicts, resulting in criminal consequences often limited to minor injuries, and victims are generally unwilling to pursue criminal responsibility of suspects. For such cases, forced prosecution is not only against the true will of the victims, but also not conducive to the repair of social relations. Procuratorial authorities should listen carefully to the views of the victims, make a risk assessment of public opinion, make a prudent decision not to prosecute, and standardize the production of settlement agreements and decisions not to prosecute by ordering the criminal suspect to repent and apologize on the spot.

5.3. Ends: Adjustment of penal configurations to reduce the number of persons in custody

Our country is still mainly using the traditional rehabilitation method of serving prison sentences. In recent years, thanks to the concerted efforts of all sectors of society and the

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judicial authorities, the number of death penalty offences in China has been drastically reduced, reflecting the implementation of the criminal policy of leniency and severity, but custodial sentences are still the main sanction of China's criminal law. The area of application of non-custodial sentences needs to be continuously broadened. [17]Some scholars statistics and pointed out that China's minor crimes crime rate is about 80% of all criminal cases, but the cases sentenced to non-custodial sentences only accounted for about 30% of all criminal cases, so most of China's minor crimes offenders are still sentenced to imprisonment. [18] For the majority of minor offenders, education and rehabilitation in complete isolation from society is not in line with the trend of the development of criminal law in the new era.

The modern view of punishment places greater emphasis on the purpose of crime prevention. On a macro level, the Fengqiao model in promoting social harmony in the new era is an experience in crime prevention. [19] Some scholars have pointed out that the reason why the “Fengqiao Experience” has lasted for 60 years and is still the “classic” crime prevention experience in China is that it is in line with the direction of humanism and the principle of community correctional treatment, and is in line with the actual situation of crime prevention in the region after China's reform and opening up and the basic requirements of community public security. [20]The basic requirements of community public safety. At present, vicious crimes that endanger personal safety rarely occur, and the proportion of new types of crimes that endanger the order of social management has risen sharply, with the structure of crimes and penalties gradually becoming lighter and more lenient, so there is a practical need to enhance the application of non-custodial mandatory measures and non-custodial penalties. [21]Firstly, the social danger and personal harm of minor crimes are low, without the urgency of imprisonment; secondly, from the perspective of restorative justice, the adoption of non-custodial mandatory measures and penalties is conducive to the dissolution of social contradictions, the promotion of social reform of offenders, and the reduction of the cost of returning minor offenders to society; thirdly, for minor crimes with less social harm and no necessity for imprisonment, the adoption of non-custodial mandatory measures and penalties is the Misdemeanor governance criminal justice is an inevitable choice, is the basic principle of criminal law requirements of the crime and punishment fit, and leniency and severity of the criminal policy, less catching prudent prosecution and prudent detention of the judicial concept.

Non-custodial mandatory measures and penalties rely primarily on social forces for supervision, and are also an objective requirement of the “Fengqiao model in promoting social harmony in the new era. [22] In order to gradually reduce the proportion of persons in custody, efforts should be made to refine the circumstances in which non-custodial coercive measures and suspended sentences are applied, to unify the criteria for the application of non-custodial coercive measures and suspended sentences, and to increase the proportion of non-custodial coercive measures and suspended sentences; at the same time, problems arising from the application of non-custodial coercive measures and suspended sentences should be promptly sorted out and countermeasures put forward in order to genuinely increase the rate of application of non-custodial coercive measures and non-custodial sentences.

6. Conclusion

“Don't make light of small evils and think that there is no calamity; although a drop of water is small, it gradually fills up a large vessel; all crimes are full of, and accumulate from small beginnings.” Crime governance is an important part of social governance, which is related to national security, social stability and people's peace of mind, and misdemeanor governance is of great significance to Chinese-style modern social governance. As a model of grassroots social governance in China, the “Fengqiao Experience”, after 60 years of inheritance and development, has formed a set of unique governance methods in resolving contradictions and disputes,

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building the rule of law, and innovating grassroots governance, combining the values of fairness, efficiency, and order, and has made a significant contribution to promoting the modernization of grassroots governance. In the current reality of "strict and severe" misdemeanor governance, the practical value of the Fengqiao model in promoting social harmony in the new era should be fully explored, and the judiciary should be motivated to perform its duties, so as to realize the "decriminalization" of misdemeanor cases by means of procuratorial hearings, criminal reconciliation and other methods. The judicial organs should actively and actively perform their duties, realize the "decriminalization" of misdemeanor cases through prosecutorial hearings, criminal reconciliation, etc., adjust the configuration of penalties, increase the application rate of non-custodial coercive measures and non-custodial penalties, and strengthen the supervision of the public, so as to realize the dual functions of "punishment" and "education" for misdemeanor offenders. It has also strengthened public supervision, realized the dual functions of "punishment" and "education" for misdemeanour offenders, and constructed a grass-roots social pattern of common building, sharing and governance.

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References

[1] Xu Dai & Wang Peiran: Social Science Front, 2022 No.10, p.266-270.
[2] Liu Yanhong: Law Science, 2011 No.11, p.108-115.
[3] Chu Huaizhi: Law Science, 2004 No.3, p.74-80.
[4] Ji Yang: Oriental Law, 2021 No.3, p.124-139.
[5] Lang Sheng: Jurists Review, 2007 No.5, p.60-63+132.
[6] Fu Yuming: Contemporary Law Review, Vol.35 (2021) No.5, p.15-27.
[7] Wang Yinglong: Comparative Law Studies, 2023 No.4, p.18-32.
[8] Liu Qi & Yang Qian: Journal of Changchun University of Science and Technology (Social Sciences Edition), Vol.32 (2019) No.3, p.65-70.
[9] Zhao Mingda: Journal of Zhejiang Youth College, 2006 No.4, p.56-58.
[10] Wang Shirong: China Legal Science, 2018 No.6, p.5-22.
[11] Ding Chunfu & Ma Peiyun: Dalian Cadres Journal, Vol.39 (2023) No.10, p.45-51.
[12] Li Shaoping: Journal of Law Application, 2018 No.17, p.2-10.
[13] Zhang Wenxian: Social Governance, 2021 No.9, p.5-9.
[14] Yu Yubiao: Journal of Judicial Police Vocational Education Research, Vol.3 (2022) No.4, p.54-62.
[15] Li Min & Yuan Lu: 2023 No.2, p.7.
[16] Research Group of Chengdu Jinniu District People's Procuratorate: Sichuan University Law Review, Vol.19 (2020) No.1, p.24-35.
[17] Lu Jianping: People's Procuratorial Semimonthly, 2016 No.9, p.34-38.
[18] Liu Chuangan: Journal of Beijing Union University (Humanities and Social Sciences), Vol.19 (2021) No.2, p.20-29.
[19] Ma Rongchun & Zhou Jianda: Journal of Nanchang University (Humanities and Social Sciences), Vol.50 (2019) No.1, p.60-70.
[20] Yang Zhangqiao & Wang Chong: Social Sciences, 2004 No.8, p.57-65.
[21] Dai Guixia & Feng Jun: Journal of Southwest University of Political Science and Law, Vol.23 (2021) No.5, p.40-51.
[22] Jin Yue, Hu Xiaojun & Zheng Yan: Chinese Justice, 2019 No.7, p.70-75.

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Nonlinear Association Between Smartphone Usage Duration and Online Social Anxiety: An Empirical Study Based on Chinese College Students

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Abstract

This study aimed to investigate the relationship between smartphone use duration and online social anxiety among Chinese college students, with particular focus on potential nonlinear characteristics. Using a cross-sectional design with questionnaire survey, data were collected from a sample of college students. Daily smartphone use duration was assessed through self-report measures, while online social anxiety was measured using the General Online Social Anxiety Inventory Scale (GAAIS). Descriptive statistics revealed that participants used smartphones for an average of 6.83 hours daily (SD = 2.76) with a multimodal distribution, and had a mean online social anxiety score of 30.31 (SD = 10.14). As the data did not meet normality assumptions, Spearman's rank correlation analysis was employed to examine the relationship between variables. Results indicated a weak positive correlation between smartphone use duration and online social anxiety ($\rho = 0.192$, $p < .001$), with a notable nonlinear pattern: in the low to moderate usage range (1-6 hours), anxiety levels increased with usage time, while in the high usage range (>6 hours), this association plateaued, demonstrating a "saturation effect." These findings challenge the simple linear assumption that "more usage leads to higher anxiety" and support a more complex relationship model. The results provide important implications for developing smartphone use guidelines and targeted mental health interventions for college students. Future research should explore the differential impact of various usage purposes and patterns on social anxiety, as well as potential mediating or moderating mechanisms in this relationship.

Keywords

Smartphone use duration; Online social anxiety; Nonlinear relationship; College students; Social media.

1. Introduction

1.1. Research Background

With the rapid development of mobile Internet technology, smartphones have become an indispensable tool in the daily life of modern people. Chinese college students are particularly heavy users of smartphones, with a penetration rate exceeding 98%, and their average daily usage significantly surpasses that of other demographic groups. Research indicates that Chinese college students use their mobile phones for an average of more than 5 hours daily. Even during the COVID-19 pandemic, this average daily usage increased to 7.4 hours [1]. At the same time, the widespread use of smartphones has been linked to a series of mental health issues. Studies have found a positive correlation between social anxiety and excessive smartphone use, with social anxiety accounting for 31.5% of the variance in smartphone addiction scores [2].

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1.2. Literature Review and Theoretical Framework

Existing studies have extensively explored the association between mobile phone use and various mental health outcomes. Research has found that excessive smartphone use correlates with negative mental health indicators such as depression and anxiety, particularly with prolonged usage [3]. However, findings regarding the nature of this relationship remain inconsistent. One study suggests that the association between mobile phone use and mental health may be non-linear, with non-users and excessive users exhibiting poorer mental health outcomes compared to moderate users[4]. This finding supports the "moderate use hypothesis," challenging the simplistic linear assumption that "greater use leads to greater harm."

The prevalence of online social anxiety—a specific manifestation of social anxiety in digital environments—warrants significant attention. A study revealed that online social anxiety is a prominent issue among university students, particularly during social media use, where individuals may experience negative emotions such as tension, fear, and anxiety [5]. Direct investigations into the link between mobile phone use and online social anxiety remain relatively limited and inconsistent. While some studies report associations between social anxiety and smartphone dependency—especially in social media contexts, where individuals with higher social anxiety levels exhibit stronger dependency [6]—others show weak or non-significant correlations. These contradictory findings may stem from unaddressed non-linear relationships or uncontrolled confounding variables.

Theoretical explanations for the connection between mobile phone use and online social anxiety may draw from multiple frameworks. The Fear of Missing Out (FoMO) theory proposed by Przybylski et al. posits that excessive mobile phone use amplifies individuals' persistent monitoring of social information, fostering hypervigilance toward online social performance [7].

1.3. Research Aims and Implications

There are several obvious shortcomings in the existing studies: First, most of them focus on the correlation between mobile phone addiction and mental health, and there are few studies on the duration of use in general users. Secondly, less attention is paid to the relationship between mobile phone use and online social anxiety, especially the potential nonlinear characteristics of this relationship. Finally, there is a lack of in-depth research on Chinese college students as a high-risk group. Therefore, this study aims to explore the relationship between mobile phone use time and online social anxiety among Chinese college students, paying special attention to the non-linear characteristics of this relationship. Specifically, this study has the following three goals: (1) To describe the distribution characteristics of college students' mobile phone use time and online social anxiety; (2) Analyzing the correlation between mobile phone use time and online social anxiety; (3) Explore whether the correlation is nonlinear. This study has important theoretical and practical significance. At a theoretical level, the findings will enrich the understanding of the relationship between digital media use and mental health, especially to validate potential non-linear relationship models. At the practical level, the research findings can provide empirical evidence for the formulation of college students' mobile phone use health guidelines, and provide references for campus mental health education and intervention strategy design.

2. Research method

2.1. Research object

In this study, 948 Chinese university students were selected by convenient sampling method.

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2.2. Research design

This study adopted a cross-sectional research design and collected data through a questionnaire survey to explore the relationship between college students' mobile phone use time and online social anxiety. The independent variable of the study was the average daily mobile phone use time and the dependent variable was the level of online social anxiety.

2.3. Research tool

2.3.1. General demographic information questionnaire

Basic demographic information such as gender, age, grade and major of the subjects was collected.

2.3.2. Cell phone use survey

The duration of mobile phone use was obtained through self-report, and the subjects were asked to report their average daily mobile phone use time (hours/day). The questionnaire clearly states that" Use" Refers to any form of mobile operation, including but not limited to social media browsing, short video viewing, gaming, learning, shopping, etc. At the same time, the questionnaire also collected the use of mobile phones before going to bed, screen brightness Settings and other related information as auxiliary research data.

2.3.3. General Online Social Anxiety Scale

In this study, the General Online Social Anxiety Scale (GAAIS) was used to assess the level of online social anxiety of the subjects. The scale contains 10 entries, using a 5-level Likert score (from "1" to "1"). Completely disagree To 5" Couldn't agree more ") . The scale ranges from 10 to 50 points, with higher scores indicating higher levels of online social anxiety. In this study, the Cronbach's α coefficient of this scale was 0.86, indicating good internal consistency. The scale mainly measures the anxiety experience of individuals in the use of social media platforms (such as wechat), including the worry of negative evaluation of shared content, tension in social interaction, hesitation and unease when Posting or replying to messages. This scale is particularly suitable for evaluating the psychological experience of Chinese college students on mainstream social media platforms, which is highly consistent with the purpose of this study.

2.4. Data analysis

Data analysis was performed using R software (version 4.4.0). First, descriptive statistical analysis was carried out on the study variables, including the calculation of the mean, standard deviation, median, interquartile distance and other indicators, and the histogram and box plot were used to show the distribution characteristics of the data. Secondly, the Shapiro-Wilk test and Q-Q plot were used to evaluate the normal distribution of the data. Since none of the study variables were consistent with the hypothesis of normal distribution, Spearman's correlation coefficient was used to analyze the intensity and direction of the correlation between mobile phone use time and online social anxiety. In order to show the relationship between the two variables more comprehensively, the local weighted scatter smoothing method is also used to draw a non-parametric fitting curve to show the possible nonlinear relations directly. The significance level for all statistical tests was set at $\alpha = 0.05$.

3. Result

3.1. Descriptive statistical analysis

This study investigated the relationship between mobile phone use time and online social anxiety in 948 college students. The descriptive statistical results of the main study variables are presented below.

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3.1.1. Duration of mobile phone use

The average duration of mobile phone use among college students in the study sample was 6.83 hours/day (SD = 2.76), with a median of 7 hours/day, ranging from a minimum of about 1 hour to a maximum of about 13 hours. The interquartile shows that 25% of students use it for less than 5 hours and 75% use it for less than 9 hours. Shapiro-Wilk test results ($p < .001$) indicates that the mobile phone usage time data deviates significantly from the normal distribution. Figure 1 shows the distribution histogram and density curve of mobile phone use time, showing obvious multi-peak distribution characteristics, with the main peak appearing at 5-6 hours and the secondary peak appearing at about 9 hours, indicating that there may be subgroups withdifferent usage patterns in the sample.

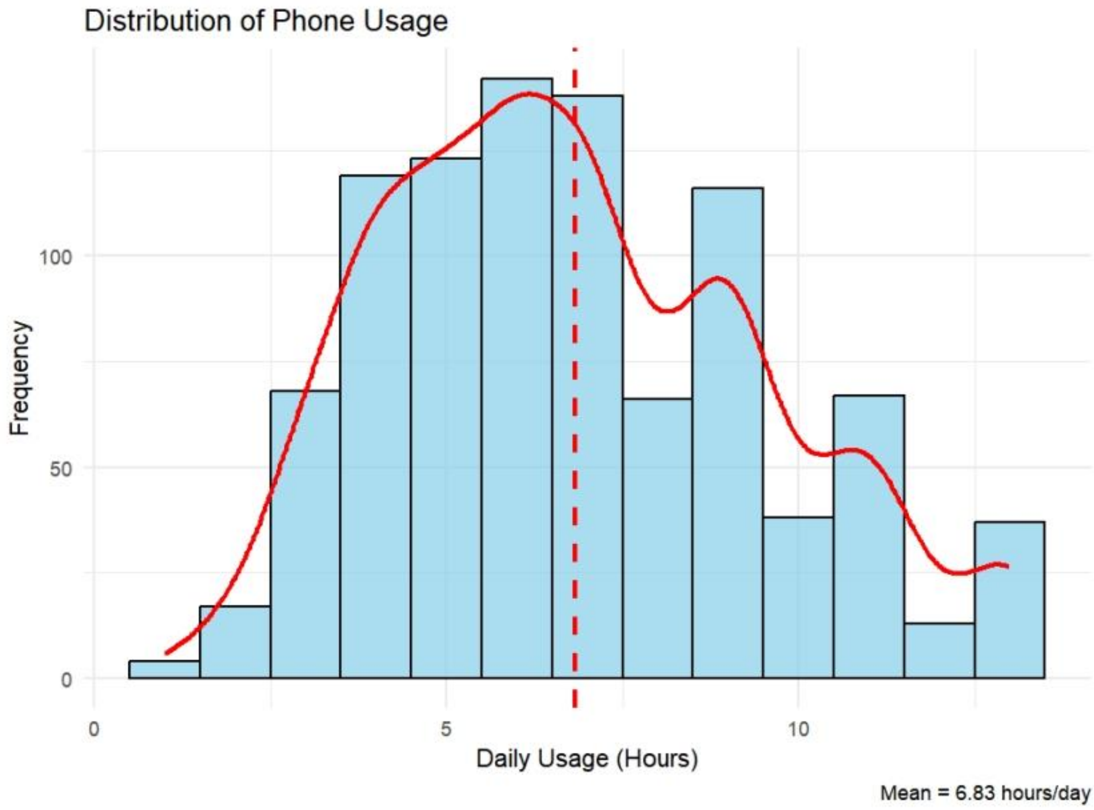

Figure. 1 disturbution of phone usage

As shown in Figure 2, the boxplot further confirms that the middle 50% of the data is concentrated in the 5-9 hour interval, and the distribution is relatively uniform. The Q-Q plot (Figure 3) shows that the data points deviate from the theoretical normal distribution line at multiple points, especially at both ends of the distribution, further supporting the conclusion of the non-normal distribution.

3.1.2. Online social anxiety

The average score for online social anxiety among college students in the sample was 30.31 (SD = 10.14), with a median of about 31 and scores ranging from about 10 at the lowest to about 50 at the highest. The quartile spacing indicates that 25% of the students scored less than about 24 points and 75% of the students scored less than about 37 points.

Shapiro-Wilk test results ($p < .001$) indicates that the online social anxiety score also does not conform to the normal distribution hypothesis. Figure 4 shows the distribution of social anxiety scores, showing a complex multi-modal distribution pattern, especially with a significant peak at the 30th point, which may represent some critical value of the scale or reflect clear subgroup differences in the sample.

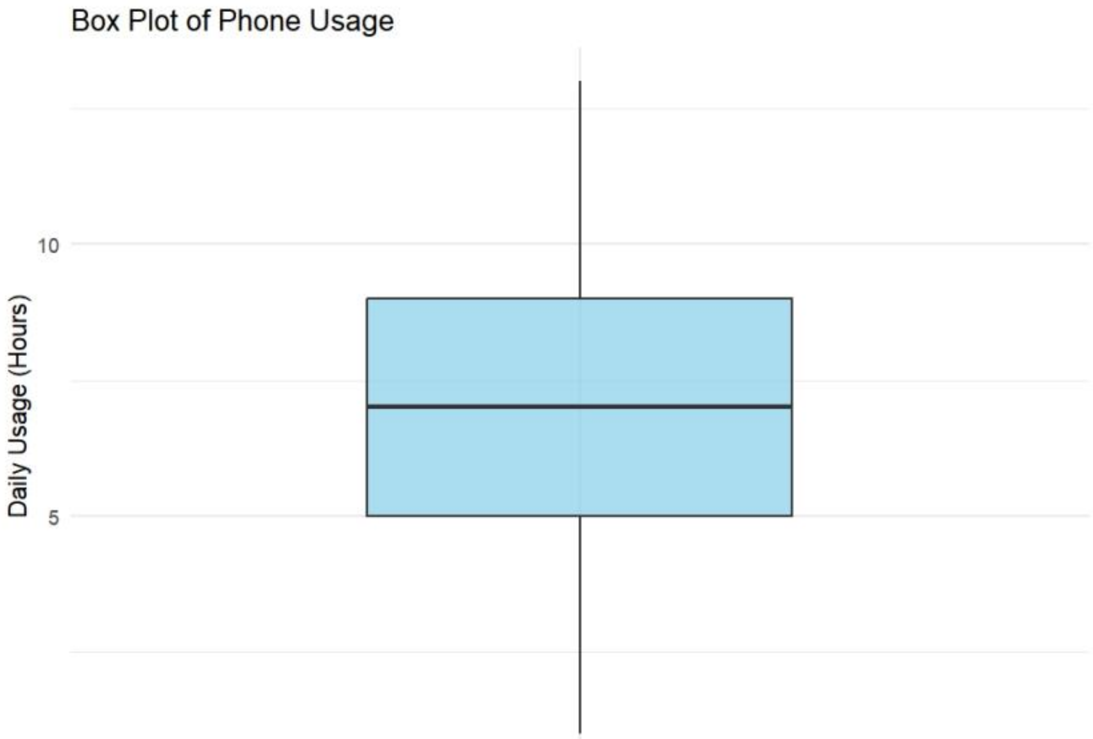

Figure. 2 box plot of phone usage

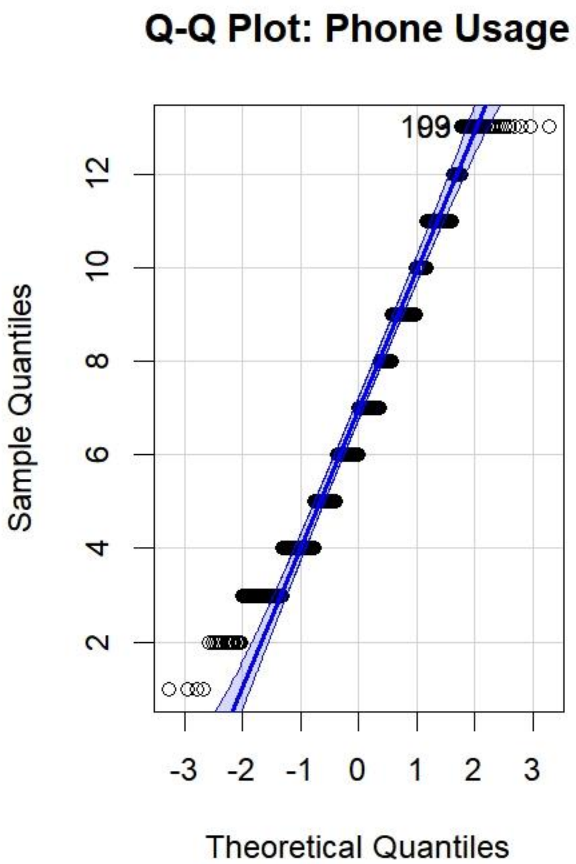

Figure.3 Q-Q plot : phone usage

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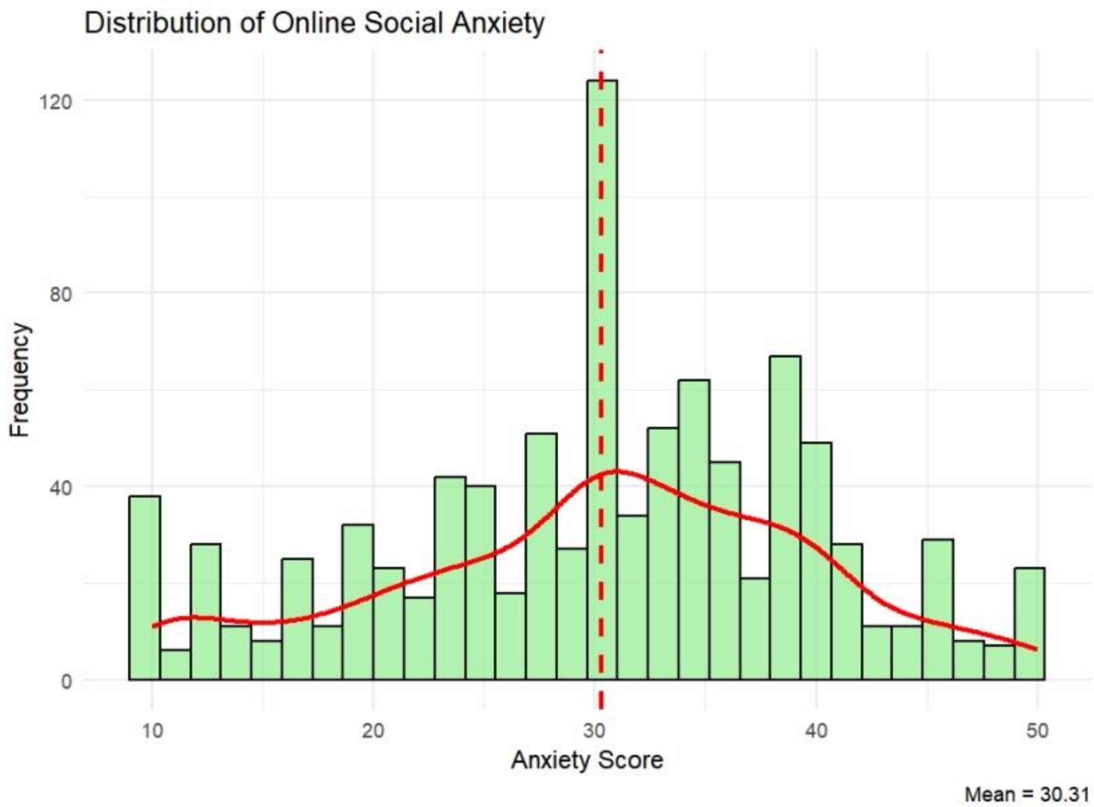

Figure.4 Disturbution of online social anxiety

The box plot in Figure 5 shows that social anxiety scores are relatively evenly distributed, with the central region concentrated between 24 and 37 points. The Q-Q figure (Figure 6) shows that the sample distribution deviates from the theoretical normal distribution line in many places, especially in the low subregion, which further confirms the non-normal distribution characteristics of the data.

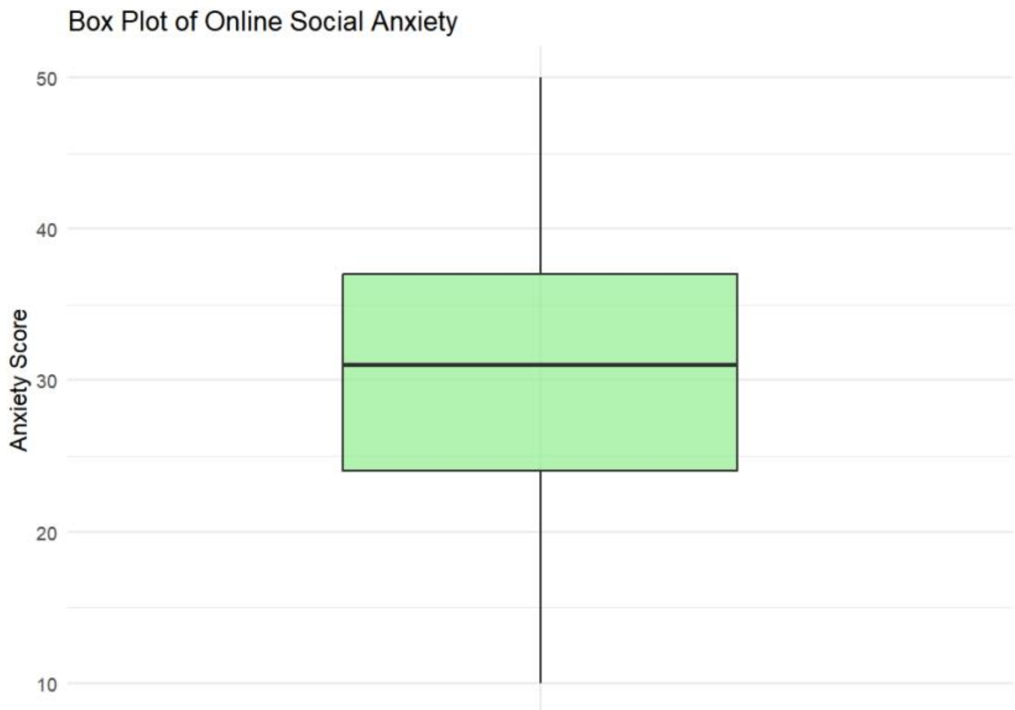

Figure.5 Box plot of online social anxiety

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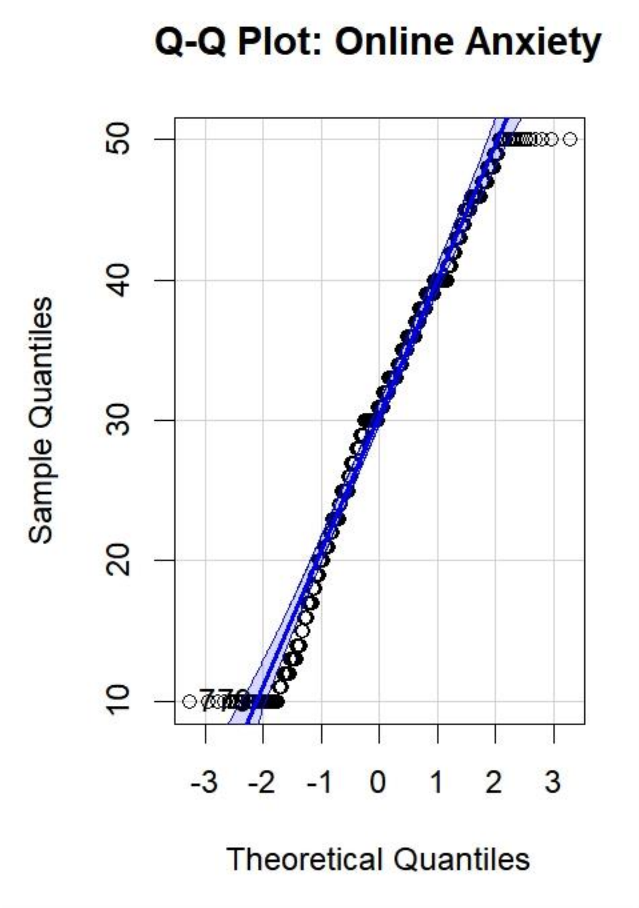

Figure.6 Q-Q plot online anxiety

3.2. Correlation analysis

Since none of the study variables were consistent with the hypothesis of normal distribution, this study used Spearman correlation analysis to explore the correlation between mobile phone use time and online social anxiety. The results showed that there was a weak positive correlation between the two variables ($\rho = 0.192$, $p < .001$), as shown in Figure 7. Figure 7 shows the scatter plot and fitting curve of mobile phone use time and online social anxiety. The scatter plot and the smooth trend line reveal the nonlinear relationship between the two variables. In the area of low use duration (about 1-6 hours), the level of social anxiety showed an obvious upward trend with the increase of use time; However, in the medium-high use duration region (more than 6 hours), the relationship flattens out, and the increase in anxiety level is no longer obvious, showing a potential "Saturation effect".

It is worth noting that although the correlation coefficient is small ($\rho = 0.192$), the very low p value ($p < .001$) suggests that this association is highly statistically significant and unlikely to be due to random factors. In addition, at any given level of cell phone use, social anxiety scores show large individual differences and dispersion, suggesting that other factors besides cell phone use duration (such as purpose of use, mode of use, personal characteristics, etc.) may also influence social anxiety levels. Overall, the correlation analysis results support a weak but statistically significant positive correlation between mobile phone use time and online social anxiety, and reveal the non-linear characteristics of this relationship. The association between increased cell phone use and increased social anxiety was mainly reflected in the range of low to moderate use, while the association became less obvious in the range of high use.

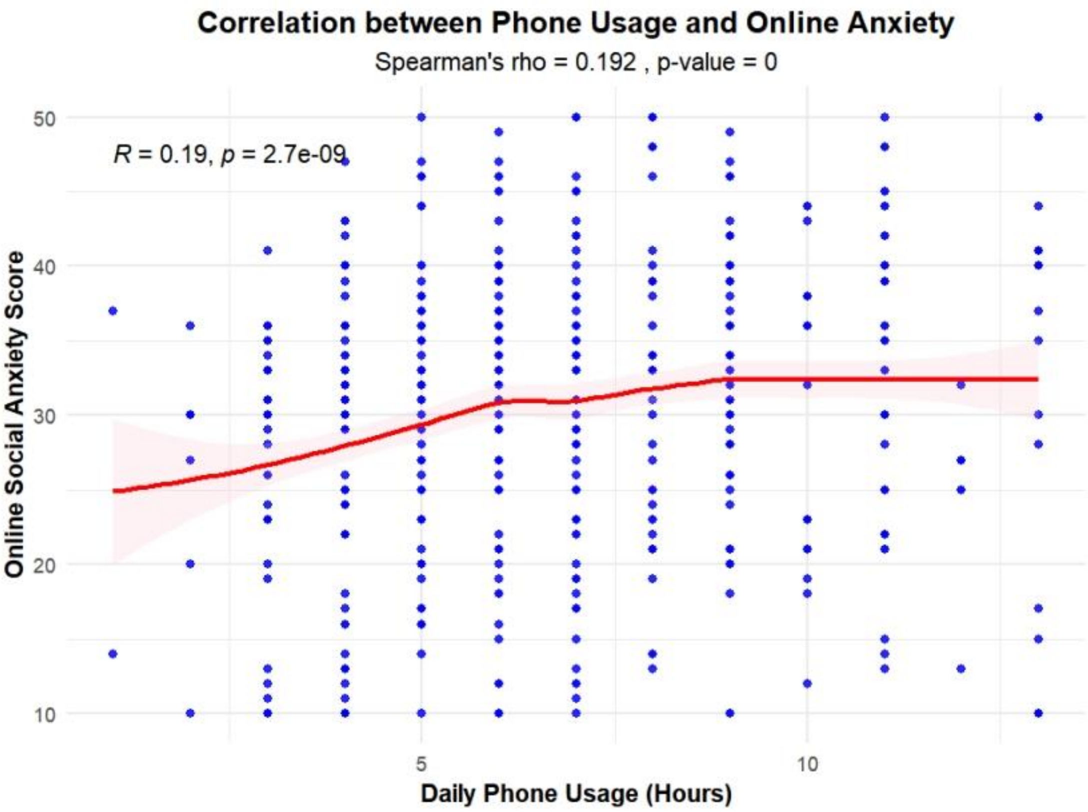

Figure.7 Correlation between Phone Usage and Online Anxiety

4. Conclusion

4.1. Key findings

This study explores the relationship between college students' mobile phone use time and online social anxiety. The results showed that there was a weak positive correlation between them ($\rho = 0.192$, $p < .001$), this association was statistically significant, although low in strength. In particular, the relationship was non-linear: in the range of low to moderate cell phone use (about 1-6 hours), the level of social anxiety increased with the increase of time use; In the higher use duration range (6 + hours), the association flattens out, showing a "Saturation effect ".

The study also found that the average duration of mobile phone use of college students was 6.83 hours/day, and the distribution showed multi-peak characteristics, suggesting that there were subgroups with different usage patterns in the sample. Online social anxiety scores also showed a non-normal distribution, with a significant peak at the 30-point mark, which may reflect a specific threshold or classification point.

4.2. Theoretical significance

The results of this study have implications for understanding the relationship between mobile phone use and mental health. First, the discovery of nonlinear relationships challenges the ". The more you use, the higher your anxiety." The simple linear hypothesis supports a more complex relational model. This finding is consistent with the use-gratification theory, which holds that the effectiveness of media use depends on motivation and satisfaction, rather than just the amount used. Second, the findings support the" Moderate use hypothesis That is, there is a use time threshold beyond which further increases in use time may not lead to significant changes in the level of social anxiety. This may be related to changes in psychological adaptation mechanisms or use patterns and purposes. Finally, although the association was weak, the

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statistically significant association showed that the duration of mobile phone use was indeed a relevant factor in social anxiety, supporting the basic idea of a link between technology use and mental health, while also suggesting the important role of other factors in this relationship.

4.3. Research limitations and future directions

This study also has some limitations: First, the cross-sectional design cannot determine causality, and future studies can further explore the causal mechanism between the two using longitudinal design or experimental methods. Second, only the length of use dimension is examined without in-depth analysis of qualitative factors such as content, purpose, and mode of use, which may play an important role in explaining the relationship between the two variables. Finally, the sample is limited to college students in a specific region, so the generalization of the research results should be cautious. In conclusion, this study confirmed the existence of a weak but statistically significant positive correlation between mobile phone use time and online social anxiety, and revealed the non-linear characteristics of this relationship. These findings provide empirical evidence for understanding the complex relationship between mobile phone use behavior and mental health of contemporary college students, and also provide reference for formulating targeted intervention strategies.

References

[1] Jiang, W., Luo, J., Guan, H., Jiang, F., & Tang, Y.-L. (2022). Problematic mobile phone use and life satisfaction among university students during the COVID-19 pandemic in Shanghai, China. Frontiers in Public Health, 9, 805529.

[2] Turgeman, L., Hefner, I., Bazon, M., Yehoshua, O., & Weinstein, A. (2020). Studies on the relationship between social anxiety and excessive smartphone use and on the effects of abstinence and sensation seeking on excessive smartphone use. International Journal of Environmental Research and Public Health, 17(4), 1262.

[3] Mayerhofer, D., et al. (2024). The association between problematic smartphone use and mental health in Austrian adolescents and young adults. Healthcare, 12(6), 600.

[4] Studer, J., Marmet, S., Wicki, M., Khazaal, Y., & Gmel, G. (2022). Associations between smartphone use and mental health and well-being among young Swiss men. Journal of Psychiatric Research, 156, 602–610.

[5] Research Group on Digital Mental Health. (2025). Network analysis of internet addiction, online social anxiety, fear of missing out, and interpersonal sensitivity among Chinese university students. PMC. Retrieved April 6, 2025.

[6] Zhang, J. (2025). Immediate and longitudinal predictive effects of self-body images on college students' mobile social media dependence: The mediating role of social anxiety. Advances in Psychology, 15(4), 9–18.

[7] Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. Computers in Human Behavior, 29(4), 1841–1848.

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Research on the English Translation of Political News in China Daily from the Perspective of Functional Equivalence Theory

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Abstract

This article aims to explore the application of the Functional Equivalence Theory in the translation of political news, especially the translation practice of political news in the English version of China Daily. The study analyzes the lexical, syntactic, textual, and cultural equivalence in translation practices and discusses its impact on improving translation quality and enhancing cross-cultural communication. The findings indicate that in translating political news, China Daily successfully conveys key terms and proper nouns with precision, adapts syntactic structures to align with English conventions, and preserves the original text's overall framework and cultural context in its English versions. This study not only enriches the theoretical framework of translation but also provides valuable references and guidance for practical translation work, helping to improve the communication effect of Chinese political discourse on the international stage.

Keywords

Functional Equivalence Theory; Translation of Political News; Cross-cultural Communication; China Daily; Dissemination of Political Discourse.

1. Introduction

1.1. Research Background

In the context of globalization, news media plays a crucial role in disseminating information and shaping national soft power. With China's rising global influence, the English translation of political news, such as that in *China Daily* serves as a bridge for cross-cultural communication, conveying China's voice and image. Political news translation, linked to policies and international relations, holds significant academic and practical value. However, current research often focuses on translation techniques, lacking in-depth analysis of functional equivalence, particularly for political discourse. Challenges like term conversion and cultural adaptation persist. This study applies Functional Equivalence Theory to explore strategies for improving the translation quality of *China Daily's* political news, aiming to enhance cross-cultural communication and provide theoretical and practical insights.

1.2. Research objective

This study aims to uncover the functional equivalence in political news translation. By examining challenges and solutions at lexical, syntactic, and textual levels, it deepens the understanding of translation essence. Analyzing its application in *China Daily's* English translation helps transmit cultural and political information, thus enriching the theory and expanding its scope.

From the functional equivalence perspective, the current study offers strategies for China Daily's political news translation. Findings will aid translators in handling language and cultural issues, making the target language suit international audiences. This reduces barriers, enhances

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China's image, and creates a better public opinion environment for international exchanges. The study is also significant for translation education. It provides a practical guide for applying the theory in political news translation practices, which helps improve education quality and cultivate translation professionals with essential skills for their careers.

2. Literature Review

2.1. The Origin of Functional Equivalence Theory

Functional Equivalence Theory was initially proposed by American linguist Eugene A. Nida. In his book Towards a Science of Translating, Nida first introduced the concept as "dynamic equivalence," emphasizing that the understanding and reaction of readers to the translation should be the same or similar to their understanding and reaction to the original text [1]. As translation studies progressed, Nida realized that the term "dynamic" could lead to misunderstandings. Therefore, in 1986, he renamed "dynamic equivalence" to "functional equivalence" and further divided it into the minimum realistic level and the maximum ideal level. Nida stressed that translation should not be limited to the correspondence of linguistic forms but should pursue the consistency of reactions between the target text readers and the source text readers, aiming to break away from the traditional word-for-word translation model and open up new pathways for translation practice. For example, in the translation of religious texts, facing unique religious concepts and expressions in different cultural contexts, Nida found that mechanical formal equivalence could not enable target language readers to grasp the essence of the original text, which prompted him to explore an equivalence-oriented approach focusing on meaning and function.

2.2. The Development of Functional Equivalence Theory

Since its introduction by Nida, Functional Equivalence Theory has sparked extensive discussions and practical applications in the field of translation studies, with many scholars expanding and refining it. Peter Newmark is one of the significant developers of Functional Equivalence Theory. He categorized translation into two types: "semantic translation" and "communicative translation." Newmark argued that communicative translation is similar to Nida's dynamic equivalence theory, emphasizing the functional equivalence between the translation and the original text [2]. The goal of communicative translation is to make the translation easily understood and accepted by target language readers while conveying the meaning and style of the original text. There are indeed similarities between the initial dynamic equivalence and communicative translation; both are reader-oriented, focusing on the effectiveness of information transfer and considering the transformation of cultural factors. J.C. Catford also contributed to the development of Functional Equivalence Theory in his writings. Catford discussed the linguistic and cultural barriers arising from language differences in the translation process, and his translation shift theory helps to understand how functional equivalence can be achieved when facing these challenges [3]. Christiane Nord is a representative figure of functionalist translation theory. She emphasized that translation should follow the principle of purpose and choose appropriate translation strategies based on the function of the target text [4]. Nord systematically elaborated on functionalist translation theory and further expanded the scope of application of Functional Equivalence Theory.

In summary, foreign scholars have made important contributions to the development of Functional Equivalence Theory, promoting its continuous improvement and development. Functional Equivalence Theory has provided significant theoretical guidance for translation practice both domestically and internationally, helping to improve translation quality and promote cross-cultural communication.

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2.3. The Necessity of Applying Functional Equivalence Theory to the Translation of Political News

Political news is characterized by its authority, timeliness, and information density. First, as it involves formal contents such as national policies and international relations, the translation must accurately convey the meaning of the original text. Any misunderstanding or deviation could potentially lead to international public opinion issues. The principle of meaning priority emphasized by Functional Equivalence Theory ensures the accurate transmission of core information. Second, political news is aimed at the global audiences, and it is necessary to consider the acceptance of readers from different cultural backgrounds. By adopting functional equivalence, Chinese political terms and culture-loaded words can be presented in a way that is easily understood by target language readers, enhancing readability and improving communication effectiveness. For example, the "Belt and Road" Initiative would be difficult for foreign readers to understand if translated literally. However, by using functional equivalence for interpretative translation, the international community can quickly grasp its essence.

Bassnett proposed the "cultural turn" in translation studies, emphasizing that the translation of political news should take into account cultural background and ideology [5]. Samuel P. Huntington's theory of cultural conflict provides a new perspective for understanding the international dissemination of political news and translation strategies, highlighting the importance of cultural adaptability [6]. Conway argues that culture is the tension between political economy, society, and the subjective world, emphasizing the social nature of language and its role in shaping the understanding of the world. News translation needs to consider the shared meanings of the source and target language communities [7]. Kalantari suggests drawing on gatekeeping theory in journalism, viewing translation as a "gate" in news production and paying attention to the impact of institutional policies and ideologies [8]. Newmark classifies political news as "expressive texts" and proposes corresponding translation strategies [9]. Fairclough's Critical Discourse Analysis (CDA) theory points out that news discourse actively constructs reality and influences public understanding [10]. Simpson analyzes the ideological tendencies in news language, revealing how language shapes views on political events [11].

2.4. The Feasibility of Applying Functional Equivalence Theory to the Translation of Political News

From a practical standpoint, the structure and language use of political news follow certain patterns, providing a basis for the implementation of functional equivalence. Most political news follows the "inverted pyramid" structure, which begins with the core event and then supplements with details. Translators can build a similar logic in the translation based on this structure to achieve functional equivalence at the discourse level. Moreover, the development of modern translation technology and tools, such as terminology databases and parallel corpora, helps translators quickly find corresponding expressions to achieve functional equivalence at the lexical and phrasal levels. At the same time, a wealth of excellent translation cases of political news has accumulated rich experience. Translators can draw on previous practices, combine functional equivalence theory, and flexibly handle cultural and rhetorical difficulties to produce high-quality translations that meet the needs of external communication.

In conclusion, Functional Equivalence Theory, with its solid theoretical foundation and wide applicability, provides a strong theoretical support and practical guidance for the study of English translation of political news in *China Daily.*

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3. Case analysis

3.1. Lexical equivalence

In the English translation of current affairs news in China Daily, lexical equivalence is reflected in the accurate transformation of professional terms and key information. For example, “中国第41次南极考察队” is translated as “China’s 41st Antarctic expedition team”. Here, “考察队” corresponds to “expedition team”, precisely conveying the professionalism of the original text. Another example is that “秦岭站” is directly translated as “Qinling Station”, preserving the original form of the proper noun, which is in line with the internationally accepted translation convention. Additionally, “气候变化对南极生态系统的影响” is translated as “the impact of climate change on the Antarctic ecosystem”. The words “影响” and “impact” are highly equivalent in semantics, ensuring the accurate transmission of information. The precise translation of these words not only retains the scientific nature and solemnity of the original text but also enhances the readability of the translated text. “战略性新兴产业” is translated as “strategic emerging industries”, where “新兴产业” and “emerging industries” are highly consistent in semantics, reflecting the frontier nature and dynamism of industry development. For instance, “极地环境保护” is translated as “polar environmental protection” , with “极地”and “polar” precisely corresponding to each other, highlighting the specificity of the protection object. By translating these words equivalently, the translated text not only accurately conveys the original information but also caters to the language preferences of English-speaking readers, thereby achieving lexical equivalence.

3.2. Syntactic equivalence

In the English translation of current affairs news in China Daily, the achievement of syntactic equivalence is reflected in the flexible adjustment of the structure of the Chinese original text by translators to adapt to English grammar and expression habits. For example, “中国第41次南极考察队” is translated as “China’s 41st Antarctic expedition team”. This transformation not only retains the core information of the original text but also makes the sentence structure more in line with English expressions through the use of the possessive form (“China’s”) and the ordinal number (“41st”). Another example is that “此次考察将开展南极秦岭站配套设施设备建设” is translated as “researchers will build the supporting infrastructure for the Qinling Station in Antarctica”. By using “researchers” as the subject, the sentence becomes more active and clearer, embodying the common subject-verb-object structure in English. Additionally, “秦岭站的建成” is translated as “ The completion of the building of the Qinling Station”, using the common nominalization structure in English, making the sentence more concise and formal.

In another report, “ 2024年1至11月，中央企业完成战略性新兴产业投资2万亿元，同比增长18.7%” is translated as “ China’s centrally - administered state - owned enterprises completed investment of 2 trillion yuan in strategic emerging industries from January to November in 2024, a year - on - year increase of 18.7 percent.” Here, the translator adjusts the sentence to align with the style of English news reports by adding a time adverbial phrase ("from January to November in 2024") and using the passive voice ("completed investment"), while retaining the key data and information from the original text. These syntactic adjustments not only ensure accurate information transmission but also enhance the fluency and naturalness of the translated text, thus better conforming to the language preferences of English-speaking readers.

3.3. Textual equivalence

Textual equivalence emphasizes that the translated text should be consistent with the original text in terms of overall structure and information transmission, ensuring that readers can obtain a reading experience similar to that of the original - text readers. In the bilingual texts of

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China Daily, this equivalence is fully demonstrated. For example, when reporting on the tasks of China's 41st Antarctic expedition team, the original text details the goals of the expedition team, the construction background and significance of the Qinling Station. The translated text unfolds in the same logical order, ensuring the integrity and coherence of the information. The sentence in the translated text "Over the coming months, researchers will build the supporting infrastructure for the Qinling Station in Antarctica" not only retains the time and task information of the original text but also accurately conveys the meaning of "配套设施设备建设" through "supporting infrastructure", meeting the requirements of textual equivalence.

In addition, when reporting on President Xi Jinping's congratulatory letter, the original text emphasizes the great significance of the completion of the Qinling Station for global scientific exploration. The translated text also achieves this by accurately rendering the phrase "provide a strong guarantee for scientists in China and around the world," thereby retaining the tone and intention of the original. This precise handling of text structure and information transmission ensures that the translation is highly consistent with the original text in terms of logic and coherence, thus achieving textual equivalence.

3.4. Cultural equivalence

Cultural equivalence is an important dimension in the Functional Equivalence Theory. It requires that in the process of information transmission, the translation should take into account the cultural connotations of both the source language and the target language. In the English translation of current affairs news in China Daily, the handling of cultural equivalence is particularly crucial. For example, when reporting on China's Qinling Station in Antarctica, the original text states that "the main body of the Qinling Station is designed in the shape of the Southern Cross, and the design concept is derived from the Southern Cross navigation used by Zheng He, a Chinese navigator during his voyages to the Western Seas." In the English translation, it is simplified to "the station's design is inspired by the Southern Cross used in ancient Chinese navigation". Although the basic cultural image is retained, the expression "Zheng He's voyages to the Western Seas", which has a profound cultural background, is omitted. This may lead to –the lack of in-depth understanding of the cultural connotation by target - language readers. This approach sacrifices the integrity of cultural equivalence to a certain extent, but it is in line with the general level of international readers' understanding of Chinese cultural backgrounds.

In another case, President Xi Jinping mentioned in his speech at the APEC Economic Leaders' Meeting that "An ancient Chinese saying goes, '道之所在，虽千万人吾往矣。' " The English translation is "An ancient Chinese sage said, 'For a righteous cause, I shall press forward, undaunted by thousands standing in my way.' " This translation not only retains the cultural image of the original text but also makes it more in line with English expression habits through free translation. At the same time, it conveys the value of "upholding justice" in Chinese culture. This translation strategy is relatively advocated in handling cultural equivalence. It not only preserves the cultural connotation but also avoids cultural barriers, reflecting the flexibility and effectiveness of the Functional Equivalence Theory in cross - cultural communication.

4. Conclusion

4.1. Major Findings

In the English translations of political news from China Daily, key terms and proper nouns are accurately rendered. For instance, the professional term "考察队" is appropriately translated as "expedition team," and the place name "秦岭站" is translated in accordance with international standards. Secondly, China Daily's translations adjust Chinese sentence structures to align with English grammar, such as adding temporal clauses or converting

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parallel structures. Furthermore, China Daily's translations retain the overall structure and information of the original news, ensuring readers understand the mission, objectives, and significance of events like Antarctic expeditions. Lastly, China Daily preserves cultural concepts and provides explanations when necessary, such as the cultural significance of the design inspiration for Qinling Station, which is derived from the Southern Cross constellation used by the Chinese navigator Zheng He.

In conclusion, the application of the Functional Equivalence Theory to political news translation could apply to maintain the accuracy of the original text while ensuring that the English version is natural and comprehensible to English-speaking readers, adhering to the principles of "faithfulness, expressiveness, and readability."

4.2. Limitation and future recommendation

This study applies Functional Equivalence Theory to political news translation, exploring its implementation across multiple dimensions to broaden theoretical perspectives and provide new research directions. It offers practical translation strategies to improve translation quality, ensuring accurate cross-cultural communication of China's political discourse and enhancing global understanding of its political stance. By emphasizing the balance between information and cultural connotations, the study provides valuable insights for cross-cultural news dissemination, promoting deeper intercultural communication. However, the research has limitations, including the small sample from China Daily, which may limit the generalization of the findings. Such static analytical methods may fail to capture dynamic language and cultural changes, and the analysis of cultural equivalence relies on limited cases. Future research should expand the range of news sources and themes, conduct longitudinal studies to track translation strategy changes, and explore the dynamic impact of cultural backgrounds on reader reception. Additionally, integrating interdisciplinary approaches from sociology and psychology could deepen the analysis of political news translation, enhance its effectiveness and influence in international communication. These improvements would provide more comprehensive and timely guidance for translation practice.

References

[1] Nida, E. A. : Toward a science of translating (Brill Academic Pub, Netherlands 1964).

[2] Newmark, P. : Approaches to translation (Pergamon Press, UK 1981).

[3] Catford, J. C. : A Linguistic Theory of Translation: An Essay in Applied Linguistics (Oxford University Press, UK 1965).

[4] Nord, C. : Text analysis in translation: theory, methodology, and didactic application of a model for translation-oriented text analysis (Routledge, UK 1992).

[5] Bassnett, S. : Translation studies (Routledge, UK 2013).

[6] Huntington, S. P. : The clash of civilizations and the remaking of world order, Long Range Planning, Vol.30 (1997) No.6, p.954-955.

[7] Conway, K. : What is the role of culture in news translation? A materialist approach, Perspectives, Vol.23 (2015) No.4, p.521-535.

[8] Kalantari, E. : Journalistic translation: A gate at which journalism studies and translation studies meet, Journalism, Vol.23 (2022) No.1, p.1411-1429.

[9] Newmark, P. : A textbook of translation (Prentice Hall, USA 1988).

[10] Fairclough, N. : Language and Power (Routledge, UK 2001).

[11] Simpson, P. : Language, Ideology and Point of View (Routledge, UK 1993).

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Xunzi's "Theory of Inherent Evil in Human Nature": An Analysis of Human Nature in Early Chinese Confucianism

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Abstract

As a synthesizer of pre-Qin Confucian thought, Xunzi's "theory of innate human evil" breaks through the traditional Confucian framework of understanding human nature, constructing a dialectical view of humanity centered on "transforming nature through conscious exertion" (hua xing qi wei). Through textual analysis and comparative intellectual history, this paper systematically elucidates the theoretical core of Xunzi's "theory of innate human evil": while human nature inherently tends toward self-interest and harm avoidance, ethical order can be reshaped through ritual-legal education (li fa jiao hua) and moral practice, thereby achieving the "distinction between innate nature and cultivated artifice" (xing wei zhi fen). The study argues that Xunzi, taking "innate evil" as his logical starting point, proposes a governance path integrating rites and laws. This approach not only provided an ideological solution for social integration during the late Warring States period but also expanded the practical dimensions of Confucianism through critical inheritance of the doctrines of Confucius and Mencius. His theory laid the foundation for ancient Chinese ethical systems, profoundly influencing the "outer governance" (wai wang) tradition and contemporary reflections on human nature.

Keywords

Xunzi; theory of innate human evil; transforming nature through conscious exertion (hua xing qi wei); ritual-legal education (li fa jiao hua); Confucian thought.

1. Introduction

Xunzi (c. 313–238 BCE), a pivotal Confucian thinker of the late Warring States period, served three times as the chancellor of the Jixia Academy in the state of Qi. His philosophy synthesized Confucian and Legalist principles, advocating for the integration of "rites and laws" (*li fa jianshi*) and the balanced use of "kingly virtue and hegemonic power" (*wang ba bingyong*). Confronting the social chaos of his era—marked by feudal wars, moral decay, and the collapse of ritual order—Xunzi proposed the provocative thesis that "human nature is inherently evil; what is good arises from conscious artifice" (*ren zhi xing e, qi shan zhe wei ye*). This assertion fundamentally challenged Mencius's mainstream doctrine of "innate human goodness" (*xing shan lun*), redefining human nature as rooted in primal desires and emphasizing the decisive role of acquired education in moral cultivation. Existing scholarship has often framed Xunzi's "theory of innate human evil" (*xing e lun*) in opposition to orthodox Confucianism, overlooking its intrinsic practical logic. This paper contends that the essence of Xunzi's theory lies in its dialectical framework of "distinguishing innate nature from cultivated artifice" (*xing wei zhi fen*). By mediating between natural instincts and social norms through ritual-legal institutions, Xunzi expanded individual moral cultivation into a blueprint for sociopolitical governance. Drawing on core texts such as *Xing E* (On Human Nature), *Li Lun* (Discourse on Ritual), and *Quan Xue* (Encouraging Learning), and contextualizing his thought within the historical turbulence of the late Warring States period, this study systematically elucidates the theoretical depth of "transforming nature through conscious exertion" (*hua xing qi wei*). It further reveals the profound impact of Xunzi's ideas on the Confucian ethical system and the formation of

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China's "ritual-legal state" (*li fa guojia*) model, ultimately re-evaluating the enduring theoretical value of his philosophy.

2. Literature Review

Academic research on Xunzi's "theory of innate human evil" (*xing e lun*) has evolved over a century, forming a multidimensional interpretive framework. Early domestic studies focused on the oppositional structure between Xunzi's and Mencius's theories of human nature. Liang Qichao pioneered the "complementarity thesis," arguing that Xunzi's "theory of innate human evil," grounded in "natural desires," and Mencius's "theory of innate human goodness" (*xing shan lun*) together constitute the practical foundation of Confucian ethics.[1] Feng Youlan further elucidated the core of Xunzi's thought through the concept of "transforming nature through conscious exertion" (*hua xing qi wei*), emphasizing the corrective function of rites and laws (*li fa*) in restraining innate tendencies.[2]

With shifts in academic paradigms, Li Zehou transcended the binary opposition framework by reconstructing "innate human evil" as a "theory of natural humanity" (*ziran renxing lun*). He highlighted Xunzi's governance logic, which harmonizes natural instincts with social order through the integration of rites and laws.[3] Chen Lai advanced a "dynamic ethical perspective," proposing that moral education (*jiao hua*) mediates the tension between desires and ethics, thereby transforming Confucianism from idealism to institutional pragmatism.[4] Liao Mingchun clarified that Xunzi's notion of "nature" (*xing*) refers to innate instincts, while "artifice" (*wei*) denotes acquired cultivation, asserting their dialectical unity.[5] Liang Tao further argued that Xunzi's theory is not a simplistic advocacy of "innate evil" but a nuanced structure of "evil nature with a good heart" (*xing e xin shan*), emphasizing the practical potential of moral agency.[6] Wang Yi and Guan Zhangmei analyzed the practical pathways of "transforming nature through conscious exertion" from the perspective of moral cultivation, underscoring the synergy between "learning" (*xue*) and "action" (*xing*) in Xunzi's thought.[7]

In Western Sinology, comparative philosophical approaches dominate. Philip J. Ivanhoe juxtaposed Xunzi with Hobbes, noting their shared premise of "human self-interest" but distinguishing Xunzi's emphasis on ritual-legal education in shaping collective ethics over coercive authority.[8] Roger T. Ames, through a process-philosophical lens, aligned Xunzi's concept of *wei* (artifice) with John Dewey's theory of "habit formation," revealing parallels in their views on ethical praxis.[9] Bryan W. Van Norden critiqued the potential "moral vacuum" in Xunzi's political philosophy as it assimilated Legalist governance principles.[10] Edward Slingerland employed cognitive science to reinterpret *hua xing qi wei* as a "cultural adaptation mechanism," correlating it with social psychological theories of habitual behavior.[11]

3. Cognition of Human Nature and Observations on Good and Evil

3.1. Theoretical Framework and Core Proposition of Xunzi's Theory of Human Nature

Xunzi's approach to understanding human nature diverges significantly from other Confucian thinkers. He prioritized analytical reasoning and logical deduction, emphasizing a rigorous investigation into the essence of humanity. In his *Xing E* (On Human Nature), he states: *"Human nature is inborn from Heaven… It cannot be learned or acquired through effort; what exists inherently in humans is called 'nature'"*. This definition starkly contrasts with Mencius's *xing shan lun* (theory of innate human goodness), which posits moral potential as the essence of human nature. For Xunzi, morality is a product of acquired cultivation, not an innate endowment. In *Zheng Ming* (Rectifying Names), he further clarifies: *"What is unlearned and spontaneous is called 'nature'"*. This underscores that Xunzi's conception of *xing* (nature) refers

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to humanity's primal instincts—innate tendencies toward self-interest and harm avoidance. As Liao Mingchun notes, such instincts are neither replaceable by human artifice (*wei*) nor divorced from it; rather, they serve as the raw material for ethical transformation.[5]

The opening line of *Xing E*—*"Human nature is inherently evil; what is good arises from conscious artifice"*—encapsulates the core of Xunzi's theory. His claim of *xing e* (innate evil) does not imply total depravity but warns that unrestrained natural desires inevitably lead to social conflict and disorder. By centering moral practice on external education rather than "inner expansion" (as in Mencius), Xunzi reoriented Confucian ethics toward pragmatic governance.

3.2. Historical Misinterpretations and Theoretical Refinement

Historically, thinkers often misread Xunzi's *xing e lun*. Criticisms such as *"Xunzi's theory is extreme; the mere assertion of 'innate evil' undermines its foundation"*[12] or *"There is no need to engage with Xunzi—focus instead on Mencius's 'innate goodness'"*[13] reflect a shallow interpretation of his nuanced argument. Revisiting *Xing E*'s thesis, it becomes clear that Xunzi sought not to vilify human nature but to establish a dialectic between *xing* (nature) and *wei* (artifice). As seen in chapters like *Li Lun* (Discourse on Ritual) and *Quan Xue* (Encouraging Learning), Xunzi acknowledges humanity's latent capacity for moral growth: *"Humans possess the potential to comprehend benevolence, righteousness, and laws, as well as the means to enact them"*. Thus, as Liang Tao argues, Xunzi should not be labeled a mere "proponent of innate evil" but rather a "theorist of ethical artifice" (*shan wei lun*) or even a "neutralist" who views nature as neither inherently good nor evil.[6] The transformative power of *wei*—deliberate cultivation through rites, laws, and education—remains the cornerstone of his philosophy.

4. Innate Human Evil and Ethical Transformation

Xunzi posits that human nature is inherently inclined toward "evil" due to primal impulses rooted in self-interest and sensory desires. He argues that without external constraints and moral cultivation, individuals would inevitably descend into conflict and chaos. In *Xing E* (On Human Nature), he states: *"Humans are born with a fondness for profit… with envy and hatred… and with desires of the eyes and ears"*. These innate tendencies, while not inherently immoral, become sources of ethical discord if left unchecked. Thus, Xunzi emphasizes *"transforming nature through conscious exertion"* (hua xing qi wei), where *"wei"* (conscious artifice) refers to the deliberate effort to reshape innate impulses into socially sanctioned virtues.

4.1. Mechanisms of Ethical Transformation: Hua Xing Qi Wei

The mechanism of *hua xing qi wei* hinges on three interrelated strategies:

1. Ritual-Legal Education (li fa jiao hua): Xunzi asserts that rituals (li) and laws (fa) serve as external frameworks to guide behavior. In Li Lun (Discourse on Ritual), he writes: "Without innate nature, artifice would lack material to act upon; without artifice, nature could never beautify itself". Rituals instill moral habits, while laws deter harmful conduct, collectively molding raw human instincts into ethical dispositions.

2. Self-Cultivation Through Learning: Xunzi elevates education as the cornerstone of moral transformation. In Quan Xue (Encouraging Learning), he declares: "Human nature lacks ritual principles; thus, one must study to acquire them… Nature does not inherently know ritual principles; thus, one must reflect to understand them". Through relentless study and introspection, individuals internalize ethical norms, gradually replacing instinctual drives with cultivated virtues.

3. Practice and Habituation: Ethical knowledge, for Xunzi, must translate into action. In Ru Xiao (The Teachings of the Ru), he states: "Knowing is not as good as doing". Moral principles become ingrained only through repetitive practice, transforming abstract ideals into reflexive behaviors.

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Edward Slingerland analogizes this process to "cultural adaptation," where ritualized actions reshape innate tendencies into socially coherent habits.[11]

4.2. Potential for Ethical Transformation and Transcending Fatalism

Xunzi's optimism lies in his belief that all humans possess the *potential* for ethical transformation. As he notes in *Xing E*: *"Every person on the street has the capacity to become a sage like Yu… Though not all may achieve it, none are barred from striving"*. This potential is grounded in humanity's unique ability to comprehend and enact moral norms—a distinction separating humans from animals. Philip J. Ivanhoe observes that while Xunzi shares Hobbes's premise of self-interested human nature, he diverges by prioritizing communal ethics shaped by education over coercive authority.[8]

Ultimately, Xunzi's theory transcends fatalism. By framing morality as a dynamic interplay between innate tendencies and conscious effort, he offers a pragmatic path to ethical progress—one that acknowledges human frailty while affirming the transformative power of culture and discipline.

5. Ethical Reconstruction and Sociopolitical Governance

Xunzi's advocacy for the "theory of innate human evil" (*xing e lun*) emerged as a direct response to the sociopolitical turmoil of the late Warring States period (475–221 BCE). During this era, incessant warfare among feudal states—epitomized by the phrase *"contending for land, they fill fields with corpses; contending for cities, they fill streets with blood"*[14]—exposed the destructive consequences of unbridled human desires. Xunzi identified unrestrained self-interest as a root cause of societal collapse and sought to address it through a dual strategy of ethical reconstruction and institutional governance.

5.1. Ritual-Legal Systems as Ethical Frameworks

Xunzi posited that natural human inclinations, while inherently self-serving, could be redirected toward social harmony through the imposition of *li* (rituals) and *fa* (laws). In *Li Lun* (Discourse in Ritual), he argues:*"Rituals arise from the need to nourish human desires… They distinguish boundaries, eliminate strife, and nurture collective flourishing"*. Rituals, in this context, function as codified moral norms that cultivate virtuous habits, while laws serve as coercive mechanisms to deter harmful behaviors. This *"integration of rites and laws"* (li fa jianshi) formed the backbone of Xunzi's governance model, bridging individual morality with statecraft.

5.2. From Moral Idealism to Institutional Pragmatism

Unlike Mencius, who grounded ethics in innate moral potential, Xunzi shifted Confucianism toward a pragmatic focus on cultivated order. Chen Lai observes that Xunzi's *"dynamic ethical perspective"* transformed Confucian thought from abstract idealism into a blueprint for institutional design.[4] For instance, the Han Dynasty scholar Dong Zhongshu later adopted Xunzi's insights in his *"three grades of human nature"* (*xing san pin shuo*), which stratified individuals based on their capacity for moral improvement and justified hierarchical governance.[6]

5.3. Balancing Freedom and Constraint

Xunzi's theory acknowledges the tension between individual autonomy and social stability. While he affirmed the inevitability of human desires, he insisted that *"moral norms are corrective measures imposed by society upon innate* nature*"*.[15] This necessitated a delicate equilibrium: institutions must restrain destructive impulses without stifling human agency. Philip J. Ivanhoe draws parallels between Xunzi and Hobbes, noting both philosophers' emphasis on governance to curb chaos. However, Xunzi diverges by prioritizing moral education over punitive control, envisioning a society where ritualized practices (*wei*) gradually internalize ethical norms.[8]

5.4. Legacy and Contemporary Relevance

Xunzi's ideas laid the groundwork for China's *"ritual-legal state"* (*li fa guojia*), a governance model that endured through imperial dynasties. His dialectical approach—*"natural instincts provide the raw material; conscious artifice shapes them into virtue"*—resonates with modern discourses on cultural conditioning and behavioral ethics. Edward Slingerland's cognitive interpretation frames hua xing qi wei as a "cultural adaptation mechanism" akin to social psychology's "habit formation" theories, underscoring its interdisciplinary relevance.[11]

In contemporary contexts, Xunzi's thought offers dual insights:

1. Institutional Design: Legal and educational systems must account for human fallibility, employing both guidance and restraint.

2. Moral Cultivation: Ethical behavior arises not from innate purity but from disciplined practice—a notion echoed in John Dewey's pragmatism.[9]

By reconciling realism with idealism, Xunzi's *xing e lun* remains a vital framework for understanding the interplay between human nature, ethics, and governance.

6. Conclusion

Xunzi's "theory of innate human evil" (*xing e lun*) achieves theoretical breakthrough through its dialectical duality: it acknowledges the objective existence of humanity's natural instincts while asserting the transformative potential of ritual-legal education (*li fa jiao hua*). This dynamic view of human nature dismantles the traditional Confucian binary of "good versus evil," constructing instead a practical ethical system grounded in the interplay between nature and artifice (*xing wei hudong*). From a historical perspective, Xunzi's concept of *"transforming nature through conscious exertion"* (*hua xing qi wei*) reoriented Confucianism from the moral idealism of Confucius and Mencius toward actionable governance strategies. His synthesis of rites and laws (*li fa jianshi*) provided a theoretical prototype for the institutional foundations of the Qin and Han empires. As Li Zehou notes, this "unity of natural instincts and social order" enabled Confucian ethics to transcend the limitations of clan-based morality, evolving into a universal framework for societal regulation.[3]

6.1. Methodological Innovations

Xunzi's theory exhibits a distinctive practical rationality. By framing morality through the lens of *"distinguishing nature from artifice"* (*xing wei zhi fen)*, he transforms abstract ethical principles into quantifiable processes of self-cultivation. The incremental path of *"accumulating goodness to attain virtue"* (*ji shan cheng de*), as outlined in *Quan Xue* (Encouraging Learning*)*, concretizes moral ideals into behavioral norms. This "praxis-oriented tradition" (*gongfu lun)* profoundly influenced later Confucian movements, notably the Neo-Confucian doctrine of *"investigating things to extend knowledge"* (*gewu zhizhi*) advocated by Zhu Xi, who echoed Xunzi's caution against unrestrained desires in his maxim *"preserve Heavenly Principle, eliminate human desires"* (*cun tianli, mie renyu*).[2]

Crucially, Xunzi avoids moral determinism. In *Jie Bi* (Dispelling Obsessions), he asserts: *"The mind is the ruler of the body"*, emphasizing the agency of conscious intent in ethical practice. This "evil nature with a good heart" (*xing e xin shan)* framework introduces a nuanced dimension to Confucian theories of mind and nature, bridging innate tendencies with moral aspiration.

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6.2. Theoretical Legacy and Contemporary Relevance

Xunzi's *xing e lun* remains a philosophy of profound intellectual depth and enduring influence. By foregrounding the complexity of human nature and the role of cultural conditioning, his ideas provided theoretical underpinnings for the structural development of social morality in ancient China. The "constructive tension" in his thought—combining a sober recognition of human frailty with confidence in ethical progress—offers a "realist idealism" that continues to resonate.

In modern contexts, Xunzi's insights illuminate debates on:

1. Human-Society Dynamics: How institutions can balance individual autonomy with collective welfare.
2. Cultural Adaptation: The mechanisms by which ethical norms are internalized through practice, as explored in Slingerland's cognitive studies.[11]
3. Moral Education: The necessity of integrating habituation (Dewey's "habit formation") with rational discourse.[9]

While Xunzi's theory has limitations—such as its potential over-reliance on external norms—its capacity to harmonize realism and idealism solidifies its position as a critical nexus between Confucian "inner *sageliness*" (*nei sheng*) and *"outer governance"* (*wai wang*). As a philosophical legacy, it continues to inform contemporary reflections on human nature, ethical practice, and the challenges of civilizational transformation.

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References

[1] Liang Qichao: History of Pre-Qin Political Thought (The Commercial Press, China 2014, p.113-121).

[2] Feng Youlan: A History of Chinese Philosophy (Vol. 1) (The Commercial Press, China 2011, p.306-321).

[3] Li Zehou: The History of Ancient Chinese Thought (SDX Joint Publishing Company, China 2017, p.94-109).

[4] Chen Lai: Ancient Religion and Ethics: The Roots of Confucian Thought (SDX Joint Publishing Company, China 2005, p.290-316).

[5] Liao Mingchun: A Re-examination of Xunzi's Theory of Human Nature, Jilin University Social Sciences Journal, Vol. 13 (1992) No.6, p.70-76.

[6] Liang Tao: Rectifying Xunzi's Theory of Human Nature: On Xunzi's Evil Nature and Good Heart, Philosophical Research, Vol. 10 (2015) No.5, p.71-80.

[7] Wang Yi, Guan Zhangmei: An Analysis of Xunzi's Theory of Moral Cultivation, Ethics Research, Vol. 13 (2006) No.3, p.62-66.

[8] Ivanhoe, P. J: Ethics in the Confucian Tradition (Hackett Publishing, America 2002).

[9] Ames, R. T: Thinking Through Confucius (SUNY Press, America 1987).

[10] Van Norden, B. W: Introduction to Classical Chinese Philosophy (Hackett Publishing, America 2011, p.298-304).

[11] Slingerland: E. Mind and Body in Early China, Journal of the American Academy of Religion, Vol. 81 (2013) No.2, p.290-320.

[12] Cheng Hao, Cheng Yi: Collected Works of the Cheng Brothers: Henan Chengshi Yishu (Vol. 19) (Zhonghua Book Company, China 2004).

ISSN: 2710-0170

[13] Li Jingde: Classified Conversations of Master Zhu (Vol. 137) (Zhonghua Book Company, China 1986).

[14] Mencius. Mencius: Li Lou I (Zhonghua Book Company, China 2010).

[15] Wang Herui: Reflections on the Enlightenment of Xunzi's Theory of Evil Human Nature, Science Education and Culture, Vol. 203 (2009) No.21, p.239.

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Pathways to Low Turnover Intention Among Social Work Supervisors in China: A Configurational Perspective

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Abstract

Recent years have witnessed escalating turnover intention among Chinese social workers, posing systemic challenges to workforce stability in the sector. Intriguingly, social work supervisors demonstrate comparatively low turnover intention despite this trend, necessitating an investigation into its causal mechanisms. Leveraging the "individual-organization-family triad model" and data from the 2019 China Social Work Longitudinal Survey (CSWLS), this study applies fuzzy-set Qualitative Comparative Analysis (fsQCA) to decode how configurations across personal, organizational, and familial dimensions jointly shape supervisors' low turnover intention. Findings reveal three key insights: (1) Low turnover intention emerges only through synergistic interactions of cross-level conditions, no single factor suffices as a necessary cause. (2) The driving pathways for low turnover intention among social work supervisors can be categorized into two primary categories: individual-organization-driven pathways and organization-family-driven pathways. (3) Family support serves as a critical buffer, mitigating the negative effects of external stressors on sustaining low turnover intention. The findings of this study not only delineate the configurational conditions underlying low turnover intention among social work supervisors but also reveal pathways of protective factor combinations that enhance workforce stability in the social work profession. These insights provide an empirical foundation for addressing the talent retention crisis in the sector and advancing the quality of professional services.

Keywords

Social Work Supervisors; Turnover Intention; Qualitative Comparative Analysis (QCA); Configurational Perspective; Pathway Analysis.

1. Introduction

Social work, as a critical component of modern social governance systems, relies heavily on the stability of its professional workforce to ensure the quality of public services and the efficacy of social governance. By the end of 2022, China had 931,000 certified social workers, including 725,000 assistant social workers and 204,000 licensed social workers [1]. However, the profession faces significant challenges with high turnover rates, exceeding an annual average of 20%. For instance, in the Yangtze River Delta and Pearl River Delta regions—areas with relatively advanced social work sectors—the turnover rate in Nanjing hovered around 20% in 2013 [2], while Guangzhou reported a rate as high as 24.55% in 2014 [3]. Such high mobility not only disrupts the continuity of social work service programs but also impedes the accumulation of practical experience and sustainable industry development [4,5].

Notably, social work supervisors, a specialized subgroup within the profession, exhibit significantly lower turnover intentions compared to frontline practitioners. Investigating the causes and pathways of their low turnover intention, and exploring how these insights can inform broader talent retention strategies, has thus become an urgent priority for advancing

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social work in China. Furthermore, while actual turnover behavior is often context-dependent and unpredictable, compromising its empirical validity [6,7], turnover intention—a well-established precursor to turnover behavior—demonstrates robust predictive power [8,9]. This has led to a scholarly consensus on treating turnover intention as a direct antecedent for empirical research [10].

Existing studies predominantly focus on single-level determinants, failing to capture the synergistic mechanisms of multidimensional factors. Qualitative Comparative Analysis (QCA) offers a methodological breakthrough by transcending the limitations of traditional linear regression, enabling the exploration of interactive effects among multiple conditions through a configurational lens [11]. Building on prior research, this study adopts a triadic "individual-organization-family" framework and employs fuzzy-set Qualitative Comparative Analysis (fsQCA) to analyze 2019 data from the China Social Work Dynamic Survey. By examining the conditional configurations underlying low turnover intention among social work supervisors, we aim to identify protective factor configurations that enhance workforce stability, thereby providing an empirical foundation for addressing talent attrition and improving service quality in the social work sector.

2. Literature review

2.1. Turnover Behavior and Turnover Intention

In the field of management studies, "turnover" is defined as the process by which individuals terminate their organizational membership after receiving material benefits from the organization [10]. Turnover behavior can be categorized into two types: voluntary turnover and involuntary turnover. Voluntary turnover refers to employees actively dissolving their employment relationships with an organization based on personal choice, whereas involuntary turnover occurs when an organization unilaterally terminates the employment relationship for specific reasons [12]. Frequent voluntary turnover negatively impacts organizational human capital allocation and service quality [13]. Due to the high contingency and unpredictability of actual turnover behavior, which complicates its empirical measurement [6,7], researchers often prioritize turnover intention—a well-established precursor strongly correlated with actual turnover behavior [8,9]—as the primary antecedent variable for investigation [10].

Turnover intention denotes the likelihood of individuals changing jobs within a defined timeframe, reflecting a psychological state preceding turnover behavior [8]. Existing research on turnover intention falls into two streams: macro-level studies, which explore causes of turnover intention from individual and organizational dimensions, and micro-level studies, which focus on turnover intention among specific occupational groups, such as state-owned enterprise employees [14], healthcare workers [15,16], and young faculty members [17].

2.2. Research on Factors Influencing Turnover Intention Among Social Work Supervisors

Current scholarship focusing specifically on turnover intention among social work supervisors remains scarce, as academic attention has predominantly centered on social workers as a general cohort. Existing studies can be categorized into three dimensions:

2.2.1. Individual-Level Factors

These factors are subdivided into work-unrelated (e.g., age, gender) and work-related (e.g., professional competence, occupational identity) dimensions [12]. Research has identified notable patterns:

Demographic trends: Older social workers typically exhibit lower turnover intention, while males report higher turnover intention compared to females [14–16]; Professional attributes: Paradoxically, higher professional qualifications (e.g., social work certifications) correlate with

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elevated turnover intention [18], likely due to heightened expectations mismatched with organizational realities. Conversely, strong professional identity and sense of belonging demonstrate significant negative associations with turnover intention [19–21].

2.2.2. Organizational-Level Factors

Key variables include job stress, workplace support, job autonomy, and job rewards. Job stress: Excessive workloads and emotional exhaustion substantially increase turnover intention [22–24]; Support systems: Collegial and supervisory support enhance organizational commitment, thereby reducing turnover intention [4,25]; Job autonomy: Greater decision-making autonomy improves job satisfaction and engagement, acting as a protective factor against turnover [26,27]; Reward structures: Both extrinsic rewards (e.g., salary) and intrinsic rewards (e.g., personal fulfillment) negatively correlate with turnover intention [28].

2.2.3. Family-Level Factors

Diverging from Western perspectives, Chinese studies emphasize the unique role of familial dynamics [20, 29]: Familial influence: Family members' opinions significantly shape career decisions, with marital status yielding divergent findings. Some studies indicate higher turnover intention among unmarried social workers due to familial obligations [20, 30], while others report negligible effects [31]. Network resources: Strong family networks enhance perceived social support, mitigating job stress and improving retention [32].

In 2019, Zeng et al. systematically synthesized international frameworks to propose a triadic "individual-organization-family" model for explaining turnover intention among Chinese social workers. Through hierarchical regression analysis of nationally representative survey data, they empirically validated the independent explanatory power of these three dimensions, establishing the model's theoretical robustness in China's context [20].

Current literature predominantly examines linear relationships between isolated factors and turnover intention, neglecting configurational interactions across multiple conditions. Furthermore, studies overwhelmingly treat social workers as a homogeneous group, with minimal attention to supervisors as a distinct subgroup. This study employs Qualitative Comparative Analysis (QCA) to investigate how the combinatorial effects of individual, organizational, and familial factors shape turnover intention among social work supervisors.

3. Research design

3.1. Research Framework

This study constructs a multidimensional analytical framework (Figure 1) for social work supervisors' turnover intention, grounded in the triadic "individual-organization-family" model and enriched by empirical insights. At the individual level, it transcends traditional demographic explanations by foregrounding professional identity as core psychological capital [33], operationalizing professional certifications (e.g., licensure) to measure competency [20]. At the organizational level, the framework integrates dual occupational rewards: material incentives (salary levels) [20] and innovative intrinsic metrics (job fulfillment) tailored to social work's emotional labor-intensive nature [34]. At the family level, it preserves cultural validity by measuring both normative influence (family members' opinions) and economic interdependence (Proportion of Family Income) [20], thereby encapsulating China's family-centric norms. This synthesis advances prior research by contextualizing cultural specificity, methodologically bridging extrinsic/intrinsic reward mechanisms, and dissecting multilevel conditionality through a configurational lens, offering a holistic tool to unravel retention dynamics in China's nonprofit sector.

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3.2. Research methods

As an integrative methodological tool bridging qualitative and quantitative paradigms [35], Qualitative Comparative Analysis (QCA) leverages set theory and Boolean algebra to examine how configurational interactions of antecedent conditions produce observed outcomes, thereby transcending traditional statistical assumptions of variable independence and linearity [36]. Distinct from conventional methods that isolate net effects of single variables, QCA offers dual analytical strengths: (1) identifying complementary and substitutive relationships among conditions through configurational pathways, and (2) adopting a holistic case-oriented perspective that synthesizes in-depth case analysis with variable-based generalization. Suitable for diverse sample sizes, QCA manifests in three forms—csQCA (dichotomous data), mvQCA (multi-value categorical data), and fsQCA (continuous data) [37]. This study employs fuzzy-set QCA (fsQCA) to address the nuanced gradations inherent in social work supervisors' turnover intention. By assigning partial membership scores (0–1), fsQCA captures "degrees of belonging" and transitional states, effectively modeling the interplay of multidimensional continuous variables that defy binary categorization [37]. This approach aligns with the study's triadic framework, enabling the identification of non-linear thresholds and asymmetric causal patterns, thus advancing a culturally and methodologically contextualized understanding of retention dynamics in China's social work sector.

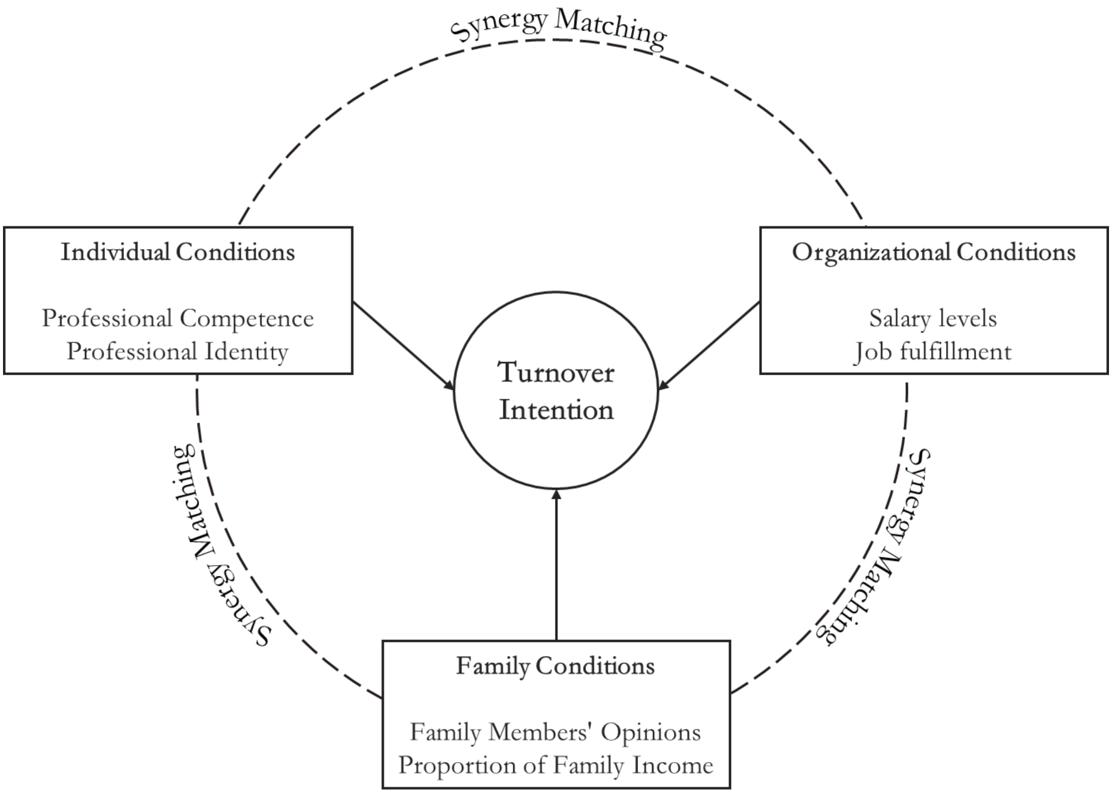

Figure 1: Research framework

3.3. Data Sources

This study utilizes cross-sectional data from the 2019 China Social Work Dynamic Survey, a pioneering large-scale longitudinal sampling survey initiated by East China University of Science and Technology to investigate developmental trends in China's social work sector. As the nation's first survey dedicated to tracking industry dynamics [38], the China Social Work Dynamic Survey employs stratified random sampling to ensure representativeness across regions and institution types. From this dataset, we extracted a subsample of social work supervisors (N = 244 valid cases) after excluding cases with missing data.

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3.4. Measurement of Outcomes and Antecedent Conditions

3.4.1. Turnover Intention

Turnover intention was measured using a 3-item Turnover Intention Scale from the China Social Work Longitudinal Survey (CSWLS), including statements such as "I intend to leave my current organization within the next six months." Responses were recorded on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The mean score of these items served as the final measure, with higher scores indicating stronger turnover intention.

3.4.2. Professional Competence

Professional competence was assessed based on the hierarchical level of social work certifications held by supervisors: No certification: Assigned a value of 1; Junior Social Worker Certification: Assigned a value of 2; Senior Social Worker Certification: Assigned a value of 7(Assignment of values in proportion to the number of license holders in the country).

3.4.3. Professional Identity

Professional identity was measured using a 7-item Professional Identity Scale from the CSWLS, including items such as "Advancing social work is central to my life's purpose." Responses were averaged (1 = strongly disagree; 5 = strongly agree), with higher scores indicating stronger professional identity.

3.4.4. Salary Levels

Monthly income was directly captured by the CSWLS question D18: "What is your current monthly take-home salary (in RMB)?"

3.4.5. Job Fulfillment

Job fulfillment was evaluated using an 8-item Personal Achievement Scale from the CSWLS, including statements like "I feel energized in my work." The mean score (1 = strongly disagree; 5 = strongly agree) served as the final measure, with higher scores indicating greater fulfillment.

3.4.6. Family Members' Opinions

Family members' attitudes toward turnover were assessed via two 5-point Likert items: "My parents/spouse believe I should remain in my current job." The mean score (1 = strongly disagree; 5 = strongly agree) was calculated, with higher scores reflecting stronger familial opposition to turnover.

3.4.7 Proportion of Family Income

This study used two specific questions to calculate the proportion of social workers' income in the total family income: "The annual income of family members 1, 2, and 3" and "What is your monthly take-home pay?". The specific calculation was as follows:

$$Proportion\ of\ Family\ Income = \frac{Supervisor's\ Monthly\ Salary \times 12}{Supervisor's\ Monthly\ Salary\ \times\ 12\ +\ \sum_{i=1}^{3} Income\ of\ Family\ Members\ i}$$

To enhance analytical interpretability, the calculated values were scaled by a factor of ten prior to their inclusion in subsequent analyses.

4. Data analysis

4.1. Descriptive Analysis of Variables

To elucidate the baseline characteristics of key variables, this study conducted preliminary descriptive analyses on the dataset, with results summarized in Table 1.

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Table 1: Descriptive Analysis of Outcome and Conditional Variables

Variable	Total	Mean	SD	Min	Max
Turnover Intention	244	2.376	0.956	1.000	5.000
Professional Competence	244	4.250	2.734	1.000	7.000
Professional Identity	244	3.344	0.524	1.143	4.000
Salary levels	244	5298.785	2011.761	500.000	15000.000
Job fulfillment	244	4.260	1.128	0.375	6.000
Family Members' Opinions	244	2.994	1.066	1.000	5.000
Proportion of Family Income	244	2.660	1.234	0.282	9.230

Note: All data are retained to three decimal places.

The data presented in Table 1 reveal that the turnover intention of social work supervisors has a mean score of 2.376, indicating a moderate to low level, which is significantly lower than that of the general social worker population across China. In the dimension of professional competence, supervisors achieved a standardized score of 4.250, markedly exceeding the national average for social workers and underscoring their professional superiority. Regarding professional identity, the mean score reaches 3.344, significantly higher than the national benchmark group, reflecting strong organizational commitment and internalization of professional values. Notably, in terms of economic compensation, the average monthly salary for supervisors is 5,298.785 RMB, representing a 42.1% increase compared to the national average social worker salary of 3,728.722 RMB. The substantial standard deviation of 2,011.761 RMB highlights pronounced regional disparities in compensation levels.

4.2. Data calibration

In fuzzy-set Qualitative Comparative Analysis (fsQCA), each antecedent condition and outcome variable is treated as a distinct fuzzy set, while data calibration involves calculating the degree of membership of each case within these sets [39]. Building on established methodologies, this study employs the direct calibration method to transform raw data into fuzzy-set membership scores. Specifically, the 90th, 50th, and 10th percentiles of the sample data are designated as the thresholds for full membership, crossover point, and full non-membership, respectively, enabling nonlinear transformation of raw data into fuzzy-set membership scores within the [0,1] interval [40]. Furthermore, to mitigate logical inconsistencies arising from fsQCA software's handling of 0.5 membership values, cases with calibrated membership scores of exactly 0.5 were adjusted to 0.501, thereby eliminating ambiguities in threshold classification during analysis [41]. Detailed calibration parameters are provided in Table 2.

Table 2: Calibration of Results and Antecedent Conditions

Results and antecedents		Fully in （90%）	Crossover （50%）	Fully out （10%）
outcome variable	Turnover Intention	3.950	2.333	1.000
Individual level	Professional Competence	7.000	2.000	1.000
	Professional Identity	4.000	3.286	2.571
Organizational level	Salary levels	8700.0	5000.000	2688.100
	Job fulfillment	5.875	4.500	2.269
Family level	Family Members' Opinions	5.000	3.000	1.000
	Proportion of Family Income	4.914	4.500	2.269

Note: All data are retained to three decimal places.

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4.3. Analysis of necessary conditions.

Prior to conducting configurational analysis, it is essential to perform necessity tests for each antecedent condition. If a condition demonstrates a consistency score exceeding the critical threshold of 0.9, it is identified as a necessary condition. Such conditions exhibit excessive independent explanatory power and should be excluded from subsequent configurational modeling to avoid obscuring the interactive effects of other conditions [42]. This study utilized fsQCA 3.0 software to implement necessity tests, with detailed results presented in Table 3. Empirical findings reveal that under both high turnover intention and non-high turnover intention scenarios, all antecedent conditions show consistency scores significantly below the 0.9 necessity threshold. This indicates that turnover intention among social work supervisors is not driven by any single necessary factor but rather emerges through cross-level conditional coupling within the individual-organization-family system, necessitating a multi-dimensional explanatory framework.

Table 3： Results of necessity analysis

	High Turnover Intention		Non-high Turnover Intention	
Condition variables	consistency	coverage	consistency	coverage
Professional Competence	0.734	0.581	0.727	0.583
~Professional Competence	0.473	0.631	0.477	0.645
Professional Identity	0.636	0.599	0.658	0.628
~Professional Identity	0.605	0.636	0.581	0.618
Salary levels	0.586	0.587	0.682	0.694
~ Salary levels	0.695	0.683	0.595	0.593
Job fulfillment	0.597	0.593	0.694	0.699
~ Job fulfillment	0.697	0.692	0.596	0.600
Family Members' Opinions	0.599	0.586	0.748	0.743
~Family Members' Opinions	0.737	0.742	0.583	0.596
Proportion of Family Income	0.630	0.654	0.627	0.660
~Proportion of Family Income	0.672	0.639	0.671	0.648

Note:“~” indicates a logical “not”； All data are retained to three decimal places.

4.4. Sufficiency analysis

After the necessity analysis, the condition configuration analysis is next. Based on sample size and data quality, the study sets a frequency threshold of 2 for case numbers, a consistency threshold of 0.8, and a PRI threshold of 0.55. After standardization, fsQCA yields three solutions: complex, intermediate, and simple. For result presentation, following Ragin and Fiss, the study uses the intermediate solution as the basis, supplemented by the simple solution. Specifically, conditions in the intermediate solution are secondary (marked by ˜ or V), while those in both solutions are core (also marked by ˜ or V), as detailed in Table 4. This method clarifies the relative importance of different causal conditions in the configuration.

Table 4 reveals five configurational paths that drive low turnover intention among social work supervisors. Each column represents a causal combination that triggers low turnover intention, revealing the differentiated patterns of nonlinear interactions among antecedent conditions. Each row reflects the necessity hierarchy of different antecedent conditions within configurations, indicating the relative importance of these causal factors. The overall solution consistency reaches 0.784, significantly exceeding the 0.75 threshold, suggesting that 78.4% of cases matching these configurations exhibit low turnover intention characteristics. Meanwhile,

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the solution coverage of 0.674 indicates that these five combinatorial paths explain 67.4% of low turnover intention cases, confirming the theoretical explanatory power of the "individual-organization-family" triad model. Based on these conditional configurations, we can further explore the differentiated roles and compatibility issues of individual, organizational, and familial factors in social work supervisors' turnover decisions.

Table 4: Configuration Analysis Results of Low Turnover Intention

	Individual-Organization Oriented Type	Organization-Family Oriented Type			
	Path 1	Path 2	Path 3	Path 4	Path 5
Professional Competence	˜		˜		
Professional Identity	˜			˜	V
Salary levels	˜		˜	V	˜
Job fulfillment	˜	˜		˜	
Family Members' Opinions		˜	˜	˜	˜
Proportion of Family Income	V	V			˜
Consistency	0.857	0.844	0.799	0.830	0.853
Raw coverage	0.284	0.442	0.476	0.322	0.311
Unique coverage	0.029	0.051	0.087	0.012	0.014
Overall solution consistency		0.784			
Overall solution coverage		0.674			

Note: ˜ or ˜ means the condition exists, V or V means the condition does not exist; ˜ or V means marginal condition, ˜ or V means the core condition; blank means the condition may or may not exist; data are retained to three decimal places.

From a configurational perspective, the turnover intention of social work supervisors can be categorized into two primary types based on the presence or absence of core conditions. The first type is characterized as an Individual-Organization Oriented Type, while the second type manifests as an Organization-Family Oriented Type.

4.4.1. Individual-Organization Oriented Type

The emergence of low turnover intention in the individual-organization oriented type is determined by conditional variables at both individual and organizational levels as core influencing factors, identifiable exclusively through a single significant pathway (Path 1). This Path profoundly demonstrates the core mechanisms whereby social work supervisors' professional identity, salary level and sense of accomplishment collectively contribute to reduced turnover intention. Specifically, under conditions of limited family economic contributions, social work supervisors with professional competence exhibit relatively lower turnover intention when there exists the concurrent presence of elevated professional identity, adequate salary compensation, and substantial job fulfillment.

4.4.2. Organization-Family Oriented Type

The formation of low turnover intention in the organization-family oriented type is conceptualized as being governed by conditional variables at both organizational and familial levels, which constitute the core determinants of turnover intention. This typology further bifurcates into two distinct configurational pathways: the achievement-family support pathway and the compensation-family support pathway.

The achievement-family support pathway, as revealed through Path 2 and Path 4, uncovers a dual emotional-driven mechanism behind the low turnover intention of social work supervisors. At the core of this pathway lies the cross-level synergistic effects between job

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fulfillment and family support. Specifically, when individuals achieve high professional fulfillment through practice and receive profound familial endorsement of their careers, the interconnected support network formed by these two factors can significantly counteract potential negative impacts from other antecedent conditions. In detail: Path 2 demonstrates a "high achievement–low dependency" characteristic. In contexts where social work supervisors contribute minimally to household finances, job fulfillment satisfies their self-actualization needs, while family emotional support provides a compensatory buffering effect. This combination fosters a non-economically rational decision-making model driven by spiritual values. Path 4 highlights a "achievement-compensation" mechanism. Under low-salary conditions, supervisors' high job fulfillment weakens the negative impact of inadequate pay by strengthening affective commitment. Simultaneously, familial recognition and support amplify the positive motivational effects of job fulfillment. This dual dynamic ultimately suppresses turnover intention.

The compensation-family support pathway, as demonstrated through Configurations 3 and 5, reveals a dual embedded mechanism where material incentives and familial capital interact to suppress turnover intention. Central to this pathway is the cross-level synergy between competitive remuneration and robust family support: when social work supervisors receive market-aligned salaries alongside strong familial endorsement of their professional roles, their turnover intention is systematically mitigated. Specifically, Configuration 3 highlights the stabilizing role of economic incentives and relational capital in contexts of moderate household financial contributions, where competitive pay and deep family support jointly anchor career commitment. In contrast, Configuration 5 uncovers a compensatory logic under weakened professional identity—even when career identification falls below group averages, industry-leading salaries combined with familial validation of the provider role offset motivational deficits through external resource compensation. This mechanism operates when supervisors act as primary economic contributors while receiving substantial family backing. These findings underscore a structural substitution effect, where extrinsic resources compensate for intrinsic motivational gaps in contexts of concurrent familial responsibilities and economic pressures. Furthermore, they emphasize interactive governance between organizational material resources and familial emotional support, revealing how their interplay critically shapes social work supervisors' career decision-making frameworks. Ultimately, this pathway illustrates the systemic interdependence of economic rationality and relational dynamics in sustaining low turnover intention within the altruism-driven social work profession.

5. Conclusions and reflections

5.1. Research Conclusions

This study systematically investigates the mechanisms underlying low turnover intention among social work supervisors by analyzing survey data from 244 practitioners nationwide through fuzzy-set Qualitative Comparative Analysis (fsQCA). The findings reveal that the formation of low turnover intention follows multiple conjunctural causation, with key conclusions as follows:

5.1.1. Cross-Level Synergistic Effects: Coupling Mechanisms of Asymmetric Resource Allocation

The study empirically validates that social work supervisors' low turnover intention exhibits distinct multi-level interdependent characteristics. Necessity analysis reveals that no single condition across individual, organizational, or familial levels constitutes a necessary condition for low turnover intention. Rather, its emergence fundamentally stems from systemic protective effects generated through nonlinear coupling of tri-level factors. Two dominant

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operational modes are identified: Individual-Organization Oriented Type and Organization-Family Oriented Type.

5.1.2. Multiple Equivalent Pathways: Configurational Heterogeneity and Equifinality

The study revealed that the formation of low turnover intention among social work supervisors follows multiple concurrent causal logics. Although the five identified configurational paths demonstrate significant heterogeneous characteristics, they all achieve the same outcome through functional equivalence. This phenomenon substantiates the core tenet of "causal asymmetry" in Qualitative Comparative Analysis (QCA) methodology - divergent combinations of conditions can produce identical outcomes through distinct causal mechanisms, thereby highlighting the context-dependent nature of career decision-making and the multiplicity of pathways in social work practice.

5.1.3. The Pivotal Role of Family Systems: The Buffering Advantage of Familial Support

The study revealed that familial support exhibits a significant buffering effect on social work supervisors' low turnover intention. Specifically, family members' perspectives functioned as a critical explanatory variable, playing a central role in 80% of the effective configurational paths. Their moderating effects and buffering capacity substantially surpassed the independent impacts of personal professional identity and organizational financial incentives. This phenomenon reflects the family-centric ideology in Chinese culture, which prioritizes familial interests over individual pursuits. Such cultural context amplifies the family system's role as a central mechanism in sustaining low turnover intention among social work supervisors.

5.2. Reflections and Limitations

This study uses 2019 empirical survey data, which has some limitations in terms of timeliness. The global COVID-19 pandemic has had a profound impact on the employment environment over time, but this study failed to include environmental factors. Therefore, future research needs to incorporate environmental factors, especially the reshaping effect of COVID-19 on the job market, into the analytical framework. This will not only enhance the study's relevance to current realities but also offer a more comprehensive model for explaining the turnover intentions of social work supervisors.

In addition, for data calibration, this study used the direct calibration method for initial data processing. While this method is simple and quick to operate, it may not fully consider the deep connections between cases and existing theories. Future research should explore more refined calibration techniques, combining the specific circumstances of cases and theoretical guidance, to enhance the accuracy and depth of data analysis.

References

[1] Information on https://www.mca.gov.cn/n156/n2679/c1662004999979995221/attr/306352.pdf.

[2] R. Hu, B.L. Shi. The Impact of Work Support on Social Workers' Turnover Intention: An Empirical Analysis Based on the "China Social Work Dynamic Survey" (CSWLS2019), Journal of East China University of Science and Technology (Social Science Edition), Vol. 37(2022), No.3, p.1-13.

[3] Z.W. Sun, H.Y. Zhou. Working Conditions, Family Support and Career Development: Multivariate Analysis of Chinese Social Workers' Turnover Intention, Social Work and Management, Vol. 19(2019), No.4, p.29-36.

[4] J. Lei, G.C. Luo, P.F. Duan, T. Cai. Analysis of Government-purchased Family Comprehensive Services in Guangzhou, Social Sciences Academic Press, 2015.

[5] Information on http://trade.swchina.org/trends/2016/0202/25176_3.shtml.

[6] Q.L. An. Influencing Factors of Social Workers' Professional Identity, Journal of East China University of Science and Technology (Social Science Edition), Vol. 25(2010), No.2, p.39-47.

[7] W.H. Mobley. Intermediate Linkages in the Relationship Between Job Satisfaction and Employee

ISSN: 2710-0170

Turnover, Journal of Applied Psychology, Vol.62(1977), No.2, p.237-240.
[8] R.P. Tett, J.P. Meyer. Job Satisfaction, Organizational Commitment, Turnover Intention and Turnover: Path Analyses Based on Meta-analytic Findings, Personnel Psychology, Vol.46 (1993), No.2, p.259-293.
[9] W.H. Mobley, R.W. Griffeth, H.H. Hand, et al. Review and Conceptual Analysis of the Employee Turnover Process, Psychological Bulletin, Vol.86(1979), No.3, p.493-522.
[10] J.L. Price. Reflections on the Determinants of Voluntary Turnover, International Journal of Manpower, Vol.22(2001), No.7, p.600-624.
[11] Q. Xu. Exploring Causal Complexity in Mate Selection Preferences: A Reanalysis of Survey Experiment Data Using QCA, Sociological Studies, Vol.39(2024), No.3, p.136-157+229.
[12] D.T. Yang, L.K. Song, J.R. Wei. Empirical Study on Influencing Factors of Chinese Employees' Turnover Intention, Henan Social Sciences, (2007), No.4, p.38-41+171.
[13] X. Cui. Study on the Influence of Employees' Personal Characteristics on Organizational Commitment and Turnover Intention, Nankai Business Review, (2003), No.4, p.4-11.
[14] R.S. Ye, Y.Q. Wang, Z.Y. Lin. Empirical Study on the Impact of Job Satisfaction and Organizational Commitment on SOE Employees' Turnover, Management World, (2005), No.3, p.122-125.
[15] X.H. Yu, X.O. Kong, M.X. Qian, et al. Relationship Between Professional Identity and Turnover Intention of Nurses in Jilin Provincial Public Hospitals, Medicine and Society, Vol.37(2024), No.3, p.114-120.
[16] L.D. Wu, L. Dou, Q. Sun, et al. Impact Analysis of Workplace Social Capital on Turnover Intention of Medical Staff in Public Hospitals, Chinese Hospital Management, Vol.41(2021), No.7, p.81-84.
[17] Y. Fan. Empirical Investigation on Turnover Intention of Rural Young Teachers, Teacher Education Research, Vol.35(2023), No.5, p.67-74+28.
[18] H.Y. Jiang, Y.A. Wang. The Role of Recognition: An Empirical Study Based on Social Workers' Turnover Intention (In Chinese), Jiangsu Social Sciences, (2016), No.4, p.149-158.
[19] J. Liu, D.H. Gu. "Constraint-Internalization" vs. Reflective Practical Cognition: Research on the Relationship Between Social Work Ethical Codes and Retention Intention, Sociological Studies, Vol.37(2022), No.2, p.183-201+230.
[20] S.C. Zeng, X. Li, X.S. He, et al. Research on Turnover Intention and Influencing Factors of Chinese Social Workers, Journal of Chongqing Technology and Business University (Social Science Edition), Vol.36(2019), No.4, p.1-10.
[21] X.P. Zhao, L. Liu, C.Z. Zhang. Multivariate Analysis of Influencing Factors on Employees' Turnover Intention, China Soft Science, (2003), No.3, p.71-74.
[22] Y. Fang. Analysis of the Status, Causes and Countermeasures of Young Social Workers' Mobility: Taking Guangdong as an Example, Youth Exploration, (2015), No.2, p.31-38.
[23] H.H. Gao, Y.L. Lin. Research on Social Workers' Turnover Intention from the Perspective of Emotional Labor: Based on CSWLS Data Analysis, Social Work and Management, Vol.24(2024), No.3, p.29-39.
[24] L. Yang, S.J. Wen, Z.Y. Dong. Staff Turnover and Coping Strategies of Full-time Social Workers in Beijing Community Youth Centers, Journal of Chinese Youth Social Science, Vol.40(2021), No.5, p.43-51.
[25] Y.L. Xiong. The Impact of Frontline Social Workers' Emotional Competence on Turnover Intention from the Perspective of Emotional Labor: An Empirical Analysis Based on CSWLS 2019, Journal of Zhejiang Shuren University, Vol.24(2024), No.2, p.55-64.
[26] Y.A. Liu, F. Wang. Research on Factors Affecting Employees' Turnover Intention, Enterprise Economy, (2006), No.6, p.42-44.
[27] H.B. Qin, Y.K. Li. Research on the Inducement Mechanism of High Turnover Intention Among Social Workers: A Configuration Analysis Based on CSWLS 2019 (In Chinese), Social Work and Management, vol.23(2023), no.4, p.34-43.
[28] L. Liu, X.S. He. Professional Returns and Social Workers' Retention Intention (In Chinese), Youth Studies, vol.1(2023), p.13-22,94.
[29] C.X. Jia, J.C. Li. Work-Family Conflict, Burnout, and Turnover Intention Among Chinese Social Workers: The Moderating Role of Work Support, Journal of Social Service Research, Vol.48(2022), No.1, p.12-27.
[30] D.W. Xu. Research on Social Workers' Professional Identity and Turnover Intention: Based on a

ISSN: 2710-0170

Survey of Social Workers in Shenzhen, Journal of Humanities, (2017), No.6, p.111-118.
[31] E. Wang, W. Jiang, S. Mao. Job Autonomy and Turnover Intention Among Social Workers in China: Roles of Work-to-family Enrichment, Job Satisfaction and Type of Sector, Journal of Social Service Research, Vol.46(2020), No.6, p.862-876.
[32] W.H. Xie. "Key Person Effect" in Social Networks: A Study on Influencing Factors of Social Workers' Turnover Intention, Journal of East China University of Science and Technology (Social Science Edition), Vol.37(2022), No.4, p.62-75+131.
[33] H.P. Sun, J. Liu. Research on Influencing Factors of Professional Social Workers' Retention: Based on a Qualitative Comparative Analysis (QCA), Social Work, (2017), No.4, p.77-85+111.
[34] S. Wang. The Impact and Mechanism of Emotional Labor on Social Workers' Job Burnout, Journal of East China University of Science and Technology (Social Science Edition), Vol.36(2021), No.4, p.66-77+90.
[35] C.C. Ragin. The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies, University of California Press, 2014.
[36] C. Zhang, X.J. Zheng, F.B. Wang. Application of Qualitative Comparative Analysis in Management Configuration Research: Review and Prospect, Foreign Economics & Management, Vol.39(2017), No.4, p.68-83.
[37] Y.Z. Du, L.D. Jia. Configuration Perspective and Qualitative Comparative Analysis (QCA): A New Path for Management Research (In Chinese), Management World, (2017), No.6, p.155-167.
[38] C. Liu, Y.Q. Yuan, Z.W. Sun, et al. China Social Work Dynamic Survey (CSWLS2019): Design, Implementation and Sample Description, Journal of East China University of Science and Technology (Social Science Edition), Vol.35(2020), No.1, p.1-32.
[39] H.B. Tan, Z.T. Fan, Y.Z. Du. Technological Management Capability, Attention Allocation and Local Government Website Construction: A Configuration Analysis Based on TOE Framework, Management World, Vol.35(2019), No.9, p.81-94.
[40] C.C. Ragin, P.C. Fiss. Redesigning Social Inquiry: Fuzzy Sets and Beyond, University of Chicago Press, 2008.
[41] P.C. Fiss. Building Better Causal Theories: A Fuzzy Set Approach to Typologies in Organization Research, Academy of Management Journal, Vol.54(2011), No.2, p.393-420.

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Analysis of Development and Innovation Strategies in the Context of New Media Short Videos

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Abstract

With the advancement of telecommunication technology, mobile network terminals such as smartphones have gradually permeated into people's daily lives and work, becoming an indispensable device. As a product of the development of mobile communication technology, short videos have become a main form for people to obtain information, knowledge, and entertainment. In recent years, the user base of short videos has been expanding, and the usage rate has increased significantly, indicating a vast prospect for development. At the same time, under the new media environment, all users have become short video publishers. The rich content of short videos, coupled with fierce market competition, and issues such as homogenization and vulgarity, are not conducive to long-term development. Therefore, this article analyzes the current issues in the development of short videos based on the new media environment and proposes corresponding innovative strategies to promote the healthy and stable development of the short video industry.

Keywords

New Media, Short Videos, Development, Innovation.

1. Introduction

In the context of modern fast-paced life, the traditional communication mode dominated by text and image information has gradually failed to meet people's needs. With the support of mobile technology development, short videos have emerged as a new form of entertainment and information acquisition for people. Currently, with a massive user base, short videos, thanks to their large number of users, significant interactivity, and lightweight features, have shown significant potential in spreading excellent traditional culture and regional culture. At the same time, they can also spread positive information content, play their value and role. In the new media environment, short videos face certain problems in terms of content and dissemination. To further give full play to their value and role, certain innovations are needed to better promote the development of short videos.

2. Literature Review

2.1. Study at Home

The development of domestic short video industry has a certain foundation, the current situation is good, and the scale is increasing.

Policy support for the digital humanities industry has increased. At the end of 2020, the Ministry of Culture and Tourism of China issued the Opinions on Promoting the High-quality Development of the Digital Cultural Industry. Digital humanities, the most popular humanities research, gradually shows a vigorous industrialization development path.

China's short video situation is good. After years of continuous rapid growth and continuous improvement, the short video industry has entered a new stage of mature development. In recent years, the scale of pan-network audio-visual industry has increased by 7.18 times, the scale of short video industry has increased by 153 times, and its share has increased by 17.8 times. Short video has become the main engine of the development of large audio-visual industry. According to the "Research Report on the In-depth Analysis and Development Trend Prediction of China's Short Video Industry 2024-2029" released by the China Business Industry Research Institute, the scale of the short video industry has reached nearly 300 billion yuan in 2022.

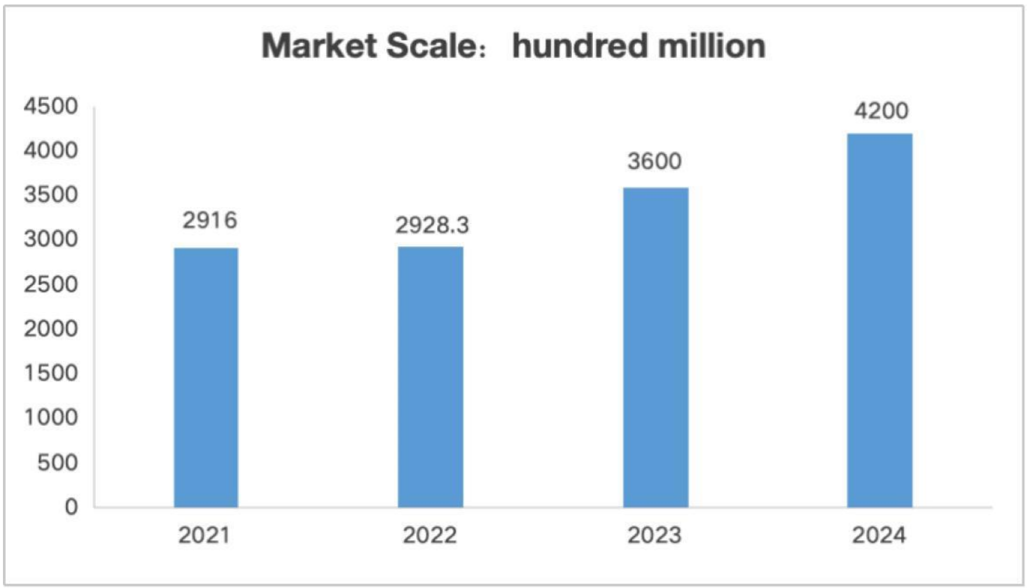

Figure 1: Forecast Trend Chart of China Short Video Market Size from 2021 to 2024 (quoted from: China Business Information Network)

The scale of short video users continues to grow. Nearly a quarter of new Internet users came into contact with the Internet because of short videos, and 24.3% of new Internet users used short video applications for the first time, which was far away from other applications. As of December 2022, the number of short video users reached 1.012 billion. Analysts at the China Business Industry Research Institute forecast that the number of short video users will increase to 1.148 billion by December 2024.

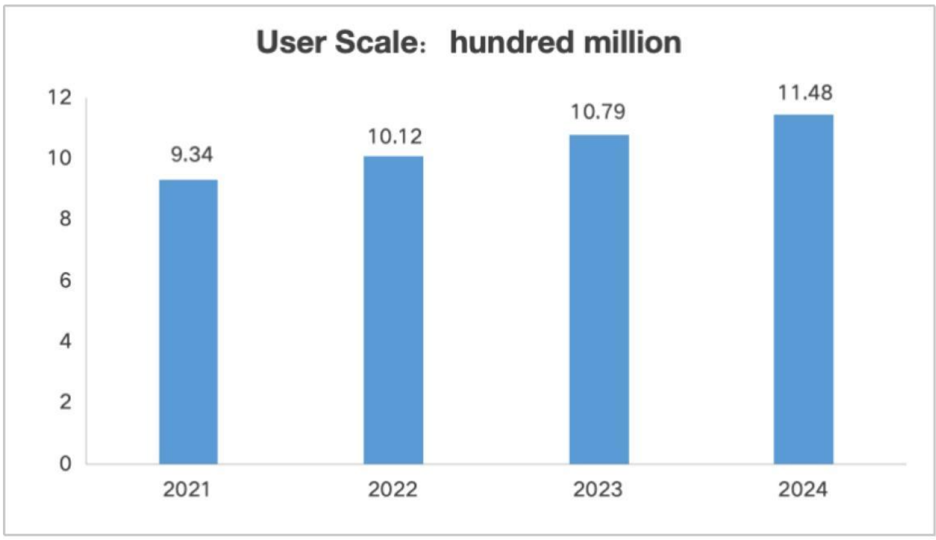

Figure 2: Forecast Trend Chart of Chinese Short Video User Scale from 2021 to 2024 (quoted from: China Business Information Network)

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2.2. Study Abroad

The growth trend of short videos spreading Chinese civilization tends to be flat. At present, the number of short video creators spreading Chinese civilization has been basically saturated, and the growth trend is flattening. It is difficult to have more room for growth, and high-quality and diversified creative subjects are urgently needed to join. The expansion of diversified and international communication subjects can effectively improve the content productivity of short video platforms and enrich the content supply, meet the diversified needs of users in a way that is more familiar and favorite, and promote the international communication of Chinese civilization to achieve better results. First, attract and mobilize more overseas Chinese to spread Chinese civilization with short videos through various ways. Overseas Chinese living around the world have a strong understanding of Chinese civilization and the culture of the host country, and have the advantages of both subjectivity of cultural content and closeness of communication methods, which can better promote the spread of Chinese civilization in the local area. Therefore, attracting and mobilizing more overseas Chinese to use short videos to disseminate Chinese civilization has broad development prospects and can produce good communication effects [1].

Short video platform to the international market. Take the short video platform Tiktok overseas version as an example. In 2017, TikTok launched the overseas version, ranking first in the application charts of Japan, Thailand, Malaysia and other countries and regions, becoming one of the most popular local apps. By 2022, it has more than 1 billion active users around the world, breaking the platform monopoly of Europe and the United States on international discourse power, and providing opportunities for the international dissemination of Chinese culture. At the same time, there is still a large vacancy in the overseas short video market worldwide, and the penetration rate of short video applications launched abroad is not high. In this context, Chinese oversea short video applications such as Douyin and Kuaishou have rapidly seized the market and become the head players, which creates more possibilities for further promoting the international communication of Chinese culture.

3. Issues in the Development of Short Videos

In the new media environment, short videos face many problems in content production and dissemination. In terms of content creation, there are issues such as a lack of innovation and significant disparities in quality. With the development of self-media, the scale of short video users has expanded, and the number of creators has also increased significantly, leading to serious copyright infringement, copying, and rephrasing phenomena, with a lack of innovation in content creation [2]. For example, on platforms like Douyin, it is common to find extracts, copying, and imitating popular video clips, which disrupts the order of the short video industry and lacks respect for original authors. Currently, all users can become creators and publishers of short videos, and the platform threshold is low. Smith, J., & Johnson, L. explore the rise of short video platforms such as TikTok and their impact on digital marketing. The authors analyze the creative characteristics of short video content, including its brevity, entertainment, and highly interactive nature, and examine how these characteristics change the way brands interact with consumers. This paper also discusses the phenomenon of User-Generated content (UGC) in short video creation, and the role of algorithm recommendation in content dissemination [3].

Although this can stimulate users' enthusiasm for creation, it also highlights significant differences in content quality. Compared to professional self-media personnel, the content created by the general public differs significantly in terms of composition, creativity, and emotional expression. Moreover, some video publishers release videos for the sake of traffic,

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such as curious videos and false videos, which reduce the quality of short videos and may even produce negative impacts.

For example, Yue Culture, with Shaoxing as its geographical core, covers historical and humanistic symbols such as Dayu's water control, Lanting Ya collection and Lu Xun's spirit, which is an important part of Chinese civilization. However, its dissemination has been limited by regionalism and single narrative mode for a long time, and its international recognition is low. Based on this, short videos can be used as the carrier, combined with "bilingual+" creation, multi-perspective narrative and 5W communication model, to explore the innovative communication path of Vietnamese culture in the new media environment. Through the combination of theory and practice, it provides a feasible scheme for the digital transformation and international output of regional culture.

In terms of dissemination, there is a lack of proper value guidance, and the integration of traditional cultural elements is limited, which is not conducive to promoting positive energy and excellent culture. Supported by the Internet and mobile communication technology, the current audience of short videos is relatively wide, including some minors whose mental development has not yet matured and are more susceptible to the influence of their surroundings. In short video production, some publishers release content that is vulgar or has incorrect values to gain more traffic, which can easily lead to negative guidance and influence on teenagers [4]. Additionally, video creators incorporate too many commercial elements to gain economic benefits, prominently showcasing commercial products. There is a lack of elements of traditional Chinese culture, and short videos have the ability to spread widely, carrying the responsibility of cultural inheritance. It is necessary to give full play to their value and advantages to promote the spread and inheritance of traditional culture. Therefore, there are also prominent issues and deficiencies in the inheritance aspect of short videos at present.

4. Specific Strategies

4.1. Focusing on Content Innovation

In the new media environment, content creation is particularly important for short videos. Effective innovation in content can enhance attractiveness, expand influence, and help to give full play to the value and role of short videos in spreading information and culture. Innovative short video content should start with creative intention, maintaining positive and forward-looking themes. At the same time, video creators should also focus on improving their self-creation abilities to attract more viewers.

Short video platforms and relevant management departments need to strengthen content review and management, penalize plagiarism and infringement, and restrict dissemination in a timely manner to optimize the short video platform environment and promote the healthy development of short videos. While stimulating the creative consciousness of video creators, attention should also be paid to the protection of their rights and interests, mobilizing their enthusiasm for innovation. Platforms can organize short video creativity competitions, encourage users to release healthy videos with personal creativity, focus on the promotion of excellent culture and ideas, and attract viewers while standardizing industry behavior to promote long-term development.

4.2. Integrating Traditional Cultural Elements

The large user base and high dissemination degree of short videos make them a carrier for spreading traditional culture and give full play to their value. The integration of traditional cultural elements into short videos can also optimize video content and deepen the connotation and value of short videos, improving their quality and contributing to the long-term and healthy development of the short video industry. Taking the spread of Yue culture as an example, video

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content can focus on city characteristics, historical sites, and famous figures, exploring Yue culture in cities like Shaoxing and showcasing the charm of Yue culture in the videos. Regularly updating videos related to Yue culture can promote the continuous spread of cultural systems, helping users to develop a regular viewing habit, strengthening their trust in accounts, and enhancing user stickiness. Users can learn about people, places, and other related aspects of Yue culture through videos, gradually establishing connections and enhancing their identity and love for the culture, thereby achieving the goal of spreading traditional culture. Therefore, attention should be paid to the integration of traditional cultural elements in the process of short video innovation to promote the spread of traditional culture, giving full play to the cultural communication value of short videos and providing new channels and ideas for the spread of traditional culture.

4.3. Strengthening Interactive Experience Design

In the new media environment, users are no longer satisfied with one-way content reception. By strengthening the interactive experience design of short videos, user engagement and platform viscosity can be significantly improved. Producers can innovatively adopt interactive forms such as voting topics, live broadcast with Mai, and dynamic stickers to stimulate users 'desire for comments, sharing and secondary creation.Brown, A., & Davis, R. studied the role of user engagement in short video creation and dissemination by comparing two short video platforms, TikTok and Instagram Reels. The authors analyzed user behavior data and found that interactivity (e.g., likes, comments, shares) is a key factor for the success of short videos. The article also explores how creators can improve user engagement by optimizing content strategies [5].

The platform needs to optimize the algorithm recommendation mechanism, launch "interactive hot list" and "co-creation challenge" activities combined with user behavior data, and encourage users to participate in the content production process. For example, the function of "plot branch selection" is developed, and the audience can influence the video direction by clicking to form a differentiated viewing experience. At the same time, a normalized communication channel between creators and fans is established, and the sense of community belonging is enhanced through mechanisms such as danmau lottery and exclusive fan MEDALS. In addition, the introduction of Virtual Reality (VR) technology to create immersive interactive scenes, such as the digital restoration tour of cultural heritage, can not only enrich the form of content, but also deepen users 'understanding and memory of cultural content. Through the two-wheel drive of technology empowerment and mechanism innovation, an ecological closed loop of co-evolution between creators and users is constructed, and short videos are promoted from content consumption to value co-creation.

4.4. Improving Relevant Regulatory Systems

In the new media environment, there are many problems with the content and dissemination of short videos, and these issues are related to the supervision of relevant departments to a certain extent. Due to the lack of effective supervision, some short video creators lack originality, or produce low-quality videos, etc., causing negative impacts. Therefore, it is required that relevant departments closely control the development of the short video industry, understand the development situation and factors affecting development, and continuously improve regulatory systems to ensure the implementation of the system, strictly regulate short video content, especially strengthening supervision and disposal of vulgar culture and sensitive content.

From the perspective of the communication subject, the local government, cultural scholars and we media talents are combined to form a diversified creative subject. For example, Shaoxing Culture and Tourism Bureau launched the “Yue Culture Global Challenge”, and invited the inheritance of Yue Opera to record the “behind the scenes” series of short videos. The content

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of communication needs to focus on the trinity of “historical sites + celebrity stories + urban characteristics”, with the Dayu Mausoleum and Shen Yuan as the core scenes, and combining AR technology to restore historical events. Create a “celebrity spirit theater”, and present Lu You’s family and country feelings and Qiu Jin’s female awakening thoughts through micro documentaries. “Craftsman Diary” series is launched to show the pyrotechnics of Shaoxing water town life and rice wine technology. The communication channel needs a matrix layout, relying on domestic platforms such as Douyin and wechat video account to open a “Yue Culture flagship account” simultaneously expanding international channels such as TikTok and YouTube, and using algorithm tags to attract the target audience. Layered communication is aimed at different audiences to strengthen the cultural identity of domestic users. At the same time, the “Oriental Venice” is used as an analogy to Shaoxing water town to reduce the cultural distance of overseas audiences. The communication effect needs to be optimized through data-driven optimization. The “communication effect evaluation matrix” is established, and the content strategy is dynamically adjusted by considering the research data of play volume, interaction rate and cultural awareness.

Short video platforms and relevant management departments need to strengthen content review and management, penalize plagiarism and infringement, and restrict dissemination in a timely manner to optimize the short video platform environment and promote the healthy development of short videos. While stimulating the creative consciousness of video creators, attention should also be paid to the protection of their rights and interests, mobilizing their enthusiasm for innovation. Platforms can organize short video creativity competitions, encourage users to release healthy videos with personal creativity, focus on the promotion of excellent culture and ideas, and attract viewers while standardizing industry behavior to promote long-term development.

Those with serious violations need to be suspended or given corresponding penalties to provide a good industry environment for the development of short videos [6]. At the same time, continuously improve the legal awareness and level of creators, regulate their creative behavior. Continuously improve the cultural evaluation system, strengthen the review of short videos, ensure that creators can strictly comply with system requirements, which is conducive to improving the quality of short videos and promoting the healthy and orderly development of the short video industry.

5. Conclusion

In the current new media environment, short video development faces both opportunities and many challenges and development dilemmas. On this basis, certain innovations are needed, focusing on content innovation, and at the same time, integrating certain elements of traditional culture to improve the quality of short videos. In addition, it is necessary to strengthen industry supervision to ensure the healthy development of the industry and give full play to a positive and healthy cultural influence. The new media environment provides technical dividends and a global stage for short video to empower cultural communication. By breaking the language barrier through the “bilingual+” mode and enhancing the sense of cultural immersion through technological innovation, the local culture can break through the regional restrictions and realize the transition from “local memory” to “world Heritage”. In the future, interdisciplinary collaboration and international cooperation should be further strengthened, and short videos should be upgraded from a “traffic tool” to a “cultural bridge” to help Chinese culture occupy the discourse highland in the process of global digital civilization.

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References

[1] Peng Chen, Duan Peng.(2024) The Internal Logic and Innovation Path of short Video in the Digital Intelligence Era to Help the International Communication of Chinese Civilization. Chinese Editorial Journal. 03:4-10.

[2] [Xu Qingyun, Ye Jingyi.(2024) Creative advantages and innovative development paths of cultural short videos in the new media era. Heilongjiang Pictorial. 14:105-107.(In Chinese)

[3] Smith, J., & Johnson, L. (2022). Short-form video content: The rise of TikTok and its impact on digital marketing. Journal of Digital Media & Policy, 13: 145-160.

[4] Huang Yali, Wang Wei.(2021) Research on the Problems and Countermeasures of mobile Short Video in the New media Era. Journal of Engineering and Technology Research. 06:254-256.

[5] Brown, A., & Davis, R. (2023). The role of user engagement in short-form video platforms: A case study of TikTok and Instagram Reels. International Journal of Communication, 17:123-140.

[6] Li Jia.(2022) Development and Innovation of positive We-media Short record Video in the Era of media Integration. Journal of News and Culture Construction. 09:69-71.

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How Leadership Transition Accountability Mechanisms Drive Environmental Governance Outcomes

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Abstract

This study investigates the impact of China's "Audit of Outgoing Officials' Natural Resource Asset Management" policy on urban environmental pollution. Utilizing a multi-period difference-in-differences (DID) model and panel data from 281 cities between 2011 and 2020, we find that the policy significantly reduces pollution. The mechanism analysis reveals that this reduction is primarily achieved through increased environmental penalties, while the effect of environmental aid is not significant. Additionally, heterogeneity analysis shows that the policy's effectiveness varies with local industrial structure and population density, being more pronounced in cities with advanced industrial structures or lower population density. This research provides valuable insights into the role of government auditing in environmental governance and offers recommendations for optimizing policy design and implementation to maximize its environmental benefits and promote sustainable development.

Keywords

Leadership Transition Accountability Mechanism, Environmental Governance, Urban Pollution, Difference-in-Differences (DID) Method.

1. Introduction

Amidst intensifying global environmental crises characterized by resource depletion and ecosystem collapse, nations grapple with reconciling developmental imperatives with planetary boundaries. As the world's largest emerging economy, China faces dual imperatives of sustaining economic growth while addressing systemic ecological degradation—a tension epitomized in its pursuit of institutional solutions under the Ecological Civilization framework. The audit outgoing official's natural resource asset management , is a groundbreaking policy mechanism mandating ex-post accountability for the environmental approach to embedding sustainability within bureaucratic governance.

The Communist Party of China Central Committee and the State Council have explicitly required the implementation of audit outgoing official's natural resource asset management(hereinafter referred to as outgoing audit). The audit system underwent pilot implementation between 2014 and 2017, with nationwide deployment commencing in November 2017[1], establishing this mechanism as a standardized institutional framework. In practice, regions have explored and accumulated rich experience. Zhejiang Province, for instance, pioneered the audit pilot in 2015 and progressively expanded it, creating a regionally distinctive audit model. Huzhou City, one of the first national pilot areas, not only contributed to the development of audit operation guidelines but also incorporated green auditing into its annual assessment of counties for five consecutive years. Lishui City further expanded the audit scope by including the realization mechanism of ecological products. This system audits local officials' management of natural

1 https://www.gov.cn/zhengce/2017-11/28/content_5242955.htm?ddtab=true

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resource assets and environmental protection efforts during their tenure, enhancing their environmental awareness and promoting sustainable economic development. It not only boosts environmental governance efficiency but also offers a Chinese approach to global environmental management.

The phased implementation of institutional environmental auditing across Chinese cities since 2014 has created a valuable quasi-natural experiment for policy evaluation research. However, constrained by data availability limitations during the initial policy rollout phase, early scholarship predominantly engaged in normative analyses to deconstruct the institutional logic and operational mechanisms of the outgoing audit system (W. Zhang, 2018). In recent years, some empirical papers have focused more on the impact of this system on corporate environmental performance and its mechanisms (Peng & Li, 2024; Zeng et al., 2022) As the policy has been in place for longer, scholars have started to assess its effects(Cao et al., 2022; Lei, 2020; Zeng et al., 2022). Yet, most existing studies look at only one environmental aspect or factor(Li et al., 2025; Siyiti & Yao, 2024; Yu et al., 2023; Zhang et al., 2024).Few scholars have comprehensively examined the system's governance effects from a macro-environmental perspective or delved into its key mechanisms. Additionally, current research falls short in providing in - depth assessments of the policy's authenticity.

This study investigates the role of government auditing in national governance through an environmental lens, utilizing prefecture-level panel data from 2014 to 2017. Employing a multi-period difference-in-differences (DID) approach, we systematically evaluate the policy effects of audit outgoing officials' natural resource asset management. To elucidate the underlying mechanisms, we establish a dual-path mediation framework incorporating fiscal expenditure on environmental governance and environmental regulation intensity as mediating variables. This methodological design enables us to disentangle the positive incentive effects of fiscal resource allocation from the negative incentive effects of regulatory stringency in environmental governance. Our empirical analysis reveals the operational logic and transmission pathways through which the outgoing audit system influences local governments' environmental governance behaviors, thereby contributing to the theoretical understanding of performance auditing in sustainable governance. The findings provide both methodological and empirical evidence for optimizing the design of vertical environmental management systems under China's cadre responsibility framework.

2. Background and Research Hypothesis

2.1. Institutional Background

China has increasingly prioritized the construction of an ecological civilization to address severe environmental challenges. To combat pollution and promote sustainable development, the government has enacted a series of environmental protection laws, including the *Environmental Protection Law of the People's Republic of China*, the *Law on the Prevention and Control of* Atmospheric *Pollution*, the *Environmental Protection Tax Law*, and the *Measures for Ecological and Environmental Administrative Punishments*. These laws impose strict penalties for violations, underscoring the nation's commitment to environmental governance. To further enhance accountability, the State Council has integrated environmental performance into the evaluation criteria for officials. This system links environmental governance outcomes to officials' career progression, creating strong incentives for prioritizing ecological stewardship.

The concept of auditing officials for their environmental responsibilities was first introduced in the Decision of the Central Committee of the Communist Party of China on Some Major Issues Concerning the Comprehensive Deepening of Reform. Article 52 of this decision, adopted at the Third Plenary Session of the 18th CPC Central Committee in 2013, called for the implementation of natural resource asset departure audits for leading officials. In 2014, the National Audit Office

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launched pilot programs in Hubei, Jiangsu, Sichuan, and Shandong provinces. These pilots tailored audit content and priorities to local conditions, providing valuable insights and laying the groundwork for broader implementation. In November 2015, central authorities issued formal guidelines for pilot audits. Following the success of these programs, the audit system was officially rolled out nationwide in November 2017.

2.2. Research Hypothesis

2.2.1. the governance implications of institutional environmental auditing.

Institutional environmental auditing functions as an accountability mechanism that internalizes ecological externalities by directly linking policymakers to resource management outcomes. Empirical studies across nations confirm its substantial environmental governance impacts, achieved through optimized political performance metrics emphasizing eco-environmental indicators, which critically shape officials' regulatory decisions (Sun et al., 2025; W. Zhang, 2018). This dual regulatory instrument simultaneously governs corporate conduct and state oversight, creating a causal chain from government enforcement to corporations' cost-benefit-driven adoption of environmental responsibilities, ultimately translating into measurable ecological improvements(Gao et al., 2024). Under regulatory pressures, enterprises strategically transition toward green development after evaluating long-term costs, fostering autonomous environmental stewardship that enhances ecological outcomes (Cao et al., 2022). China's natural resource asset auditing exemplifies this mechanism, reducing industrial SO_2 emissions by 12.7% while boosting afforestation investment by 9.4%, with cross-national evidence confirming audit-driven compliance through elevated non-compliance costs(Blackman et al., 2010). Therefore, we propose the following research H1：

H1. In the pilot areas where the audit of outgoing leading officials' natural resource accountability is implemented*, the environmental quality will be significantly improved.*

2.2.2. The mediating effect on the relationship between institutional environmental auditing and environmental governance

In existing literature, output data such as government audit reports or penalty announcements is used to conduct post-audit inspection, emphasizing the post-audit accountability function of government audit without paying attention to the behavior of the government itself (Fang et al., 2024;Chen, 2011). Command-and-control tools, also known as coercive policy tools, refer to a series of laws and regulations enacted by the government to urge polluters to implement such laws and regulations and meet environmental standards (Weitzman, 1974).

It is also conducive to the innovation and dissemination of technology. In areas where outgoing audit of natural resources is implemented, local officials can make use of fiscal policy through market forces such as increasing subsidies and tax revenue to encourage the popularization and application of new technologies for energy conservation and emission reduction, support emerging industries, inhibit excessive use of fossil fuels and expansion of heavy polluters, to achieve effective environmental governance. Researchers have suggested that audits can fulfil the mandate of environmental governance by preventing abuses and governance failures in the use and application of environmental funds, and by facilitating the processing of sanctions and preventing their occurrence(Gao et al., 2024, 2024; Wu et al., 2020).Therefore, we propose the following research H2、H3:

H2. In the pilot areas where the audit of outgoing leading officials' natural resource accountability is implemented*, environmental quality will be improved through strengthening environmental supervision.*

H3. In the pilot areas where the audit of outgoing leading officials' natural resource accountability is implemented*, environmental quality will be improved by increasing fiscal expenditure on environmental governance.*

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3. Research design

3.1. Sample selection and data sources

The outgoing audit policy was initially piloted between 2014 and 2017. To comprehensively capture policy effects while ensuring temporal comparability, we extend our analysis window to 2011-2020. This extended timeframe accommodates sufficient pre-intervention baseline data and enables robust post-implementation evaluation. Our empirical strategy employs a quasi-experimental design, utilizing 152 pilot cities as the treatment group and 129 non-pilot cities as the control group. The final sample comprises 281 prefecture-level municipalities. The outgoing audit data of natural resource assets are mainly obtained manually from the official websites of governments such as regional audit offices (bureaus). Government expenditure data on environmental governance are obtained by reading the annual report on the work of the government. Data on temperature and precipitation are averaged by collating the raw data from the synoptic network. The remaining data was obtained from regional statistical yearbooks, statistical yearbooks on environment and almanacks of Chinese cities.With the exception of pilot audit data on natural resource asset accountability during leadership tenure transitions, all statistical indicators were obtained from official publications including China Statistical Yearbook, China Environmental Statistics Yearbook, and China City Statistical Yearbook.

3.2. Model Specification

The primary objective of this study is to investigate whether the audit outgoing official's natural resource asset management effectively reduces urban pollution levels. Given staggered implementation timelines across pilot cities (2014–2017), we employ a multi-period difference-in-differences (DID) framework to address heterogeneous treatment adoption. The baseline regression model is specified as follows:

$$Pollution_{it} = \beta_0 + \beta_1 treat_i \times post_{it} + \beta_2 Controls_{it} + City_i + Year_t + \varepsilon_{it} \qquad (1)$$

The dependent variable $Polltion_{it}$ indicates the environmental pollution level of city i in year t. β_0 is the intercept, β_1 reflects the policy treatment effect, and β_2 is the coefficient for control variables. $treat_i$ is a group dummy variable, where 1 indicates city i is in the treatment group and 0 indicates it is in the control group. $post_{it}$ is a time dummy variable, taking the value 1 if the city has been piloted in that year and 0 otherwise. $Controls_{i,t}$ includes the values of various control variables for city i in year t . $City_i$ captures city fixed effects, $Year_t$ captures year fixed effects, and ε_{it} is the random error term.

This study follows the mediation effect test by Wen & Ye, (2014) to examine whether audits reduce urban environmental pollution by increasing environmental aid and penalties. To test the mediation effect of the leaders' natural resource asset audit policy on environmental pollution, we develop mediation models (2)-(5) based on the baseline regression model (1).

The models are as follows:

$$Ev\_penalty_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 Controls_{it} + City_i + Year_t + \varepsilon_{it} \qquad (2)$$

$$Pollution_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 Controls_{it} + \beta_3 Ev\_penalty + City_i + Year_t + \varepsilon_{it} \qquad (3)$$

$$\text{Green Investment}_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 Controls_{it} + City_i + Year_t + \varepsilon_{it} \qquad (4)$$

$$Pollution_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 Controls_{it} + \beta_3 \text{Green Investment}_{it} + City_i + Year_t + \varepsilon_{it} \qquad (5)$$

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$Ev\_penalty_{it}$ indicates the environmental penalty intensity of city i in year t.

$Green\ Investment_{it}$ indicates the green investment of city i in year t. Other variables are defined as in Model (1).

3.3. Variables Description

3.3.1. Explained variable

The explained variable in this study is the degree of environmental pollution. The entropy method, an objective evaluation approach, is employed here. It can prevent the bias from subjective weighting and make full use of data, ensuring more scientific and comprehensive results. Therefore, this study uses the entropy method to calculate the environmental pollution levels of each city in the corresponding years, based on three indicators: waste water discharge, SO2 discharge, and smoke and dust discharge.

3.3.2. Explanatoryvariable

The core explanatory variable is did, an interaction term defined as $did = treat \times post$.$treat$ is a group dummy variable: 1 if city i is in the treatment group (i.e., has piloted the natural resource asset audit policy), and 0 otherwise.$post$ is a time dummy variable: 1 if the year is the pilot year or later for city i, and 0 otherwise. Thus, didindicates whether city i had implemented the audit policy by year t (1 if implemented, 0 otherwise).

3.3.3. Control variables

To alleviate the interference caused by omitted variables, the paper referred to previous literature and controlled variables such as economic development level, population density, openness level, fiscal investment intensity, industrial structure, education expenditure level, R&D expenditure level, educational attainment(Zheng et al., 2013; Yu et al., 2014; Sun et al., 2014) . Detailed definitions of all variables are listed in Table 1.

Table 1 Variable definitions

Variable Name	Abbreviation	Definition	Measurement
Explained Variable	Pollution	Environmental Pollution Level	Composite index calculated by entropy method, based on three indicators: wastewater discharge, SO2 emissions, and dust emissions.
Group Dummy	treat	Treatment Group Dummy	Equals 1 if the city belongs to the treatment group, otherwise 0.
Time Dummy	post	Policy Implementation Dummy	Equals 1 if the policy was implemented in the city-year, otherwise 0.
DID Term	did	Interaction Term	treat×posttreat×post; equals 1 for treatment group cities in post-policy years, otherwise 0.
Green Fiscal Support	Green_support	Environmental Fiscal Effort	Fiscal environmental protection expenditure / General fiscal budget expenditure.
Green Investment	Green Investment	Environmental Investment Intensity	Pollution control investment / GDP.
Environmental Penalty	Ev_penalty	Environmental Enforcement Intensity	Total number of environmental penalty cases in the city-year.

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Economic Development Level	EC	Log of GDP	ln(GDP).
Population Density	PD	Population Pressure	Resident population / City area (persons/km^2).
Openness Level	DOS	Economic Openness	Foreign direct investment (FDI) / Regional GDP.
Fiscal Investment Intensity	FII	Public Investment Effort	Fixed asset investment / General fiscal expenditure.
Industrial Structure	IS	Industrial Upgrading	Tertiary industry value added / Regional GDP.
Education Expenditure Level	EEL	Public Education Effort	Education expenditure / General fiscal expenditure.
R&D Expenditure Level	LST	Public R&D Effort	Science and technology expenditure / General fiscal expenditure.
Educational Attainment	LE	Human Capital Stock	College and university students / Total population.

3.4. Descriptive Statistics

Table 2 presents the descriptive statistics of the key variables. The environmental pollution level, calculated using the entropy method, is relatively low overall, with a mean value of 0.004. However, the maximum value reaches 0.0901, indicating significantly higher pollution levels in certain cities. Both green fiscal support and green investment exhibit small standard deviations, with minimal differences between their maximum and minimum values, suggesting that cities generally prioritize environmental initiatives. In contrast, environmental penalties show a large standard deviation, reflecting substantial variations in enforcement intensity across cities. The economic development level ranges from a minimum of 2.5934 to a maximum of 8.261, highlighting pronounced disparities in economic conditions among cities.

Table 2 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Pollution	2809	.0004	.0037	0	.0901
Green_support	2809	.0073	.0038	.0004	.0256
Green Investment	2809	.0122	.0047	.0016	.0298
Ev_penalty	1727	196.2085	490.1991	1	6391
EC	2809	5.0786	.9301	2.5934	8.261
PD	2808	5.7531	.9128	.6831	7.8816
DOS	2798	.0169	.0178	0	.1988
FII	2808	4.7354	2.0259	.0124	14.8013
IS	2773	.4185	.1016	.1015	.8387
EEL	2808	.177	.0394	0	.3562
LST	2808	.0168	.0171	.0006	.2068
LE	2798	.0196	.0258	0	.1938

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4. Empirical results and analysis

4.1. Baseline regression results

Table 3 reports the baseline regression results. In column (1), the coefficient of the policy variable is significantly negative at the 95% confidence level, indicating that the audit of outgoing leading officials' natural resource accountability exerts a statistically significant suppressing effect on urban environmental pollution without the inclusion of control variables. In columns (2), (3), and (4), control variables are sequentially added to the model. The results demonstrate that the pollution-mitigating effect of the policy remains statistically significant across all specifications, confirming the robustness of the findings.

Table 3 Estimation findings of DID method

Variables	(1) *Pollution*	(2) *Pollution*	(3) *Pollution*	(4) *Pollution*
did	-0.0003** (0.0001)	-0.0004** (0.0001)	-0.0003** (0.0001)	-0.0004** *(0.0002)
ln *GDP*	—	0.0007*** (0.0003)	—	0.0006*** (0.0002)
PD	—	-0.0001** (0.0001)	—	0.0000 (0.0001)
DOS	—	-0.0062** (0.0025)	—	-0.0095*** (0.0037)
FII	—	—	0.0001** (0.0000)	0.0001** (0.0000)
IS	—	—	-0.0016** (0.0008)	-0.0007 (0.0007)
EEL	—	—	0.0013 (0.0010)	0.0006 (0.0010)
LST	—	—	0.0022 (0.0015)	0.0011 (0.0013)
LE	—	—	-0.0436** (0.0174)	-0.0446** (0.0177)
Year FE	*Yes*	*Yes*	*Yes*	*Yes*
City FE	*Yes*	*Yes*	*Yes*	*Yes*
_cons	0.0004*** (0.0000)	-0.0024** (0.0010)	0.0013** (0.0005)	-0.0017 (0.0010)
N	2809	2798	2763	2753
$R-sq$	0.7854	0.7862	0.7904	0.7912
Adj. R-*sq*	0.7606	0.7613	0.7655	0.7660

Notes: Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

4.2. Event study

Figure 1 shows dynamic effect estimates of the treatment and control groups before and after policy implementation. The x-axis shows time relative to the policy implementation year (t = 0 is the implementation year), and the y-axis shows the estimated treatment effect. Results show that for the five years before policy implementation (t = -5 to t = -1), all time dummy coefficients

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are near zero and not significant at the 10% level (p > 0.1), indicating no systematic pre-trend differences between groups and confirming the parallel trends assumption. For the implementation year and subsequent years (t ≥ 0), coefficients are significantly negative, showing the leaders' natural resource asset audit policy sustainably reduces pollution post-implementation. These results confirm the reliability of the baseline findings.

4.3. Robustness test

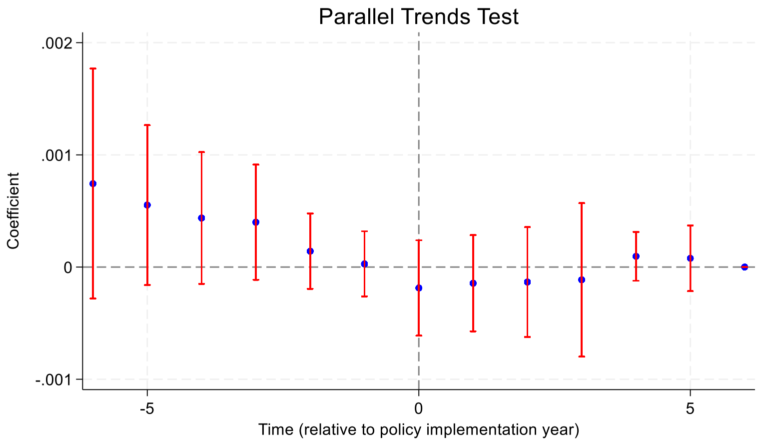

Figure 1 Parallel trend test results

4.3.1. Temporal placebo test

To test the sensitivity of the model to temporal variations and enhance the reliability of the findings, we conducted a temporal placebo test following the approach of Roth et al.,(2023). Based on the baseline regression framework, we artificially shifted the implementation year of the audit of outgoing leading officials'natural resource accountability forward by four and five years for all cities and re-estimated the regression models. As shown in Table 5, the adjusted policy effects remain statistically insignificant (at the 10% level) under both counterfactual scenarios (4-year and 5-year shifts). These results confirm that the original policy effect is robust, indicating that the Audit of outgoing leading officials' natural resource accountability genuinely contributed to reducing urban environmental pollution levels.

Table 4 Temporal placebo test

	(1) *pollution* **(5-year shifts)**	(2) *pollution* **(5-year shifts)**
did	-0.003 (0.002)	-0.002 (0.001)
Control	*Yes*	*Yes*
Year FE	*Yes*	*Yes*
City FE	*Yes*	*Yes*
N	2808	2808

Notes: Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

4.3.2. PSM—DID

To mitigate sample selection bias and ensure pre-policy similarity in characteristics between the treatment and control groups, thereby enhancing estimation accuracy, we conducted

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robustness checks using the Propensity Score Matching-Difference-in-Differences (PSM-DID) method.

Specifically, we selected five covariates—economic development level, population density, green investment, scientific and technological level, education expenditure level, and openness level—to match each treatment group unit with its closest counterpart in the control group. After excluding unmatched samples, we re-estimated the model using a multi-period difference-in-differences (DID) framework. The results demonstrate that the pollution-reducing effect of the audit of outgoing leading officials'natural resource accountability remains statistically significant, confirming the robustness of our findings.

Table 5 PSM-DID

	pollution
did	-0.00016* (-1.73)
Control	*Yes*
Year FE	*Yes*
City FE	*Yes*
Number of obs	1419

Notes: Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

4.4. Mechanism Test

As mentioned earlier, this study proposes that the audit of officials' natural resource assets may reduce urban environmental pollution by increasing environmental aid and penalties. This is tested using causal stepwise regression analysis. Models (3) and (4) test whether the leaders' natural resource asset audit policy reduces pollution by increasing environmental penalties. In model (3), β_1 is positive and significant; in model (4), β_1 is negative but insignificant, while β_3 is negative and significant at the 10% level. This suggests that increased environmental penalties fully mediate the reduction in pollution caused by the audit policy, meaning the policy achieves urban pollution reduction by enhancing environmental penalties.

Models (5) and (6) test whether the leaders' natural resource asset audit policy reduces pollution by increasing environmental aid. In model (5), β_1 is positive and significant; in model (6), β_1 is negative and significant, while β_3 is negative but insignificant. This shows the audit policy boosts urban green investment, yet this investment doesn't significantly lower pollution. Thus, the policy fails to reduce urban pollution through enhanced environmental aid. The detailed results are presented in Table 6.

Table 6 Mechanism Test

	(1) *Ev _ penalty*	(2) *Pollution*	(3) Green Investment	(4) *Pollution*
did	107.4119*** (2.81)	-0.002 (-1.16)	0.0047** (2.25)	-0.0036** (-2.5)
$Ev\_penalty_{it}$	—	-2.59e-08* (-1.66)	—	—
Green Investment$_{it}$	—	—	—	-0.00249 (-0.23)

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Year FE	*Yes*	*Yes*	*Yes*	*Yes*
City FE	*Yes*	*Yes*	*Yes*	*Yes*
Control	*Yes*	*Yes*	*Yes*	*Yes*
Number of obs	1721	1721	2797	2798
Adj. R-*sq*	0.4791	0.8266	0.5985	0.7611

Notes: Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

4.5. Further Analysis

The pollution-reducing effect of the audit of outgoing leading officials'natural resource accountability may vary across cities due to differences in local characteristics. To investigate this heterogeneity, we conducted subgroup analyses based on industrial structure and population density. Cities were divided into two groups—advanced industrial structure (above-average) and less developed industrial structure (below-average)—based on the mean value of industrial structure. The baseline regression was re-estimated for each subgroup: (1) In cities with advanced industrial structure, the coefficient of the did is significantly negative. (2) In cities with less developed industrial structure, the coefficient of the did term is negative but statistically insignificant .

This indicates that the pollution-reducing effect of the policy varies significantly with industrial structure. Cities with advanced industrial structures (e.g., those dominated by high-tech industries and services) exhibit a pronounced pollution reduction, likely due to their reliance on low-pollution, high-value-added sectors and greater capacity for green innovation. In contrast, cities with less developed industrial structures (e.g., heavy industry or resource-intensive sectors) show weaker effects, possibly due to technological limitations and higher baseline pollution levels.

Cities were categorized into high population density (above-median) and low population density (below-median) groups. Regression results reveal: The coefficients of the did are significantly negative in both subgroups. However, the absolute value of the coefficient is larger in low-density cities compared to high-density cities.

This suggests that the policy's pollution-mitigating effect is stronger in low-density cities. Potential explanations include: Higher policy implementation efficiency in low-density cities, where administrative coordination and enforcement may be more streamlined. Challenges in enforcement in high-density cities, such as complex governance structures and competing priorities, which dilute policy effectiveness.

The heterogeneity analysis underscores that the environmental benefits of the Audit of outgoing leading officials' natural resource accountability depend critically on local industrial structure and population density. Policymakers should prioritize tailored strategies—such as promoting industrial upgrading in resource-dependent cities and enhancing governance capacity in densely populated areas—to maximize the policy's effectiveness.

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Table 7 Heterogeneity Analysis

	(1) *Pollution* **(advanced)**	(2) *Pollution* **(less developed)**	(3) *Pollution* **(high-density)**	(4) *Pollution* **(low-density)**
did	-0.0006** (-2.12)	-0.000336 (-0.71)	-0.0000409** (-2.27)	-0.0007986** (-2.52)
Year FE	*Yes*	*Yes*	*Yes*	*Yes*
City FE	*Yes*	*Yes*	*Yes*	*Yes*
Number of obs	1295	1438	1396	1355
Adj. R-sq	0.7633	0.9909	0.5247	0.7721

Notes: Robust standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

5. Conclusions and Policy Implications

5.1. Empirical Findings

This study examines the impact of the leaders' natural resource asset audit policy on urban environmental pollution using a multi-period DID model and panel data from 281 cities between 2011 and 2020. We find that this audit policy significantly reduces urban pollution, and this conclusion holds after conducting parallel trend, placebo, and PSM-DID tests, indicating the policy's effectiveness in pollution reduction. Furthermore, the mediation analysis reveals that the audit policy mainly reduces pollution by increasing environmental penalties, while the pollution reduction effect through environmental aid is not significant. Heterogeneity analysis shows that the policy's pollution reduction effect is stronger in cities with better industrial structures or lower population density.

5.2. Policy Recommendations

Based on these findings, we propose several recommendations. First, the promotion of the natural resource asset audit policy should be intensified, and its coverage should be expanded to more cities and regions. Second, it is essential to establish localized environmental data monitoring and pollution evaluation systems to standardize audit work and ensure the sustainable implementation of the audit policy. Third, the environmental penalty mechanism should be optimized by building digital and intelligent platforms. This will enable precise screening of problematic cases, move away from indiscriminate inspections, and achieve "smart law enforcement." Strengthening environmental penalties can further leverage the audit policy's pollution reduction effect and ensure strict enforcement of environmental regulations. Finally, in cities with less developed industries, efforts should be made to accelerate the transformation of traditional industries towards high-end, intelligent, and green models. This includes reducing the proportion of highly polluting industries, encouraging energy-saving and emission reduction innovations, and gradually phasing out or relocating heavily polluting industries.

The audit of outgoing leading officials’ natural resource accountability demonstrates significant potential to curb urban pollution, particularly when aligned with local industrial and demographic contexts. By addressing implementation gaps and leveraging technological advancements, policymakers can amplify its environmental benefits and foster sustainable development.

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References

[1] Blackman, A., Lahiri, B., Pizer, W., Rivera Planter, M., & Muñoz Piña, C. (2010). Voluntary environmental regulation in developing countries: Mexico's Clean Industry Program. Journal of Environmental Economics and Management, 60(3), 182–192. https:// doi.org/ 10.1016/ j.jeem.2010.05.006

[2] Cao, H., Zhang, L., Qi, Y., Yang, Z., & Li, X. (2022). Government auditing and environmental governance: Evidence from China's auditing system reform. Environmental Impact Assessment Review, 93, 106705. https://doi.org/10.1016/j.eiar.2021.106705

[3] Chen, C. (2011). Government Audit and National Economic Security. In M. Dai (Ed.), Innovative Computing and Information (Vol. 232, pp. 157–163). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-23998-4_24

[4] Fang, C. J., Ahmi, A., & Sharif, Z. (2024). Government Auditing, Government Transparency, and Corruption: Empirical Evidence from Provincial Levels in China. South Eastern European Journal of Public Health, 1780–1796. https://doi.org/10.70135/seejph.vi.2699

[5] Gao, Z., Zhao, Y., Li, L., & Hao, Y. (2024). The environmental consequences of national Audit governance: An analysis based on county-level data in China. Journal of Environmental Management, 359, 120976. https://doi.org/10.1016/j.jenvman.2024.120976

[6] Lei, J. (2020). Reforming the natural resource auditing system from the ecological civilization perspective. Chinese Journal of Population, Resources and Environment, 18(2), 87–96. https:// doi.org/10.1016/j.cjpre.2019.01.001

[7] Li, S., Shen, J., & Sun, F. (2025). A study on the water resource assets management audit for outgoing officials considering asset elements. Journal of Cleaner Production, 494, 144931. https:// doi.org/10.1016/j.jclepro.2025.144931

[8] Peng, L., & Li, H. (2024). Environmental governance and firm's environmental investment: Evidence from the natural resources and assets accountability audit of outgoing officials. Finance Research Letters, 65, 105545. https://doi.org/10.1016/j.frl.2024.105545

[9] Roth, J., Sant'Anna, P. H. C., Bilinski, A., & Poe, J. (2023). What's trending in difference-in-differences? A synthesis of the recent econometrics literature. Journal of Econometrics, 235(2), 2218–2244. https://doi.org/10.1016/j.jeconom.2023.03.008

[10] Siyiti, M., & Yao, X. (2024). Natural resource assets management and urban carbon emission efficiency: Evidence from quasi-natural experiment in China. Energy Economics, 140, 107963. https://doi.org/10.1016/j.eneco.2024.107963

[11] Sun, L., Luo, K., Zhou, C., & Yan, J. (2025). Can the government environmental audits improve corporate green investment? Evidence from China. International Review of Economics & Finance, 97, 103782. https://doi.org/10.1016/j.iref.2024.103782

[12] Weitzman, M. (1974). Prices Vs. Quantities. Review of Economic Studies, 41, 477–491. https://doi.org/10.2307/2296698

[13] Wen, Z. L., & Ye, B. (2014). Analyses of Mediating Effects: The Development of Methods and Models. Advances in Psychological Science, 22, 731–745. https://doi.org/10.3724/SP.J.1042.2014.00731

[14] Wu, X., Cao, Q., Tan, X., & Li, L. (2020). The effect of audit of outgoing leading officials' natural resource accountability on environmental governance: Evidence from China. Managerial Auditing Journal, 35(9), 1213–1241. https://doi.org/10.1108/MAJ-08-2019-2378

[15] Yu, Y., Bao, Y., Zhang, Q., Shen, P., Yang, H., & Xu, Z. (2023). Evaluation of marine resources environmental responsibility audit based on PSR framework. Ocean & Coastal Management, 245, 106742. https://doi.org/10.1016/j.ocecoaman.2023.106742

[16] Zeng, H., Li, X., Zhou, Q., & Wang, L. (2022). Local government environmental regulatory pressures and corporate environmental strategies: Evidence from natural resource accountability audits in China. Business Strategy and the Environment, 31(7), 3060–3082. https:// doi.org/ 10.1002/bse.3064

[17] Zhang, G., Wang, J., & Liu, Y. (2024). How does auditing outgoing officials' natural resource asset management policies affect carbon emission efficiency? Evidence from a debiased machine learning model. Journal of Cleaner Production, 478, 143932. https://doi.org/ 10.1016/ j.jclepro. 2024. 143932

[18] Zhang, W. (2018). Conducting Natural Resource Assets Departure Audit on Leading Cadres. Journal of Service Science and Management, 11(1), Article 1. https://doi.org/10.4236/jssm.2018.111004

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A Study on Expatriates' Cultural Adaptation in China: An Example of Community-based Language Services in Shaoxing

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Abstract

Through questionnaires and case interviews, we investigated the current situation of cross-cultural adaptation of expatriates in Shaoxing, analyzed the factors affecting their cross-cultural adaptation in three dimensions: linguistic adaptation, psychological adaptation, and socio-cultural adaptation, and put forward the following suggestions: enhancing language support, improving accommodation, providing vocational guidance, and encouraging community participation to improve the cross-cultural communication skills of expatriates, with a view to providing constructive suggestions for the development of community-based language services.

Keywords

Expatriates; acculturation; community-based language services.

1. Introduction

With the rapid development of China's economy and the deepening of its opening to the outside world, more and more foreigners are choosing to live and work in China. Shaoxing, as an important city in the eastern part of the country, has attracted a large number of expatriates by virtue of its rich cultural heritage and vibrant economic environment. It is worth mentioning that Shaoxing Merchants' initiative to hire expatriates for the first time in its history marked an important milestone in the city's efforts to attract foreign talent[1]. This event not only reflects Shaoxing's openness in promoting foreign investment and international exchanges, but also provides expatriates with the opportunity to work in China and promotes cultural exchange and integration. However, for these expatriates, language and cultural differences have become major barriers to their integration into the local community. Although the Shaoxing municipal government and community management organizations have taken measures to help expatriates adapt to local life, the actual effects of community-based language services and their impact on cultural adaptation have not been adequately studied.

The purpose of this study is to explore the challenges of acculturation of expatriates in the Shaoxing community, to assess the impact of dependent language services on their acculturation, and to analyze the problems and challenges in the implementation of the program in order to make recommendations for optimization.

This study has important theoretical, practical and social significance. Theoretically, it will enrich the theoretical system in the field of cross-cultural adaptation, especially in the area of expatriates' cultural adaptation in China, and provide new perspectives and theoretical foundations for subsequent research. Practically, it will provide targeted language services and cultural adaptation support strategies for Shaoxing and other communities, help expatriates better integrate into the local society and improve their quality of life, and provide references for the government and related departments to formulate relevant policies to promote Chinese-foreign cultural exchanges and the introduction of international talents. Socially, improving the cultural adaptability of expatriates can help build a harmonious international community

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environment, promote mutual understanding and respect among people of different cultural backgrounds, enhance the inclusiveness and diversity of the community, and contribute to China's globalization process.

2. Overview of International and Domestic Research

With the advancement of globalization and the deepening of international exchanges, the cross-cultural adaptation of expatriates in China has gradually become a hot topic of academic concern. In foreign countries, the research on cross-cultural adaptation began in the early 20th century, with early studies focusing on the mental health problems of immigrants[2], and then gradually developed into the study of various consequences arising from the cross-cultural process[3]. Black further classified it into three dimensions, namely general adaptation, work adaptation, and interactional adaptation. Oberg put forward the famous U-shape model, which described four phases of the process of cross-cultural adaptation: honeymoon phase, crisis phase and recovery and adaptation periods[4]. Berry, on the other hand, explored the four modes of acculturation: cultural integration, assimilation, segregation and marginalization[5].

Domestic research started late but has developed rapidly in recent years, and scholars have explored cross-cultural adaptation in depth from different disciplinary backgrounds. Yang Junhong (2005)[6] investigated the cultural adaptation status of international students coming to China and found that interpersonal adaptation was the main challenge they faced. Wang Lijuan (2011) systematically elaborated the development history, classification, research dimensions and perspectives, and related theories of intercultural research[7]. Wen Wen et al. (2014) pointed out that the level of international students' socio-cultural adaptation in China was affected by their activities with Chinese faculty and students, and international students from East Asia encountered greater difficulties in cultural adaptation[8].

Of particular interest, Cheng Hui et al. (2024) examined psychological and social adaptation variables through an empirical study of expatriate communities living in China and found that expatriate communities have a better status quo of psychological adaptation, while social adaptation is more significantly affected by objective factors[9].

In the context of community-based language services in Shaoxing, this study aims to explore the cultural adaptation of expatriates in China. As a city with deep cultural heritage, Shaoxing's community-based language services provide a platform for expatriates to learn and practice Chinese, which helps them better integrate into the local society. This study will draw on domestic and international research findings and combine them with the actual situation of Shaoxing's community to conduct an in-depth analysis of expatriates' cultural adaptation and put forward corresponding suggestions and countermeasures.

3. Research Analysis of Results

Based on Searle and Ward's dichotomy (2022)[10] of cross-cultural adaptation, this study targets the current situation of cross-cultural adaptation of expatriates in Shaoxing from three aspects: linguistic adaptation, psychological adaptation and cultural adaptation. The research questions mainly include two aspects: (1) the problems and current situation analysis of the cross-cultural adaptation of expatriates in Shaoxing; (2) the analysis of important factors affecting the cross-cultural adaptation of expatriates in Shaoxing. The study used a questionnaire survey combined with case interviews, and selected expatriates from different areas of Shaoxing as the research subjects, including 61 males and 18 females.

A total of 95 questionnaires were distributed, of which 79 valid questionnaires were returned. The specific target information is shown in Table 1 below:

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Table 1: Basic information of the research subjects

Item	Category	Number	Percentage
Nationality	Iran	21	26%
	Afghanistan	7	9%
	Yemen	6	8%
	Korea	3	4%
	Pakistan	28	35%
	Andorra	2	3%
	Egypt	4	5%
	Russia	8	10%
Age	<30	10	13%
	30-45	48	61%
	>45	21	26%
Time in China (Shaoxing)	Less than a month	19	24%
	1-6 months	24	30%
	6-12 months	8	10%
	More than a year	28	36%
Occupation	Student	7	9%
	Teacher	2	3%
	Employees of the enterprise	69	87%
	Freelancing	1	1%

Based on the tabular data, we can see that among the groups surveyed, Pakistanis have the highest percentage with 35%, followed by Iranians with 26%. In terms of age distribution, the group between 30 and 45 years old has the highest percentage of 61%, while the groups younger than 30 years old and older than 45 years old account for 13% and 26% respectively. In terms of the time spent in China (Shaoxing), the group with more than one year accounted for the highest proportion of 36%, followed by the group with 1-6 months, accounting for 30%. In terms of occupational distribution, employees of enterprises accounted for the majority with 87%, students accounted for 9%, while teachers and freelancers had lower proportions of 3% and 1%, respectively.

(1) Language Adaptation

Language adaptation refers to the process by which an individual learns, uses and gradually integrates the local language in a new language environment. This process involves a number of aspects, and this paper only investigates the expatriates' own language ability, their learning and use of Chinese, and the number of times they use Chinese in their daily lives.

It also analyzes the data in these three areas to find out the problems that exist. They are language proficiency and diversity; Frequency and fluency in Chinese and Concerns about Chinese language services in the community.

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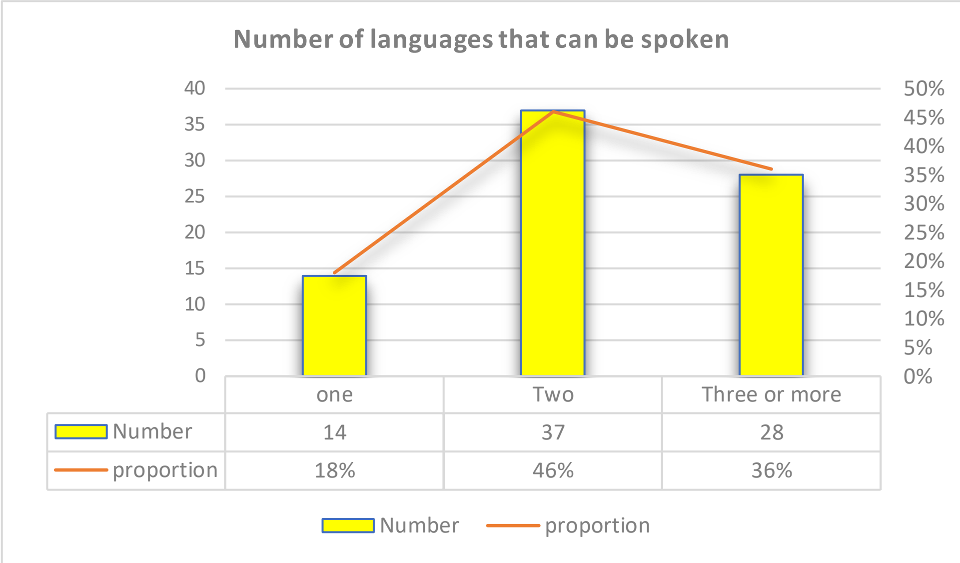

Figure 1: Number of languages that can be spoken

As Figure 1 shows that the percentage of expats who speak only one language is 18%, which limits their ability to communicate in a multilingual environment. Forty-six percent of expatriates speak two languages, indicating that they have a certain level of linguistic adaptability, but may still need to improve their Chinese language skills to better integrate into the local community. Thirty-six percent of expatriates speak three or more languages, indicating that they have strong language learning abilities and are more likely to adapt to a Chinese-speaking environment and integrate into the local community.

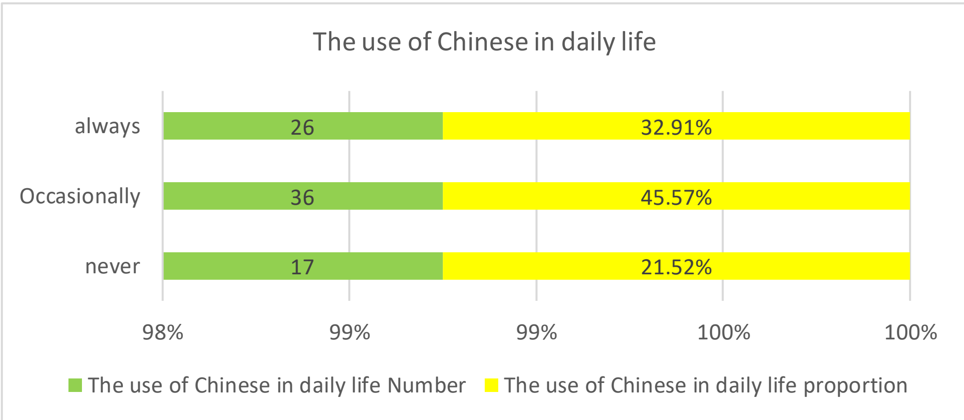

Figure 2: The use of Chinese in daily life

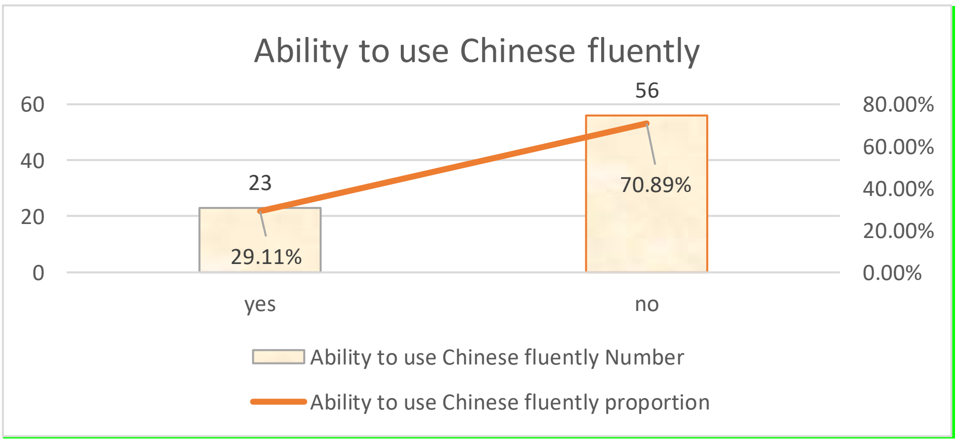

Figure 3: Fluency in using Chinese

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Figure 2 and 3 reveal that 21.52% of expats never use Chinese, which may have something to do with their social circle or that their work and daily activities do not require Chinese. 45.57% of expats use Chinese occasionally, which means that they have some basic knowledge of the language, but probably not enough to communicate in a complex or in-depth way. 32.91% of expats use Chinese all the time, which is a positive sign that they are able to use Chinese in comfortable using Chinese in their daily life. The fact that 70.89% of people cannot speak English fluently indicates that there is a large market for those in need of English language services. Even so, 29.11% of people are still able to use English fluently.

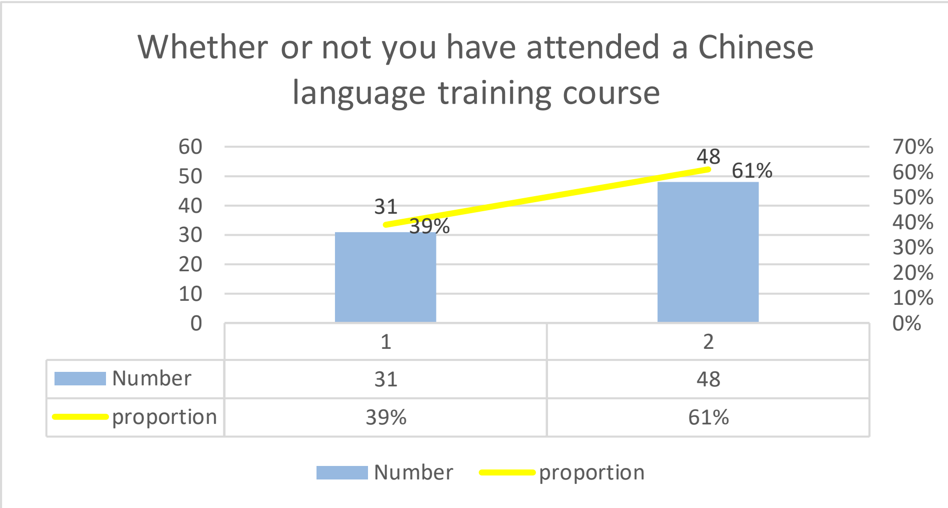

Figure 4: Attending Chinese language training course

This may be related to the fact that they have attended Chinese language training courses, as seen in Figure 4, 39% of them have attended Chinese language training courses, which may help them to improve their language skills and better adapt to the living environment in Shaoxing City.

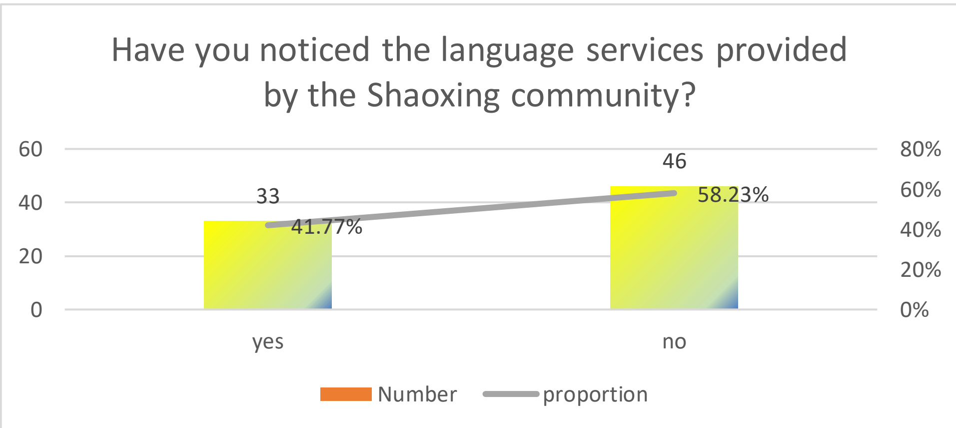

Figure 5: The notice on language services provided by the Shaoxing community

It can be seen that only nearly half of them noticed the relevant language services provided by the community, and still half of them paid no attention to the community language services, and most of them answered no to the question of whether or not they had participated in Chinese language training courses, which shows that they did not pay enough attention to the Chinese language.

(2) Psychological Adaptation

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Psychological adaptation involves the attitude of adapting to the culture, confidence in language learning, the number of times they share their views with family and friends, and their plans for the future. When people from different countries come to Shaoxing to study and live in this unfamiliar environment, psychological adaptation is a prerequisite for their cross-cultural adaptation, which directly affects their socio-cultural adaptation or academic adaptation. The psychological adaptation of expatriates coming to Shaoxing is shown as below.

Adaptation of cultural attitudes

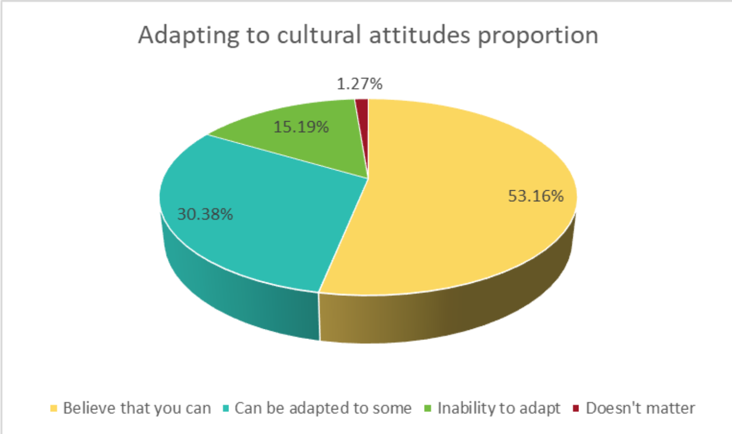

Figure 6: Attitudes on adapting different cultures

Figure 6 shows 53.16% of the expatriates believe that they will definitely be able to adapt to Chinese culture, and their positive attitude towards adapting to the new environment is commendable; 30.38% of the expatriates believe that they can only adapt to a part of Chinese culture, which may mean that they have difficulty adapting to certain aspects of the culture, but are still trying to adapt; and 15.19% of the expatriates say that they are unable to adapt, and that they are encountering greater psychological adaptation challenges and need more support and help. There is one thing need to be mentioned that 1.27% of the expatriates think it doesn't matter whether or not they can adapt to cultural attitudes.

Confidence in language learning

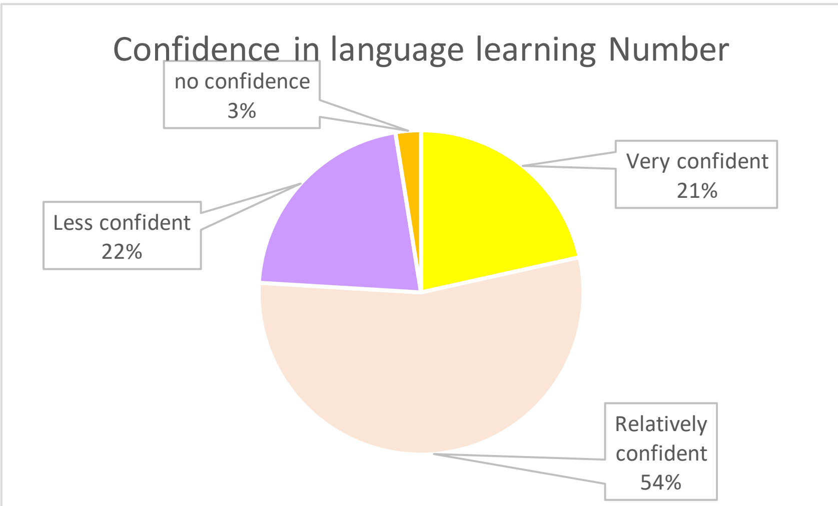

Figure 7: Language Learning Confidence

In Figure 7, 21% of the expatriates are confident in learning Chinese, which indicates that they have a positive attitude towards language learning, which is crucial for them to live and study in Shaoxing. 54% of the expatriates think that they can only understand part of a sentence with

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relative confidence, which may mean that they are having difficulties with the language and need more linguistic support. 22% can only understand words, which suggests that they may need more time and resources for language learning.

The number of times you share your thoughts with family

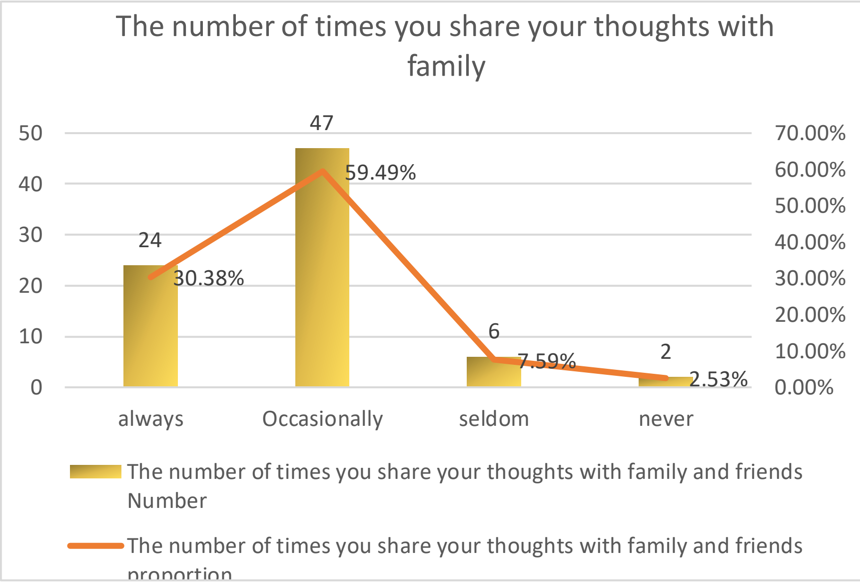

Figure 8: Frequency of sharing thoughts with family

Figure 8 demonstrates that 30.38% of expats always share views with family and friends, which suggests that they are doing better in terms of social and emotional support, which could help their psychological adjustment. 59.49% of expats occasionally share views with family and friends, which could mean that they are seeking support with some frequency, but there is still room for improvement. 7.59% of expats seldom share views with family and friends, which could suggest that they are social and emotional support, and may need to be encouraged to interact more with others.

Future intentions:

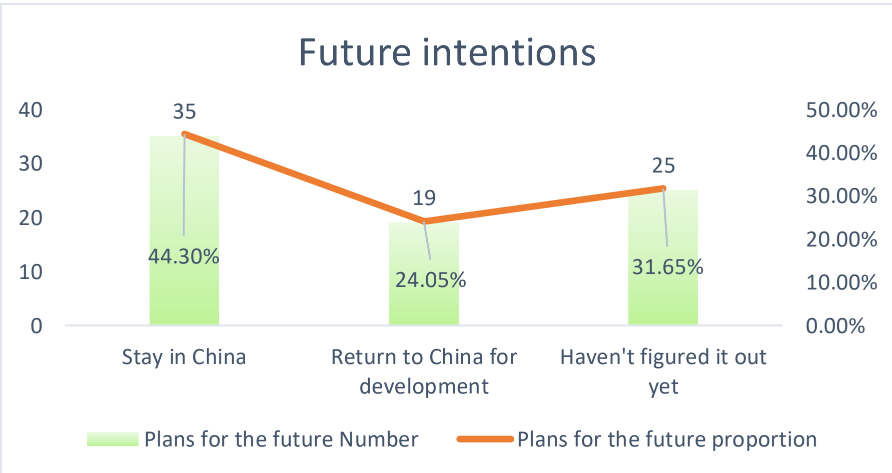

Figure 9: Future intentions

In Figure 9 above, 44.30% of expatriates plan to stay in China, indicating a positive attitude towards their future in Shaoxing, which is important for their long-term adaptation and integration. 24.05% of expatriates plan to return to their home country, which may mean that they have reservations about their long-term adaptation in Shaoxing. 31.65% of expatriates'

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intentions for the future depend on circumstances, suggesting that they may still be waiting to see and assessing how they will fit in.

(3) Socio-cultural adaptation

Socio-cultural adaptation was designed as a questionnaire in terms of food and accommodation, friendships and activities, and culture and work.

a. Dietary adaptation

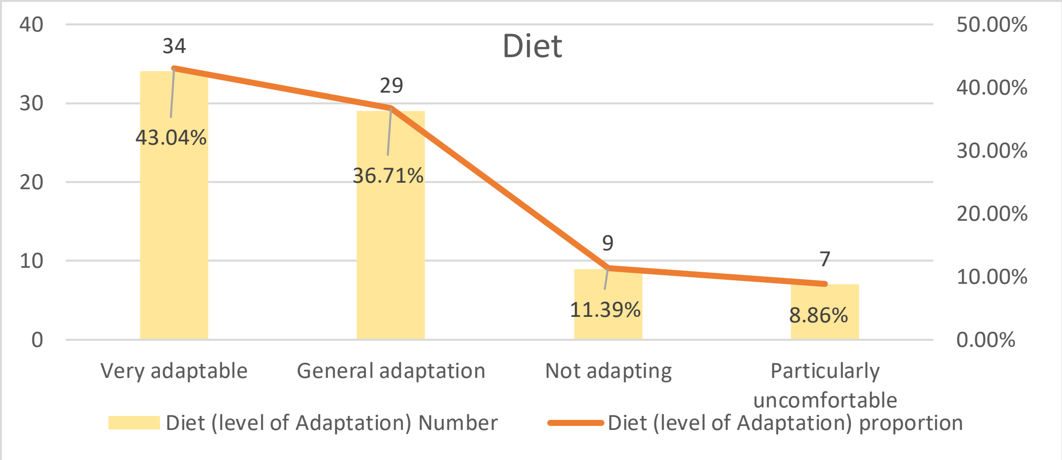

Figure 10: Diet (level of adaptation)

Figure 10: In terms of dietary adaptation, the data shows that 43.04% of expatriates said they were very well adapted to Chinese cuisine, indicating that the diversity and uniqueness of Chinese food is recognized and enjoyed by some expatriates. However, there are also some who say they are not adapting or especially not adapting, which may be related to personal eating habits, religious beliefs or health concerns. To help these expatriates adapt better, the community can organize cooking classes to introduce Chinese food culture, as well as provide food choices that fit their dietary habits.

Accommodation satisfaction

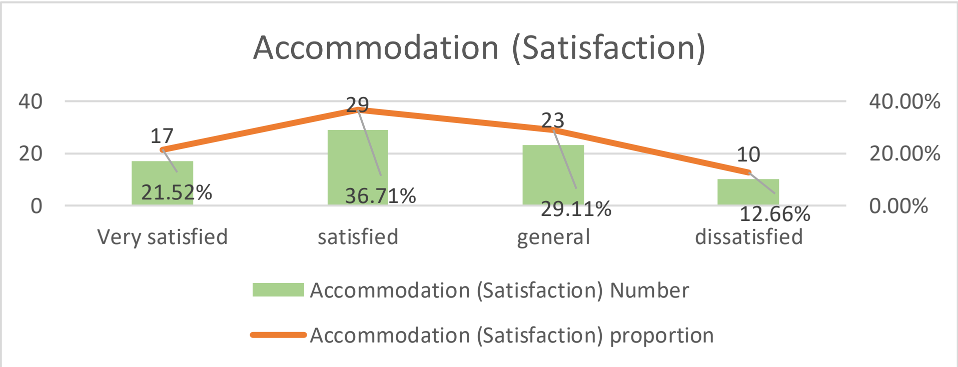

Figure 11: Accommodation (level of satisfaction)

Figure 11: In terms of accommodation satisfaction, 36.71% of expatriates were satisfied with the accommodation conditions, reflecting the community's efforts in providing accommodation services. However, there were also 29.11% who considered the accommodation to be average and 12.66% who were not satisfied. This suggests that the community needs to further understand the accommodation needs of expatriates and improve the accommodation environment in order to increase their satisfaction with their stay.

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Frequency of participation in activities

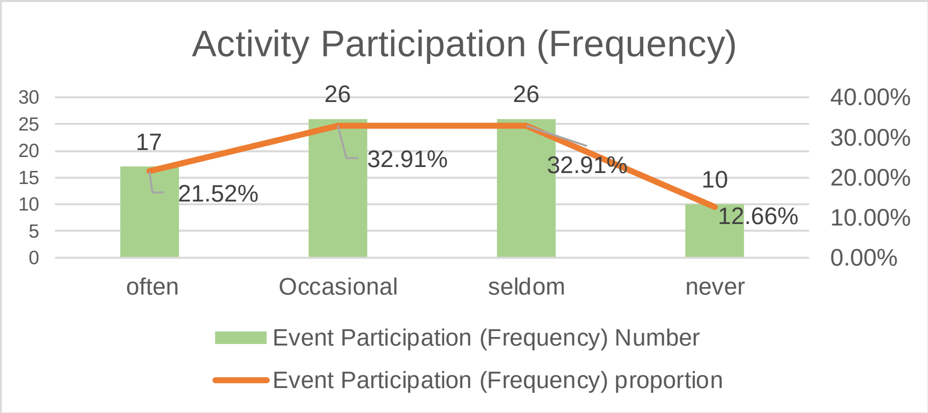

Figure 12: Activities (frequency of participation)

Figure 12: In terms of frequency of participation in activities, 21.52% of expatriates participated in community activities regularly, which helped them to better integrate into the community and make new friends. However, 32.91% seldom or occasionally participated and 12.66% never participated, which may mean that there is still room for improvement in the publicity, scheduling or content of community activities. The community can design more attractive activities through questionnaires or interviews to understand the interests and needs of expatriates in order to increase their participation.

Degree of adaptation to cultural practices

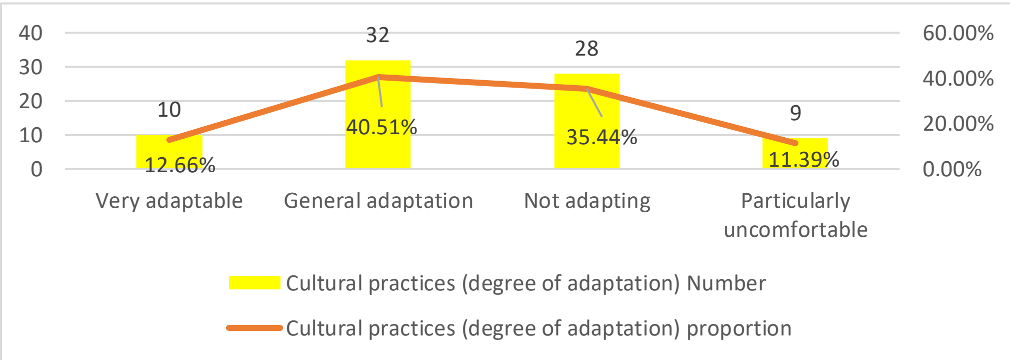

Figure 13: Cultural practices (degree of adaptation)

With regard to the degree of adaptation to cultural practices, only 12.66% of expatriates said they were very well adapted to Chinese cultural practices, while 40.51% said they were generally adapted and 35.44% were not, which indicates that there is still much room for improvement in cultural adaptation. Communities can organize cultural festivals, lectures and exchange activities to help expatriates gain a deeper understanding of Chinese culture and promote cultural exchange and integration.

Degree of adaptation to work or study pressure

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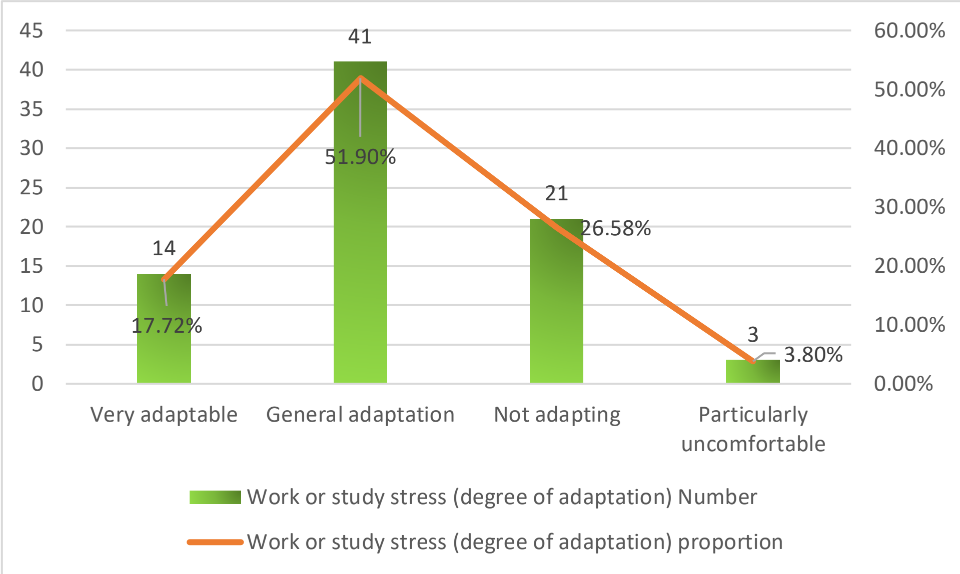

Figure 14: Work or study stress (level of adaptation)

With regard to the level of adaptation to work or study pressure, 17.72% of expatriates said they adapted very well, 51.90% said they adapted moderately, while 26.58% did not adapt. This may be related to language barriers, work environment or academic pressure. The community can provide language support services, such as English corners or Chinese language classes, as well as career development and academic guidance, to help expatriates better cope with stress at work and study.

4. Suggestions for Expatriates on Cultural Adaptation

Through our research on expatriates in Shaoxing, we found that expatriates showed significant differences in language adaptability, with some of them fluent in Chinese, while a significant percentage rarely or never use Chinese, highlighting their need to improve their Chinese language skills. In terms of psychological adaptation, most expatriates had positive attitudes towards Chinese culture, but faced challenges in terms of confidence in language learning and showed mixed performance in terms of social and emotional support. The socio-cultural adaptability survey showed that expatriates had varying degrees of adaptability in terms of diet, accommodation, participation in activities and cultural practices, suggesting that there is room for improvement in community services to meet the needs of expatriates.

In response to these findings, we make the following suggestions to facilitate expatriates' cultural adaptation:

(1) The number of expatriates lacks access to language learning resources, or they may not realize the importance of learning Chinese. In response the community should enhance language support services, such as providing additional Chinese language training courses and offering online learning platforms to improve expatriates' language skills. Second, cultural exchange activities such as festival celebrations and cultural lectures should be organized to enhance expatriates' community participation and increase their understanding of and participation in Chinese culture.

(2) The psychological adaptation of expatriates in Shaoxing is characterized by diversity. Most expatriates have a positive attitude towards adapting to Chinese culture, but there are some challenges in terms of confidence in language learning. Their performance in socialization and emotional support varied, as did their future intentions. To improve expatriates' psychological adjustment, Shaoxing can provide more language support services, encourage expatriates to

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participate more in social activities, as well as provide them with guidance on career planning and future directions to help them better integrate into the local work environment.

(3) Improving accommodation based on expatriates' feedback and provide more accommodation options that meet their needs. At the same time, we encourage them to participate in community activities and build up social networks to enhance their psychological adaptability.

Through these measures, we expect to provide stronger support for expatriates' cultural adaptation in Shaoxing City and promote their integration with the local community.

5. Conclusion

By investigating and analyzing the cultural adaptation of expatriates in Shaoxing City, this study reveals their current situation and challenges in terms of linguistic, psychological and socio-cultural adaptation. The findings suggest that although expatriates have made some progress in adapting to Chinese culture, they still face many challenges, especially in language learning and psychological adaptation. Therefore, the optimization and improvement of community-based language services are crucial for enhancing expatriates' cultural adaptation.

Through this study, we propose a series of targeted recommendations aimed at helping expatriates better integrate into community life in Shaoxing City, improving their quality of life, and promoting Chinese and foreign cultural exchanges. It is hoped that this study will provide a valuable reference for Shaoxing City and other similar communities to support the cultural adaptation of expatriates, as well as provide new perspectives and theoretical foundations for future research.

References

[1] H. YUAN: China Merchants Group has foreign employees. Observation and Reflection, 2003, (10): 38-39.

[2] J. W. BERRY: Social Psychological Costs and Benefits of Multiculturalism: A view from Cananda. Trames Journal of the Humanities and Social Sciences, 1998.

[3] J. S. BLACK, M. MENDENHALL, G. ODDOU: Toward a Comprehensive Model of International Adjustment: An Integration of Multiple Theoretical Perspectives. The Academy of Management Review, 1991, 16(2): 291-317.

[4] K. OBERG: Cultural shock: Adjustment to new cultural environments. Practical Anthropology, 1960, 7(4): 177-182.

[5] BERRY J, POORTINGA Y, SEGALL M, et al. Cross-cultural Psychology: Research and Applications (Second, revised edition). 2002.

[6] J. YANG: A Study on the Cross-cultural Adaptation Problems of International Students in China [D]; East China Normal University, 2005.

[7] L. WANG: A Review of the Research Status on Cross-cultural Adaptation [J]. Shandong Social Sciences, 2011, (4): 44-49.

[8] W. WEN, J. LIU: An Empirical Study on Cross-cultural Adaptation of International Students in China and Its Influencing Factors. Fudan Education Forum, 2014, 12(5): 8.

[9] C. MIAO, S. ZHANG: The cross-cultural adaptation of Chinese international students: an empirical study on sequential-mediated effects. Front Psychol, 2024, 15: 1386044.

[10] C. WARD: Critical Reflections on Sociocultural Adaptation. International Journal of Intercultural Relations, 2022, 88: 157-162.

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Research on the Inheritance Dilemmas and Innovative Paths of the Kaiyang Festival and the Xieyang Festival

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Abstract

As important fishing - culture festivals in the eastern coastal areas of China, the Kaiyang Festival and the Xieyang Festival embody fishermen's reverence for the ocean and their prayers for good fortune. However, in the process of modernization, these traditional festivals face challenges in inheritance. This article conducts field research and literature analysis in Xiangshan, Ningbo, and Daishan, Zhoushan, to explore issues such as funding shortages, a single - organizational model, and a succession gap among young inheritors. It also proposes corresponding innovative approaches, including the integration of culture and tourism, digital dissemination, and community participation, aiming to provide references for the protection and development of traditional fishing culture.

Keywords

Kaiyang Festival; Xieyang Festival; dilemma.

1. Inheritance Status and Problems

The Kaiyang and Xieyang Festivals of fishermen are distinctive folk activities in China's coastal regions, widely spread in Xiangshan County and Daishan County of Zhejiang Province, as well as in Rongcheng City, Rizhao City, and Jimo District (formerly Jimo City) of Shandong Province. In Xiangshan, Zhejiang, the fishermen's Kaiyang and Xieyang Festival activities have a long - standing history, dating back over a thousand years according to records. They reached their peak from the Yongzheng period of the Qing Dynasty to the period of the Republic of China. The Kaiyang Festival is usually held around the spring - summer transition when fishing boats are about to set sail. Fishermen hold relevant ceremonies, praying for safety and a bountiful harvest. The Xieyang Festival is celebrated around the summer - autumn transition after the fishing boats return safely, expressing gratitude for the ocean's blessings. These activities include fishermen's sacrificial rituals and traditional folk art performances. They are characterized by diverse sacrificial objects (such as Mazu Niangniang, Chenghuang Laoye, General Wang Pusa, and Emperor Yushi), a wide variety of sacrificial locations (temples, coasts, docks, ports, fishing grounds, etc.), and various sacrificial forms (covering boat - dragon worship, the Kaiyang Festival, the Xieyang Festival, small - sea sacrifices, Taiping Festival, fish - master sacrifices, etc.). Their core purpose is to pray for safe voyages and prosperous fishing.

The Kaiyang and Xieyang Festivals of fishermen in Daishan, Zhejiang, mainly center around the sea - sacrifice ceremony, commonly known as "Xie Long Shui Jiu" or "Xing Wen Shu". The ceremony is typically held in local Dragon King palaces, fishing - port docks, or on fishing boats. A shrine dedicated to the Dragon King is set up on - site, with tables and chairs arranged, incense burned, and candles lit. Five types of livestock, including pigs, sheep, and geese, along with fruits and vegetarian offerings, are presented as sacrifices. Fishermen offer libations with devotion and chant prayers. The etiquette is elaborate, and the procedures are rigorous. Historically, the sea - sacrifice in Daishan was divided into official and folk sacrifices, and some fishing villages still preserve this traditional custom. The timing of the activities is often related to the local

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fishing - production cycle. For example, relevant celebrations are frequently held during the seasonal fishing moratorium.

The Kaiyang and Xieyang Festivals carry the fishermen's original memories and spiritual sustenance. As spiritual activities expressing fishermen's inner wishes, they take sacrifice as the core and have the characteristics of entertaining both the gods and people. They are not only unique traditional folk - activity forms developed by local fishermen in their long - term fishing - production and life but also carry a wealth of important historical and cultural information. They have high academic value for studying the sacrificial history of China's coastal areas and play a significant role in enlivening the cultural life of fishing areas and promoting the prosperity of fishing - culture creation. However, through field visits to Xiangshan in Ningbo and Daishan in Zhoushan, it is evident that under the impact of modernization, the inheritance of the Kaiyang and Xieyang Festivals faces challenges.

1.1. Prominent Problem of Fund Shortage

In the Xiangshan area, the funding sources for the Kaiyang and Xieyang Festivals are extremely limited, mainly relying on government subsidies and personal donations. According to an interview with Han Sulian, the national - level inheritor of the Kaiyang Festival in this area, the annual national - level subsidy is approximately 50,000 yuan, and the provincial - level subsidy is only 25,000 yuan. However, the actual cost of holding a comprehensive and large - scale festival far exceeds the sum of these subsidies. This forces activity organizers like Han Sulian to use their own money to fill the funding gap, severely restricting the scale and quality improvement of the activities. For instance, during the activity - preparation process, a substantial amount of funds is required for purchasing sacrificial supplies, inviting traditional - art performance teams, and venue decoration, but the limited subsidies cannot meet these needs.

Although the funding investment in Daishan, Zhoushan, is relatively better than that in Xiangshan, with the local government investing over 2 million yuan annually to support the Xieyang Festival, in recent years, as the activity scale continues to expand, the number of participants increases, and the activity content becomes more diverse, the funds remain insufficient. Moreover, the issue of unequal distribution of income from local tourism development is also prominent. Tourism - related income has not effectively contributed to the sustainable development of the festival activities. Some stakeholders have reaped the majority of the benefits, while the proportion of funds allocated to the inheritance and development of the festivals is small, seriously affecting the sustainability of the activities. For example, the construction of some tourism - supporting facilities has consumed a large amount of funds, while there is a shortage of funds for cultivating inheritors, protecting traditional ceremonies, and promoting innovation.

1.2. Single - Organizational Model

The Kaiyang and Xieyang Festival activities in the Xiangshan area mainly rely on the spontaneous organization of inheritors. Taking Han Sulian as an example, as the main initiator, she mainly contacts villagers one by one via phone, appealing for their voluntary participation. This organizational model is highly inefficient and overly dependent on the personal ability and interpersonal relationships of the initiator. Once the initiator has limited energy or encounters unexpected situations, the organization of the activities will be severely affected. Additionally, due to the lack of a professional organizational structure and systematic planning, it is difficult to expand the scale of the activities, and the activity forms are relatively monotonous, unable to fully showcase the rich cultural connotations of the Kaiyang and Xieyang Festivals. For example, in the activity - process arrangement, chaos may occur due to the lack of overall planning, resulting in a significant decline in the activity's effectiveness.

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Daishan has adopted an organizational model of "government - led + social participation". The County Bureau of Culture, Radio, Television, Press, and Publication takes the lead, with each village taking turns to host, and professional planning companies are invited to assist. While this model has enhanced the professionalism and standardization of the activities to some extent, it also reveals the problem of excessive government intervention. The government's over - dominance in activity planning and implementation makes it difficult to fully unleash the autonomy and creativity of the public, leading to a gradual decrease in public participation. Villagers are more passive in performing tasks during the activities rather than actively engaging, which is not conducive to the deep - rooted inheritance of traditional festivals among the people. For example, in the design of some ceremony segments, due to the intervention of the government and professional planning companies, it may deviate from the traditional customs of local fishermen, causing the activities to lose their original folk characteristics.

1.3. Succession Gap among Young Inheritors

In both Xiangshan and Daishan, the inheritors of the Kaiyang and Xieyang Festivals generally show an aging trend. Xie Youfang, an inheritor in Xiangshan, is advanced in age and has limited energy, finding it challenging to carry out the inheritance work effectively. The younger generation shows little interest in traditional festivals. According to Han Sulian's description, most of the participants at the activity site are the elderly, and the younger generation is more inclined to work in cities, pursuing a modern urban lifestyle. This has created a succession gap in the inheritance of traditional festivals, making it difficult to fully inherit many traditional techniques and ceremonies. For example, the younger generation lacks enthusiasm for learning some traditional sacrificial dances and ballads, leading to the gradual disappearance of these cultural elements.

Although Daishan has attempted to select inheritors through methods such as "open selection" and "political - task assignments", after the selection, there is a lack of a systematic training mechanism. The newly selected inheritors only receive basic training and find it difficult to deeply understand and master the essence of the ceremonies. This makes it impossible for them to accurately convey the cultural connotations of traditional festivals during the actual inheritance process, greatly reducing the inheritance effect. For example, in the sacrificial ceremony, some new inheritors may make operational mistakes in crucial steps and details due to insufficient understanding, affecting the solemnity and integrity of the entire ceremony.

In the process of inheriting the Kaiyang and Xieyang Festivals, issues such as fund shortages, a single - organizational model, and a succession gap among young inheritors are intertwined, seriously threatening the survival and development of these two traditional festivals. It is urgent to seek effective solutions.

2. Analysis of the Causes of Inheritance Dilemmas

2.1. Changes in the Cultural Ecology

2.1.1. Impact of Fishery Modernization

In today's era, the process of fishery modernization is accelerating. Traditional fishing methods are gradually being replaced by mechanization. The widespread application of advanced fishing equipment and technology has significantly improved fishing efficiency, bringing about profound changes in fishermen's operation methods and lifestyles. In the past, fishermen relied entirely on manual labor and simple tools for fishing, establishing a close and deep - seated connection with the ocean. The ocean was not only the source of their livelihood but also the carrier of their culture and beliefs. Today, mechanized operations have substantially reduced fishermen's time at sea, making it relatively easier to obtain catches, and their dependence on the ocean has decreased remarkably.

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This change in dependence directly impacts the economic foundation of traditional festivals. The Kaiyang and Xieyang Festivals were originally ceremonies held by fishermen before going to sea and after returning, praying for safety and expressing gratitude for the ocean's offerings. Their existence was based on fishermen's awe and reliance on the ocean. When this dependence weakens, the spiritual connotations and practical significance of the festivals gradually fade in fishermen's hearts. For example, some young fishermen under the modern fishery - production model believe that the risks of going to sea have been greatly reduced, and they no longer hold the Kaiyang and Xieyang Festival ceremonies as devoutly as their ancestors. They even attach less importance to these traditional festivals than to some modern festivals.

2.1.2. Changes in the Concepts of the Young Generation under the Influence of Urbanization

The rapid development of urbanization has profoundly transformed people's lifestyles and values, and the young generation is particularly affected. Lured by urban life, the young generation yearns for a more convenient and diverse modern lifestyle and pursues fashionable and pluralistic cultural and entertainment activities. In contrast, traditional folk - cultural activities, with their relatively simple forms and traditional contents, struggle to arouse the interest of the young generation.

The traditional - cultural elements contained in the Kaiyang and Xieyang Festivals lack sufficient appeal to the young generation. Growing up exposed to modern technology and popular culture, they lack in - depth understanding and emotional resonance with the sacrificial ceremonies, folk performances, and other aspects of traditional festivals. For example, in some coastal fishing villages, the young generation is more interested in playing mobile games and watching online videos and has little enthusiasm for participating in the Kaiyang and Xieyang Festival activities. Moreover, urbanization has led to a large - scale migration of young labor to cities. Many young people leave fishing villages to work and live in cities, further weakening the inheritance foundation of traditional festivals among the young population.

2.2. Insufficient Policy Support

2.2.1. Fragmented Capital Investment and Lack of Long - term Planning

The government's investment in supporting the inheritance and development of the Kaiyang and Xieyang Festivals is fragmented and lacks long - term planning. Taking Xiangshan as an example, the activity funds come from multiple different departments, but there is no dedicated special - purpose appropriation. This makes the distribution and use of funds lack systematicity and coherence, resulting in low capital - utilization efficiency. The fund - allocation times, standards, and requirements of different departments vary. Activity organizers need to spend a great deal of energy coordinating relationships when applying for and using funds, increasing management costs. Furthermore, due to the lack of long - term and stable financial support, activity organizers find it difficult to formulate long - term development plans and cannot continuously invest in and improve festival activities, which severely restricts the scale and quality improvement of festival activities.

2.2.2. Emphasis on "Intangible - Cultural - Heritage Application" over Inheritance and Innovation in Cultural - Protection Policies

Currently, cultural - protection policies tend to place more emphasis on "intangible - cultural - heritage application" while neglecting inheritance and innovation to a certain extent. Many local governments invest a large amount of resources and energy in the "intangible - cultural - heritage application" work of the Kaiyang and Xieyang Festivals. After successfully applying for intangible - cultural - heritage status, they fail to promptly shift the focus to subsequent inheritance and innovation. This makes the festival activities gradually become rigid in form,

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lacking the innovative vitality to keep up with the times and difficult to attract more people to participate.

When local areas hold the Kaiyang and Xieyang Festivals, they still adhere to the activity forms and contents from previous years. The sacrificial ceremonies, folk performances, and other segments lack novelty and cannot meet the aesthetic needs of modern audiences. Moreover, in terms of cultural inheritance, there is a lack of effective support and cultivation for inheritors, and a comprehensive inheritance system has not been established, making it difficult to effectively inherit and develop traditional techniques and cultural connotations. This phenomenon of emphasizing "intangible - cultural - heritage application" over inheritance and innovation has caused the Kaiyang and Xieyang Festivals to gradually lose their attractiveness and vitality in modern society.

2.3. The Double - edged - Sword Effect of Tourism Development

2.3.1. Excessive Commercialization Leading to the Loss of Cultural Connotations

Tourism development has brought significant economic benefits to coastal areas. For example, the homestay industry on Dongmen Island in Xiangshan has thrived under the impetus of tourism, bringing substantial income to local residents. However, excessive tourism development has also had a negative impact on the Kaiyang and Xieyang Festivals. The most prominent issue is the excessive commercialization of festival activities.

Driven by the tourism market, some local areas, in pursuit of maximum economic benefits, over - package the Kaiyang and Xieyang Festivals as tourism products, one - sidedly focusing on the ornamental and commercial value of the activities while neglecting their original cultural connotations. The sacrificial ceremonies are simplified or modified, folk performances become mere commercial shows, and traditional - cultural elements are misused or distorted. For example, some merchants add numerous entertainment projects unrelated to traditional culture during the festival activities to attract tourists, causing the Kaiyang and Xieyang Festivals to gradually devolve into a formalistic performance, losing their sacredness and cultural heritage as traditional fishermen's festivals.

2.3.2. The Influx of Tourists Putting Pressure on the Local Ecology and Folk Environment

With the growing popularity of the Kaiyang and Xieyang Festivals, a large number of tourists are attracted to visit and experience. Although the influx of tourists has promoted the local tourism industry to a certain extent, it has also imposed great pressure on the local ecological and folk environment. Taking the Shatou Scenic Spot as an example, during the festival, the large number of tourists causes traffic congestion, bringing great inconvenience to the travel of local residents. At the same time, the increase in the number of tourists exceeds the carrying capacity of local infrastructure, leading to environmental - sanitation deterioration and damage to the ecological balance. In addition, the behaviors and cultural concepts of tourists have also influenced the local folk environment. Some tourists lack respect and understanding of local traditional customs and may engage in inappropriate behaviors when visiting and participating in festival activities, interfering with the normal life of local residents and disrupting the inheritance atmosphere of traditional folk culture. This damage to the ecological and folk environment not only affects the quality of life of local residents but also poses a threat to the sustainable inheritance of the Kaiyang and Xieyang Festivals.

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3. Exploration of Innovative Paths

3.1. Integration of Culture and Tourism to Activate Cultural Values

3.1.1. Develop Characteristic "Festival + Tourism" Products

Deeply explore the cultural connotations of the Kaiyang and Xieyang Festivals and organically integrate them with the tourism industry to create attractive characteristic tourism products. Taking Xiangshan as an example, the local area can design a "Mazu - Culture Experience Tour" route centered around the Mazu culture. Tourists can not only visit the time - honored Mazu Temple, understand the origin and development of Mazu beliefs, and experience its profound cultural heritage but also participate in the sacrificial ceremonies of the Kaiyang and Xieyang Festivals to feel the charm of traditional folk activities. Through immersive experiences such as wearing traditional costumes, offering sacrifices, and joining parades, tourists can gain a deeper understanding of the Mazu culture and enhance their sense of identity and belonging to this traditional culture.

In Daishan, a "Dragon - King - Sacrifice Research Tour" project can be launched based on the Dragon - King - sacrifice culture. Organize tourists to visit the Dragon - King Temple, and invite professional interpreters to introduce the historical origin of the Dragon - King belief, the process, and significance of the sacrificial ceremony, enabling tourists to understand the unique marine culture of Daishan. Meanwhile, set up research - learning courses for tourists to participate in making sacrificial supplies, learning traditional sacrificial etiquette, etc., and deeply experience the connotations of the Dragon - King - sacrifice culture through practical activities. This research - learning tour can not only meet tourists' thirst for knowledge but also cultivate potential audiences for local cultural inheritance.

3.1.2. Create Cultural Tourism Routes

Integrate the rich natural and cultural resources of the local area, and combine the Kaiyang and Xieyang Festivals with surrounding scenic spots to create cultural tourism routes with regional characteristics. In Xiangshan, with the Fishing Port Ancient City as the core, connect surrounding sacrificial places such as the Mazu Temple and the Fish Master Temple, as well as scenic island areas with beautiful natural scenery. When visiting the Fishing Port Ancient City, tourists can appreciate the ancient fishing town landscape and feel the charm of traditional fishing culture. When visiting the Mazu Temple and the Fish Master Temple, they can learn about the local sea - god beliefs and sacrificial traditions. The scenic island areas allow tourists to enjoy the beautiful sea view and experience the tranquility and comfort of island life. Through such route design, the cultural elements of the Kaiyang and Xieyang Festivals are integrated into the entire tourism process, enhancing the popularity and influence of the festivals and attracting more tourists to experience.

In Daishan, a tourism route themed on the Dragon King sacrifice culture can be created around the Sea - sacrifice Altar. Combine the Sea - sacrifice Altar with surrounding Dragon King palaces and folk villages. Tourists can watch the grand sea - sacrifice ceremony at the Sea - sacrifice Altar and feel its solemn and sacred atmosphere. At the Dragon King palaces, they can learn about the history and features of different Dragon King palaces and deeply explore the Dragon King belief. The folk villages enable tourists to experience the local traditional lifestyle, taste special food, and buy handicrafts. By creating such cultural tourism routes, it can not only enrich tourists' travel experiences but also promote the coordinated development of the local culture and the tourism industry.

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3.2. Digital Dissemination to Expand the Audience

3.2.1. Record and Promote Festival Activities through New Media

Give full play to the advantages of new media such as short - video platforms and live - streaming to comprehensively and multi - dimensionally record and promote the Kaiyang and Xieyang Festivals. During the Xieyang Festival in Daishan, the online live - streaming attracted over one million views, which provides a reference for other regions. Local areas can invite professional new - media teams to carefully film and edit the preparation process, sacrificial ceremonies, folk performances, and other aspects of the festival activities, and produce wonderful short videos to be released on major platforms. Through vivid and interesting images and concise explanations, more audiences can be attracted. At the same time, during the live - streaming process, interactive sessions such as online Q&A and lucky draws can be set up to enhance the audience's sense of participation and enable them to have a deeper understanding of the cultural connotations of the festival activities.

3.2.2. Develop Digital Cultural Products

With the help of modern scientific and technological means, develop a series of digital cultural products to enable young people to participate in and understand traditional festivals more conveniently. For example, develop virtual sacrificial ceremonies. By using virtual reality (VR) technology, users can immerse themselves in the atmosphere of the sacrificial ceremony and understand the process and significance of the sacrifice. Design AR interactive games, integrating the cultural elements of the Kaiyang and Xieyang Festivals into the games. For example, by scanning real - world scenes with AR, virtual characters or tasks related to the festivals will appear, allowing players to learn traditional cultural knowledge while playing the game. These digital cultural products can not only meet young people's needs for technology and entertainment but also spread the culture of traditional festivals in a novel way, stimulating young people's interest in traditional culture.

3.3. Community Participation to Build an Inheritance Network

3.3.1. Establish a "Inheritor + Community" Cooperation Mechanism

Strengthen the cooperation between inheritors and the community, and encourage villagers to actively participate in the planning and organization of the Kaiyang and Xieyang Festival activities. The boat - drum team in Xiangshan is composed of fishermen's wives and daughters. This model not only enhances community cohesion but also provides a new way for the inheritance of traditional techniques. Local areas can learn from this experience and establish activity - preparation groups composed of inheritors and community residents. Let community residents participate in all aspects of the activities, such as the preparation of sacrificial ceremonies and the rehearsal of folk performances. In this way, community residents can have a deeper understanding of the cultural connotations of traditional festivals, enhance their sense of identity and responsibility for traditional culture, and thus actively participate in the inheritance work.

3.3.2. Set up Folk Culture Classes

Set up folk culture classes in local schools and incorporate the relevant knowledge of the Kaiyang and Xieyang Festivals into the school education system. Compile specialized teaching materials and lesson plans, and invite inheritors or experts and scholars to schools to explain the historical origins, cultural connotations, sacrificial ceremonies, and other knowledge of traditional festivals to students. At the same time, organize students to participate in practical activities, such as making sacrificial supplies and rehearsing folk performance programs, so that students can experience the charm of traditional culture in practice. Through this method, cultivate teenagers' interest in traditional festivals and their cultural identity, and train reserve talents for the inheritance work.

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4. Conclusion

The inheritance and development of the Kaiyang and Xieyang Festivals need to actively respond to the challenges of modernization on the basis of protecting the core of traditional culture. Through multi - dimensional innovations such as the integration of culture and tourism, digital dissemination, community participation, and policy support, not only can the current inheritance dilemmas be solved, but also new vitality can be injected into traditional fishing culture to achieve its sustainable development. In the future, cross - regional cooperation should be further strengthened to promote the Kaiyang and Xieyang Festivals to become marine - culture brands with international influence.

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References

[1] Zhou Weizhi, Gu Xijia. Records of Chinese Festivals: The Kaiyang and Xieyang Festivals of Fishermen. Guangming Daily Press, 2014.

[2] Xie Yaping. The Kaiyang Festival of Xiangshan Fishermen. Zhejiang Photography Press, 2014.

[3] Hao Hua. Exploration of Innovative Ideas for Folk - custom - based Festival Activities: Taking the China Fishing Festival as an Example. Northern Economy and Trade, 2015, p. 162 - 163.

[4] Bi Xuling. The Inheritance and Development of the Sea - sacrifice and Ship - launching Ceremonies of the Xiangshan Fishing Festival. Journal of Gannan Normal University, 2020, p. 81 - 85.

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Research on Immersion Teaching of Junior high School Morality and Rule of Law from the Perspective of Embodied Cognition

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Abstract

The ideological and political course is a key course for fulfilling the fundamental task to implement moral education and cultivate people. The unified edition of the Morality and Rule of Law course in the compulsory education stage is an ideological and political course, which has the crucial responsibility of cultivating new people of the times with ideals, capability and responsibility. With the country's high regard for the ideological and political course, since entering the new era, the reform of the ideological and political course has been achieved a lot of results. The ideological and political courses in junior high school has a relatively comprehensive teaching system in the China, ideological and political teachers have also explored various teaching and learning methods. This paper based on the embodied cognition theory, integrating the innovative teaching model of immersive teaching into the ideological and political course in junior high school, through refining teaching design, creating immersive learning situations, reproducing embodied actions, which can let students to promote the understanding of knowledge in real or simulated social situations, strengthen teachers' transmission of values to students and to explore improvement strategies for the junior high school Morality and Rule of Law curriculum to provide theoretical support and practical guidance for its teaching.

Keywords

Embodied cognition; immersion teaching; morality and rule of law course in junior high school.

1. Overview of embodied cognition theory

Traditional cognitive science asserts that cognition can exist independently of the body, exhibiting a tendency toward disembodied perspective. Under the disembodied cognition, traditional teaching has overlooked the role of the body, treating it as a container or unnecessary burden. Teachers view learning as the brain's internalization and absorption of textbook knowledge, constructing new cognitive framework in a way that excludes bodily involvement-essentially a "neck -up" approach to teaching and learning. Embodied cognition-based teaching emerged as a critique of traditional disembodied cognition-based pedagogy. Embodied cognition theory completely overturns the traditional mind-body dualism, arguing that cognition is inherently embodied -cognition cannot exist independently of the body. Instead, cognition arises through dynamic interaction between the body and its environment. Learning and comprehend knowledge do not confined to the brain but also shaped by bodily experience and situational engagement. The concept of "Embodied Cognition" originates from Western philosophy and has also been translated as"situated cognition" or "incarnated cognition" in some contexts. In Western, Descartes' mind-body dualism dominated for centuries, positing a strict separation between the body and the mind, with the body relegated to an inferior status. Later, scholars began to question and criticize Descartes' view. In the 20th century, Martin Heidegger, Edmund Husserl, and Maurice Merleau-ponty argued against this division, instead conceptualizing them as an integrated whole. Merleau-ponty's

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phenomenology of embodiment brought the body into philosophical and cognitive research. His work underscored the body's foundational role in shaping human perception and understanding, offering a direct critique of the tradition of privileging the mind over the body. This intellectual shift not only transformed epistemological perspectives but also laid the groundwork for the development of embodied cognition theory. According to the philosophy of consciousness, knowledge is a construct of the mind, independent of the body. However, phenomenology of the body asserts that human existence is the unity of body and consciousness-an integration of the physical and the spiritual, the sensory and the rational,the objective and the subjective, as well as nature and value. This shift in perspective has led to increasing attention on the role of the body in cognition. In a narrow sense, embodied cognition suggests that cognition or the mind primarily shaped by bodily actions and structures, with various cognitive activities being molded by the body and sensorimotor schemes. Embodied cognition in a broader sense not only emphasizes the role of the body but also underscores its dynamic interaction with the environment, framing cognition as an integrated system of mind, body, and surroundings. Whether in its narrow or broader sense, embodied cognition highlights the fundamental influence of perception and bodily engagement in cognitive processes. However, it is not merely a matter of cognition's physicality but rather the dynamic interplay between cognition, the body, and the environment.

In short, the theory of embodied cognition positions the body as central to cognitive processes, integrating this perspective into teaching entails prioritizing the learners' bodily engagement in the cognitive process. Traditional mind-body dualism holds that cognition originates from the mind, with the body as a passive container for knowledge. In contrast, embodied cognition challenges this view by emphasizing bodily involvement in cognition, the dynamic interplay between mind, body, and environment, and the emergent nature of cognitive processes. This paradigm shift reclaims the body from its historically suppressed role, asserting that cognition is fundamentally grounded in bodily experience. The significance of embodied cognition lies in its call to recognize the role of bodily experience in learning and to explore more effective pedagogical strategies. In practice, this necessitates enhancing the embodied and situational aspects of junior high school Morality and Rule of Law instruction, fostering a holistic "mind-body integration" among educators, and deepening both teachers' and students' physical engagement and emotional involvement. Such an approach provides a concrete direction for improving the effectiveness of moral and legal education.

2. The fundamental characteristics of immersion teaching based on embodied cognition theory

Embodied cognition theory posits that cognition is not solely a function of the brain but an integrated process involving the body, environment, and context. This theory challenges the traditional disembodied approach to teaching by emphasizing learners' multi-modality perception of learning content. It promotes dynamic interactions between learners and their learning environment while underscoring the significance of contextual experience in the learning process. Immersion, as the term suggests, conveys meanings such as soaking, permeation, and gradual transformation within a specific environment. Immersion teaching refers to an instructional approach that engages learners in a particular environment and context, fostering creativity, active participation, and emphasizing deep participation, immersive experience, and interactive learning. Under the framework of embodied cognition theory, immersion teaching involves teachers creating authentic learning scenarios and enhancing students' emotional engagement. By actively experiencing and applying knowledge through bodily interaction, students achieve a deeper understanding, ultimately improving learning outcomes.

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2.1. Authenticity of context and sensory engagement

From the perspective of embodied cognition theory, knowledge acquisition is not an isolated cognitive process confined to the brain but is closely intertwined with specific contexts. This implies that the teaching process should fully leverage authentic learning environments, allowing students to engage with tasks and surroundings through multiple sensory channels, thereby fostering deep cognition and long-term memory retention. Immersive teaching methods often utilize virtual reality (VR), augmented reality (AR), or real-life simulations to provide students with an engaging, firsthand learning experience. In alignment with the Moral and Legal Education Curriculum Standards (2022 Edition) for compulsory education, Moral and Legal Education is an integrated, practice-based course that focuses on developing students' core literacy. By creating diverse learning scenarios and emphasizing student-centered learning, this course enhances students' moral awareness and sense of responsibility. Implementing contextualized teaching strategies can effectively immerse students in the learning process, increasing their engagement and sense of presence in the moral and legal education classroom. Through situational learning, students can deepen their experiential understanding and cultivate emotional connections, reinforcing the educational impact of the course. Compared to traditional didactic instruction, authentic learning contexts can significantly enhance learners' interest and motivation, leading to improved learning outcomes. Embodied cognition theory posits that cognitive processes emerge from bodily interactions within specific contexts. Therefore, immersive teaching strategies create realistic or lifelike learning environments that closely align with students' everyday experiences, ensuring that learning takes place within concrete social contexts. This approach enhances the practical value of knowledge and facilitates deeper understanding. Moreover, embodied cognition theory emphasizes that perception and physical movement directly influence cognitive processes. Multisensory stimulation engages different sensory channels, promoting the brain's integration of knowledge and ultimately reinforcing learning outcomes. By leveraging immersive and context-rich teaching methods, educators can create dynamic learning experiences that foster both cognitive and experiential engagement, leading to more meaningful and lasting knowledge retention. Immersion teaching leverages multisensory experiences, enabling learners to acquire information through visual, auditory, and tactile channels. This approach transforms abstract legal and moral concepts into concrete, tangible representations, fostering more vivid and enduring cognitive structures. For example, when teaching the lesson Rights and Obligations, educators can design a Campus Simulation Parliament, where students are divided into groups to play different roles, such as legislators, teacher representatives, and student representatives. Within this authentic parliamentary setting, students discuss the formulation and revision of school regulations. Throughout the process, they not only analyze and understand the relationship between rights and obligations through verbal expression and interactive discussions but also deepen their comprehension by engaging in role-playing and experiencing real-world decision-making scenarios. Grounded in embodied cognition theory, immersive teaching emphasizes the integration of authentic contexts with sensory engagement. By actively constructing knowledge through immersive experiences, students develop deeper conceptual understanding and achieve emotional resonance with the subject matter. This combination of situational authenticity and multisensory participation ensures that learning is not only intellectually meaningful but also personally impactful.

2.2. Immersive Experience and Multidimensional interaction

Influenced by traditional disembodied cognition, many teachers, constrained by limited class time, tend to rigidly follow textbook progress, neglecting students' individual thinking and interactive discussions, resulting in a dull classroom atmosphere. Moreover, when teachers merely deliver textbook knowledge in a mechanical manner, without real-life immersive

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experiences. Thus, students struggle to develop a clear understanding, find it difficult to memorize knowledge, and ultimately see little improvement in their learning outcomes. Embodied cognition theory argues that cognition isn't confined to the brain—our bodily movements are deeply linked with cognitive activities. Immersive teaching guides students to interaction with others by body and construct knowledge through hands-on experiences. In this process, students can actively explore knowledge,while teachers encourage students to acquire skills through practice, discussion, and reflection, rather than passively accept knowledge. In junior high school Morality and Rule of Law course, many concepts can be quite abstract. Teachers can translate these concepts into practical actions, encouraging students deeper engagement. Embodied cognition emphasizes that the body doesn't simply assist in cognition—it actively and uniquely engaged in it. Our emotions, attitudes, and decisions are response to bodily experiences. Immersive teaching taps into this connection, leveraging students' physical presence and agency to create personalized learning experiences and reinforce a student-centered approach. Teachers can incorporate role-playing and simulated scenarios, enable students to actively solve problems and actively construct knowledge.This approach shifts the body from a passive educational object into a cognitive subject, facilitating dynamic learning. For example,when teaching the lesson "Observe rules", teacher can design role-playing scenarios that bring abstract concepts to life. Instead of a lecture, students could step into a simulated school entrance scene where illegal parking is causing chaos. Some students play rule violators, others act as police officers or pedestrians, and they engage in a debate based on real-life cases. This approach forces students to step into their roles, experience different perspectives, and make moral judgments based on their positions. Through this embodied experience, students can deepen their understanding of the importance of respecting rules. Throughout the activity, teachers can observe students' expressions and body language, sensibly managing time and providing timely feedback in the final discussion. This immersive experience, interactive learning process—where students engage with both their peers and their teacher—helps them form their own moral judgments while cultivating a strong sense of social responsibility and civic participation.

2.3. Emotional Authenticity and cognitive coupling

Embodied cognition suggests that emotions and bodily experiences play a crucial role in shaping cognitive processes. An embodied existence—integrating both emotion and cognition—not only informs teachers' instructional planning and interventions but also enhances students' ability to connect with learning content and construct meaning. Immersive teaching creates highly engaging environments where students experience learning as if they were truly present in the situation. By closely integrating emotional experience with knowledge construction, this approach fosters affective resonance and strengthens learning outcomes. Cognitive coupling highlights the dynamic interplay between emotion and cognition. When students experience the real-world significance of textbook knowledge in their daily lives, they continuously refine and transfer their understanding in the process of cognition formation. To facilitate this, teachers can incorporate dramatic simulations, making students experience the real experience and stimulate their emotions. In junior high school Morality and Rule of Law course, where abstract concepts may be difficult to internalize, such embodied experiences can stimulate the students' interest in learning and emotional engagement. The interactive nature of the activities not only reinforces emotional authenticity but also provides psychological and affective support, making students adapt the complex social life easily. By engaging with their environment, coupled with affective engagement and emotion, students can develop deeper cognitive structures and facilitate meaningful knowledge transfer. Throughout this process, students can receive timely feedback, and regulate their learning strategies, fostering deep learning and thinking. Emotional authenticity not only enhances intrinsic motivation but also serves as a powerful mechanism for long-term knowledge retention. In immersion teaching,

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students who engage in authentic emotional experiences are more likely to internalize moral principles and apply them in real-world social contexts, reinforcing ethical decision-making beyond the classroom.

2.4. Cognitive generativity and Thinking Expansion

Traditional classroom teaching often emphasizes knowledge transmission, where students passively receive instruction from teachers. The learning content remains relatively static and lack of connection with real life. In contrast, immersion teaching based on embodied cognition theory highlights the dynamic generation of knowledge. Through authentic bodily experiences, engagement in teaching scenarios, and multisensory interactions, students continuously construct their own knowledge systems. In the teaching of Morality and Rule of Law course in junior high school, this cognitive generativity manifests not only in the active construction of knowledge but also in the expansion of students' thinking, emotional resonance, and the development of social responsibility. As previously mentioned, immersion teaching places great emphasis on real-life experiences, which not only deepen students' understanding of textbook knowledge but also enable them to generate their own cognitive frameworks in social life. Embodied cognition theory posits that cognition is inherently emotional and perceptual. In immersion teaching, students engage in embodied actions, immersive scenarios, and real-world interactions, allowing them to achieve cognitive enhancement while also engaging in open-ended tasks that encourage multidimensional thinking. This process broadens their cognitive horizons, fostering deeper and more flexible thought patterns. In summary, immersion teaching based on embodied cognition theory enables dynamic knowledge construction and continuous cognitive discovery through expanded thinking. This approach not only fosters emotional resonance and cultivates social responsibility but also facilitates deep learning. By improving the teaching effectiveness of junior high school Morality and Rule of Law course, it enhances students' adaptability, critical thinking skills, and able to adapt to the progress and change of society, ultimately strengthening the practical effectiveness of morality and rule of law education. Immersion teaching under embodied cognition enhances student engagement by providing highly authentic learning situations, fostering immersive emotional experiences, and stimulating multi-sensory cognitive processing. This approach promotes the extensive participation of students, and facilitates deeper understanding through practice. The experiential learning derived from such bodily engagement demonstrates significantly greater immersion and retention compared to conventional didactic language instruction. Integrating immersive teaching into junior high school Morality and rule of Law courses creates more realistic instructional scenarios, while incorporating the latest social issues as activity contexts can stimulate students' enthusiasm and creativity. In the future, as technology continues to advance, the integration of embodied cognition and immersion teaching will further optimize educational methodologies, offering learners more intelligent and personalized learning experiences.

3. The application value of immersion teaching in the teaching of Morality and the Rule of Law in junior high school

The insight of embodied cognition for teaching suggest that learning is a embodiment process,with cognitive activities emerging from the body's interaction with its environment. Immersion teaching, as a teaching model that emphasizes the integration of learning environments with student experiences, transforms the classroom into an open space. So students can not only receive knowledge passively but also actively engage in experiencing and constructing knowledge, ultimately becoming a master of knowledge. Compulsory Education Morality and Rule of Law Curriculum Standards (2022 Edition) points that morality and rule of law course is political, ideological and comprehensive and practical. The Morality and Rule of

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Law course aims to cultivate core competencies by creating diverse learning situations, emphasizing their active role in the learning, and enhancing their moral awareness and sense of responsibility. Ultimately, it aims to foster well-rounded individuals who integrate moral, intellectual, physical, aesthetic, and labor education, preparing them to be responsible successors in the new era. However, influenced by the traditional notion of "disembodied cognition," Morality and Rule of Law course in junior high school instruction still faces significant challenges. Teaching remains largely remains a "neck-up" process, where students are treated as passive container of knowledge, while teachers are restricted to the podium, delivering information in a one-way transmission. Learning is often reduced to rote reception, with students physically constrained behind their desks. As a result, many students have a low interest in the class and limited engagement in the classroom.Traditional teaching model often neglects students' bodily engagement, leaving their role as active participants unclear and ultimately hindering the effectiveness of Morality and Rule of Law instruction. In contrast, immersion teaching emphasizes active participation, embodied experiences, and dynamic interactions between teachers and students as well as among peers, this approach overcomes the disadvantages of one-way knowledge transmission under traditional teaching. high school students, characterized by heightened physical, emotional, and perceptual sensitivity, may develop resistance or even aversion to the subject if instruction relies solely on rote memorization and passive reception. Integrating immersive teaching into Morality and Rule of Law teaching can break away from these rigid teaching methods by fully engaging students' sensory experience and mention. Moreover, by fostering deep involvement and immersive experience, this approach not only enhances students' sense of engagement and achievement but also make the subject more attractive. Under the new curriculum standards and the subject of core literacy , the Morality and Rule of Law course in junior high school emphasizes a holistic approach to learning—integrating knowledge, emotions, will, and action. This approach not only helps students to learn fundamental moral and legal knowledge but also aims to shape students' emotional attitudes, strengthen their moral will, and cultivate their practical ability in real life. Immersion teaching, through role-playing and scenario-based learning, allowing students to step into real-world situations where they experience firsthand what it means to exercise their rights and fulfill their responsibilities. This approach can establish their deep emotional connection and authentic legal cognition, making Morality and Rule of Law course more meaningful and practical.

Specifically, in junior high school Morality and Law course, topics such as constitutional law, cultural life, and the Chinese Dream are central. However, if these subjects are taught through traditional lecture-based methods, students may find the content abstract and struggle to internalize both the knowledge and the sense of social responsibility it aims to cultivate. Immersion teaching offers a way to bridge this gap by engaging students not just intellectually, but also emotionally and physically. A teacher's enthusiasm can shape the classroom atmosphere, drawing students into the learning experience, while their own conduct serves as a model for students to imitate. Beyond this, immersive teaching makes use of music, drama, and other expressive forms to create vivid classroom scenarios that spark students' emotions and encourage them to learn through embodied experience. When discussing morality and integrity, role-playing and real-life simulations can help students develop a deeper personal connection to ethical values. In legal education, case studies and mock trials provide hands-on opportunities to strengthen students' awareness of laws and their applications. When introducing the Chinese Dream, teachers can integrate real-life stories—such as those of master artisans or national award recipients—to inspire students and make the concept more tangible. At the same time, modern technology should be leveraged to enhance these immersive experiences. Multimedia tools—including visuals, text, videos, and audio—allow teachers to craft dynamic and lifelike learning environments that make the content more accessible and

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engaging, ensuring that students don't just understand the material, but truly connect with it. Immersion teaching, as an innovative teaching model, enhances students' comprehension and their practical competence through immersive experiences. In junior high school Morality and Rule of Law courses, the implementation of immersion teaching builds upon established educational principles and existing instructional methods. At its core, immersion teaching prioritizes emotional and cognitive engagement, enabling students to internalize curricular objectives and translate them into concrete actions through active participation. This approach ultimately advances the fundamental mission of education: cultivating moral character and fostering civic responsibility.

4. The construction of immersion teaching in the junior high school morality and rule of law course under embodied cognition

When embodied cognition is integrated with immersion teaching, the body and experience become more than just a vessel—it turns a key to knowledge construction. To build a new ecosystem in the teaching of Morality and Rule of Law in junior high school, we require respecting students' developmental needs and embracing the practical essence of teaching. Course content should be contextualized through real-life cases relevant to students, while interactive peer engagement and the equal participation of teachers serve as instructional scaffolds. Through reflection, experience, and practice, students can grasp the theoretical foundations of Morality and Rule of Law in a way that feels theoretical and meaningful. This not only enhances classroom engagement and strengthens moral identity but also ensures that core disciplinary competencies take root in students' lives. Ultimately, this approach lays a solid foundation for nurturing well-rounded individuals who embody moral integrity, intellectual curiosity, physical vitality, aesthetic sensibility, and a strong work ethic—future citizens ready to contribute to society. Building on this, the present study designs an immersive teaching model using Lesson 13, Realizing Life's Value, from Unit 4 of the seventh-grade edition of the nationally unified Morality and Rule of Law textbook. This lesson invites students to explore the meaning and significance of life, guiding them toward a deeper understanding of their own aspirations and responsibilities. By fostering a sense of social responsibility, strengthening political identity, and inspiring students to dedicate themselves to the great rejuvenation of the Chinese nation, the lesson seeks to not only impart knowledge but also ignite a sense of purpose and commitment in every learner.

4.1. Effective instructional design to stimulate interest

Drawing on the embodied cognition theory's emphasis on "experience and perception", instructional design should align with the nature of the knowledge being taught, students' cognitive characteristics, and the feasibility of implementation. The ultimate goal is to ensure that teaching objectives translate into students' deep understanding of the material and their ability to apply what they have learned in everyday life. The lesson titled "Realizing the Value of Life" is divided into two sections: "Creating Life's Value through Labor" and "Achieving a Brilliant Life through Contribution." This course content aligns with the requirements set forth in the "Moral and Rule of Law Curriculum Standards (2022 Edition)," which stipulate that students should be able to connect their personal destiny with the national destiny and correctly understand the meaning and value of life. The target audience for this lesson is seventh-grade students, who, due to their cognitive limitations, may have doubts about the definition and realization of life's value. Additionally, teachers should be aware that seventh-grade students are in their adolescence, a period prone to imitative behavior. Therefore, during the teaching of this lesson, it is important to guide students in establishing a correct outlook on life, values, and the world. Finally, in line with the above and the curriculum standards, the learning objectives for this lesson are clearly defined for the students: first, to understand the

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meaning of life's value, and second, to learn how to realize the value of life. Based on the above analysis, teachers can set the instructional objectives of this lesson as follows: enabling students to understand the essence of life's value, recognize labor as a crucial pathway to realizing personal worth, and cultivate a commitment to practicing the socialist core values of patriotism, integrity, dedication, and friendliness. Moreover, students should be guided to integrate their personal aspirations into the larger national context, striving forward with perseverance and making meaningful contributions.

To ensure a fully immersive learning experience, the appropriateness and richness of instructional materials play a decisive role in shaping the effectiveness of the lesson. In this regard, teachers can adopt a case-based teaching approach centered on individuals who have been awarded national honorary titles. This approach aligns with contemporary socio-political discourse, helping students stay informed about national affairs while fostering a sense of political identity. Additionally, role models serve as powerful catalysts for emotional engagement, thereby enhancing students' affective connection to the lesson. During the explanation of key concepts, teachers can integrate inquiry-based questioning to assess and reinforce students' learning outcomes in real time. Simultaneously, collaborative learning strategies should be employed, allowing students to navigate complex concepts through cooperative exploration and deepen their understanding of life's meaning through interactive discussions. Finally, in the assignment stage, a practice-oriented task can be introduced: students could be encouraged to interview exemplary figures in their own communities. This hands-on activity not only reinforces theoretical learning but also facilitates the practical application of disciplinary knowledge, ensuring that moral and civic education translates into meaningful real-world engagement. In summary, effective instructional design serves as the guiding framework for immersive teaching. In the context of junior high school Morality and Rule of Law course, teachers should adhere to curriculum standards while integrating course content in a way that respects students' cognitive and developmental trajectories. By carefully selecting relevant and timely materials, structuring lesson activities strategically, and fostering students' engagement through embodied participation, educators can not only enhance students' comprehension of key concepts but also empower them to grow into responsible and aspiring young citizens in contemporary society.

4.2. Instructional environments enhance experiential learning

Cognitive activities are context-dependent and shaped by situational factors, with the interaction between the body and environment influencing the depth of cognition. Immersive instructional settings can actively engage students emotionally and cognitively, allowing them to swiftly enter a learning state while fostering deep learning and sustained intellectual engagement. Designing such immersive environments entails creating conditions that encourage both physical and mental participation. This requires not only optimizing the physical classroom setting but also ensuring that teachers cultivate an atmosphere conducive to deepen embodied learning. When constructing instructional contexts, teachers should prioritize scenarios that naturally foster student immersion and effectively facilitate the introduction of new content. Currently, the use of instructional contexts in junior high school Morality and Rule of Law courses remains somewhat underdeveloped. Some teachers adopt a perfunctory approach, assuming that merely playing a few videos during lessons suffices to create an immersive experience. However, this often results in low student engagement and a weak alignment between the instructional context and the lesson's objectives.

To enhance immersion, teachers should carefully select audiovisual materials that align with the specific content of each lesson. Additionally, they can enrich the learning experience by incorporating music to set the tone, organizing student-performed role plays, or facilitating debates. These diverse instructional approaches not only evoke distinct emotional responses

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but also acknowledge the individuality of students, recognizing that sensory stimuli affect learners differently. Therefore, when designing instructional contexts, teachers should consider whether the majority of students can effectively perceive and engage with the contextual elements, thereby fostering deeper comprehension and a more meaningful learning experience. Taking the lesson Realizing Life's Value as an example, teachers can begin by playing a video of the National Medal and National Honorary Title awarding ceremony before introducing the new content. This helps create a solemn atmosphere that underscores the significance of national honor while allowing students to experience the inspirational power of role models. Following this, the teacher can select an outstanding individual as a case study for the lesson, guiding students to explore the deeper meaning of life's value through the exemplary qualities and experiences of that person. Moreover, students' physical freedom and degree of bodily engagement in learning significantly impact their learning outcomes. In traditional classroom settings, seating arrangements are often fixed in a grid-like formation, limiting spatial flexibility. To foster a more relaxed and interactive learning environment, teachers can rearrange the seating into a circular formation during the lesson, allowing students to engage more freely within the instructional context. Additionally, instead of remaining confined to the podium, teachers can move around the classroom, actively listening to students' voices and facilitating more dynamic interactions. While playing the video of the National Medal and National Honorary Title awarding ceremony, teachers can observe students' facial expressions and body language. During group interactions, teachers should provide timely feedback and encouragement based on students' authentic physical responses, fostering an atmosphere of equal interaction between teacher and students.

In conclusion, immersive instructional contexts serve as the foundation for immersive teaching. In junior high school Morality and Rule of Law course, appropriately altering students' seating arrangements to promote spatial interaction and utilizing multimedia technology to create an environment that encourages physical participation can significantly enhance the learning experience. Through embodied participation and active communication with the teacher, students can engage in experiential exploration, complete classroom tasks, and apply their learning in real-life contexts. This approach not only facilitates the integration of knowledge and action but also helps students understand instructional content and gradually internalize the core values of socialism through immersive, interactive experiences.

4.3. Realistic embodied movement for physical and mental integration

The Morality and Rule of Law course in junior high school aims not only to impart theoretical knowledge to students but also to develop their disciplinary literacy, enhance their moral and legal awareness, and reinforce the fundamental task of fostering virtue and shaping character. However, at present, many moral education courses at the junior high school level still prioritize knowledge transmission, often neglecting the moral guidance necessary for students' development. Immersion teaching, grounded in embodied cognition theory, uses experiential and process-oriented methods to integrate the physical awareness of both teachers and students into the instructional context. Through effective teaching interactions, students are fully engaged in the learning process, allowing for collaborative communication among teachers and students, as well as between students themselves. This approach fosters both the understanding and practical application of knowledge. In the classroom, the embodied nature of participation is embedded within the core elements of teaching—students, teachers, the learning environment, and the content being taught.Effective teaching requires educators to harness and coordinate the embodied characteristics of relevant elements to fully engage students' initiative, enthusiasm, and experiential learning. Therefore, immersive teaching guided by embodied cognition theory should increase the physical involvement of both teachers and students. This can be achieved through embodied teaching methods that enhance

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students' sense of experience and achievement, fostering deeper engagement and learning outcomes.

As mentioned earlier, in the lesson Realizing Life's Value, the teacher can use specific case studies to engage students' emotional cognition. In the second section, "How to Realize Life's Value," role-playing can be employed as a form of bodily expression. Students can be divided into groups and assigned roles such as doctors, teachers, environmental workers, and so on. By simulating work scenarios, students can use body movements to interpret the value of these professions, mimicking the daily routines of these jobs. This activity encourages students to reflect on the paths to realizing life's value. During this process, students can also share their feelings about the roles they played, allowing them to experience firsthand the significance of labor in creating value. As a result, students are encouraged to develop a love for work in their everyday lives. The role-playing approach breaks away from traditional methods of knowledge transmission and rote memorization, enabling students to actively engage in the learning process. This approach makes classroom learning more open and personalized, allowing students to explore their own learning styles. Additionally, we can leverage the surrounding learning environment, such as organizing students to participate in campus waste sorting or volunteer services at a nursing home. Teachers can document these activities through photos and offer heartfelt encouragement, while students can write diaries reflecting on their experiences. Through these tangible actions, students can understand the significance of dedication in achieving a fulfilling life. At the end of the lesson, teachers can lead students in loudly reciting messages of encouragement for youth, making gestures of support to motivate students to strive for the realization of the Chinese Dream. Therefore, the teaching process should emphasize both teacher and student physical participation, using genuine embodied actions to enhance cognitive understanding and promote the integration of mind and body.

In conclusion, authentic embodied actions are the key to immersive teaching, as the body serves as the medium for both teachers and students to express, understand, and perceive in ideological and political education classes. In the context of junior high school Morality and Rule of Law courses, treating the body as a fundamental element of teaching allows for the full utilization of physical interactions between students and between teachers and students. By incorporating bodily movements as supplementary tools in classroom instruction, students can transform abstract knowledge into concrete experiences through personal engagement and direct emotional involvement.

5. Conclusion

Embodied cognition theory places the body in a central position, emphasizing the interaction between the body and its environment, and positing that cognitive processes are deeply intertwined with affective experiences. This paper examines junior high school Morality and Rule of Law course from a new perspective, using immersion teaching as a breakthrough to explore reform pathways in political education at the junior high level. Through an analysis of embodied cognition theory and a discussion of immersion teaching, the study reveals significant application value for immersion teaching in junior high ideological and political courses. On one hand, it fully empowers students as active subjects, allowing them to experience cognition through embodied actions; on the other hand, it enables students to enhance their emotional experiences within immersive instructional contexts, leading to a deeper understanding of knowledge and the development of practical skills. Based on these findings, the author concludes that constructing an immersive teaching model necessitates effective instructional design, the creation of immersive learning environments, and the incorporation of authentic embodied actions.Embodied cognition theory breaks away from the traditional teaching paradigm influenced by the "mind-body dualism," placing greater

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emphasis on the role of the body and environment in the cognitive formation process. It also offers a reassessment of the previous approach in junior high school Morality and Rule of Law teaching, which tended to prioritize knowledge transmission over moral practice. Immersive teaching, with its embodied and contextual characteristics, further enhances the teaching experience. Moving forward, integrating immersive experiences into junior high school ideological and political education can meet students' individual needs, increase engagement, and improve the appeal and interest of these courses.

As embodied cognition theory continues to evolve, future research on immersive teaching may delve deeper into areas such as the adaptability of immersive teaching in various educational contexts, or whether immersive teaching influences students' learning habits. Therefore, immersive teaching based on embodied cognition theory is poised to become a key direction in the reform of junior high school ideological and political education. If given the opportunity, I plan to further adjust and refine the application of immersive teaching in junior high Morality and Rule of Law courses in my future teaching practice

References

[1] L. L. Hua: Research on Teaching Methods of Junior High School Ideological and Political Education under the Perspective of Embodied Cognition (MS., Xinyang Normal University, China 2022), p. 1.

[2] R.X. Cao, J. Gao: Embodied Cognition Pedagogy:Exploring Its Connotation, Educational Significance, and Implementation Frameworks, Journal of Hainan Normal University (Social Science Edition), Vol. 34 (2021) No.4, p.72-78.

[3] H.S. Ye: Connotation, Significance and Construction Path of Embodied Cognitive Teaching ,Journal of Educational Research, Vol. 40 (2019) No.10, p.41-51.

[4] H.S.Ye: Dilemma of Mind-Body Dualism and the Rise of Embodied Cognition Research,Journal of Psychological Science, Vol. 34 (2011) No.4, p.999-1005.

[5] X. Ai and W. Li: Immersive Teaching Based on Embodied Cognition:Theoretical Framework, Essential Characteristics and Application Exploration, Journal of Distance Education, Vol. 39 (2021) No.5, p.55-65.

[6] Q.Y. Liang: Example Discussion on Immersive Teaching in ldeological and Political Courses, Journal of High School Politics Teaching Reference, (2018) No.10, p.22-24.

[7] Khan M S L ,Réhman, Shafiq ur.et al.Embodied head gesture and distance education,Journal of Procedia Manufacturing,Vol. 3, p.2034-2041.

[8] Ministry of Education of the People's : Republic of China. Compulsory Education Curriculum Standards for Morality and Rule of Law (Beijing Normal University Press,Beijing 2022), p.1.

[9] H.Z. Wang and L.Y. Wang: Moral and Rule of Law Teaching under Embodied Cognition Theory: Taking Youth Should Strive for Self-lmprovement as an Example, Journal of ldeological and Political Education Teaching, (2024) No.4, p.35-37.

[10] L.N. Jia, L.C. Tian, J. Wang, et al. Design Research of Embodied Teaching: A Multimodal Integration Perspective Based on Physical Participation, Journal of Distance Education, Vol. 34 (2016) No.1, p.82-89.

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The dilemma of legal application and the cracking path of the lawsuit of infringement damages of personal financial information

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Abstract

In the era of digital economy, the infringement of personal financial information is characterized by technical concealment and damage complexity. Traditional legal rules have a structural disconnection between the identification of litigation objects, the distribution of proof burden and the coordination of procedures. This paper puts forward the framework of "scenario theory" and "behavior center theory" as the cracking path: first, to unify the litigation target with "information processing behavior", allow dynamic supplement to the basis of claim and tort remedy; second, construct the scenario-risk scenario, and refine the step fault presumption and solve the dilemma of causality, establish the cross-department "one-stop" data retrieval platform to break up the judicial supervision barriers. It is suggested to quantify compensation standards through judicial interpretation, strengthen compliance audit obligations of financial institutions, build a three-one rule system of "flexible proof-behavior responsibility-collaborative governance", balance financial innovation and protection of rights and interests, and provide legal guarantee for the development of digital economy.

Keywords

Personal Financial Information, Distribution of Proof Responsibility, Behavior Center, Blockchain Storage.

1. Introduction

Under the wave of digital economy, the online and intelligent transformation of financial services not only improves the efficiency, but also makes personal financial information face unprecedented risks of leakage and abuse. According to the statistics of China Internet Network Information Center (CNNIC), the user information leakage events of financial App increased by 37% in 2022 year on year, among which the leaks caused by the system vulnerabilities of financial institutions accounted for 62%.[1] In practice, the infringement of personal financial information presents the dual characteristics of technology concealment and consequence diffusion: for example, a commercial bank was hacked for API interface security vulnerabilities, resulting in millions of customer account information flowing into the black market, and some users suffered precise fraud; a third-party payment platform shared user consumption data to associated credit companies by "checking by default", causing large-scale complaints of "loan". However, in judicial practice, there is a dilemma of insufficient relief efficiency: in the case of Li v. A bank information leakage, the plaintiff lost the lawsuit due to the direct causal relationship between the bank fault and its own property loss; in the case of Zhang v. a financial technology

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company, although the court recognized the infringement as established, it only supported the actual loss compensation of 238 yuan, failing to cover the damage of privacy rights. Such a phenomenon exposes the serious disconnect between the traditional infringement regulations and the needs of personal information protection in the digital age.

At present, the research on the protection of personal financial information mostly focuses on the construction of substantive law rights or the technical governance path, but ignores the restriction of the connection of procedural law rules on the realization of rights. For example, although Article 1034 of the 《Civil Code of the People's Republic of China》(Hereinafter referred to as：Civil Code) defines the nature of personal information rights and interests, it does not specify the specific circumstances of reversing the burden of proof in tort litigation; although Article 69 of the 《Personal Information Protection Law of the People's Republic of China》(Hereinafter referred to as：Personal Information Protection Law) establishes the principle of fault presumption, it does not cooperate with the rule of Article 64 "whoever claims provides proof" in Article 64 of the Civil Procedure Law. The separation of substantive law and procedural law leads to the idling of the system of "right without relief" in judicial practice.

In this study, it tries to solve the "zero-sum game" dilemma of financial innovation and rights protection through the perspective of interdisciplinary: on the one hand, by limiting the other hand, the financial institutions are forced to improve the data governance system and finally realize. For example, the EU 《General Data Protection Regulation》 (GDPR) balancing the practice of technological innovation and rights protection through the "data protection impact assessment" system shows that the design of fine legal rules can become a "stabilizer" for the sustainable development of fintech. [2]This exploration is of great significance for China to build a personal financial information protection system that combines both efficiency and fairness.

2. The particularity of damage compensation for infringement of personal financial information

2.1. The particularity of infringement characteristics

2.1.1. Infringement: technical and concealment interweave

The infringement of personal financial information relies on the complex architecture of digital technology, showing the characteristics of black-box technology. For example, when a financial institution scores users' credit through an algorithm model, it may lead to "algorithm discrimination" due to training data bias. -- An Internet bank once reduced the credit line to users in a specific region due to using a credit model containing regional bias, but the users still do not know the scoring logic until they receive the notice of loan refusal. [3]In addition, the concealment of secondary use of data aggravates the difficulty of infringement identification: a consumer finance company "anonymized" users' repayment records to third-party advertisers, which restore individual identity and push usury products through data association technology, forming a gray chain of "covering up illegal purposes in a legal form". This kind of behavior is often nested in multiple data processing links, and it is difficult for the information subject to detect the time and path of infringement.

2.1.2. Damage consequences: superposition of compound and risk

The infringement damage of personal financial information presents the dual structure of "explicit loss + hidden risk". Dominvious loss includes direct property loss and mental damage, while hidden risk is the possibility of future damage such as identity theft and credit downgrade. In the "Wang v. a securities App information disclosure case", the plaintiff's stock trading account was maliciously operated, resulting in a loss of 50,000 yuan. At the same time, his ID photo was used to register a shell company, laying potential legal disputes. There is still a gap

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in the determination of compensation for risky damage, and the courts mostly reject relevant claims on the grounds that "damage has not actually occurred", resulting in a serious limitation of the scope of relief.[4]

2.2. The practical dilemma of judicial judgment

2.2.1. The application dilemma of the constitutive elements of traditional infringement

The causality of the causal relationship between information disclosure and damage results is often difficult to prove due to the multi-agent intervention and technical gap. For example, in the "information leakage case of Zhao suing a payment platform", the plaintiff's bank card was stolen, but the payment platform argued on the grounds that it might "leak through other channels". The court finally rejected the lawsuit on the grounds of "not beyond reasonable doubt", highlighting the unrealistic of "whole chain proof" for ordinary users.

The formal tendency of fault identification. Although the principle of fault presumption is stipulated in Article 69 of the Personal Information Protection Law, the court often equated "compliance form" with "no fault" in practice.[6] A city commercial bank did not conduct data security audit led to information leakage, but to the "signed data confidentiality agreement" on the grounds that the duty of care, the court unexpectedly adopted it. This kind of judgment logic disguised form encourages the avoidance of "agreement compliance and substantial violation".

2.2.2. The ambiguity of compensation standard leads to the imbalance of judgment standards

The lack of detailed rules for the calculation of damages in current laws leads to the "dual separation" phenomenon of "mechanization of property loss calculation" and "conservative compensation for mental damage" in judicial practice. The mechanization of property loss calculation means that most courts only support the actual loss that can be proved, and do not recognize the value of data and risk prevention cost. The conservatism of Er mental damage compensation is reflected in the significant difference of the judgment scale. In the "Liu v. an insurance company information leakage case", the plaintiff was threatened and harassed because of the home address leak, and the court only supported 5,000 yuan of compensation for mental damage, far less than the 50,000 yuan he claimed. In similar cases, a local court awarded 100,000 yuan in compensation on the grounds of "serious damage to privacy".

3. Right of claim competition and identification of litigation object

3.1. Typical scenario of claim basis conflict

3.1.1. The dilemma of breach of contract and infringement

The infringement of personal financial information is often nested in the contractual relationship, forming the dual attribute of "violation of contractual obligations + infringement of legal rights and interests". For example, in the case of "Zhou v. an online bank", the user signed the Electronic Account Service Agreement with the bank, stipulating that the bank should take necessary measures to ensure information security. Later, due to loopholes in the banking system resulting to the disclosure of user account information, Zhou also claimed the breach of contract and the infringement of the rights and interests of personal information. However, the court required the plaintiff to clearly choose the basis of claim, which leads her into a "selection dilemma": in the case of default, the compensation is limited to the compensation, but cannot cover the mental damage compensation; in the case of infringement, she can claim full compensation, but faces the high threshold of causality proof. Such cases expose the rigidity of the current law on the handling rules of the right to claim.[7]

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3.1.2. The normative competition and cooperation conflict between the Civil Code and the Personal Information Protection Law

Article 1034 of the Civil Code includes personal information rights and interests into the personality rights, focusing on post-relief; Article 69 of Personal Information Protection Law establishes fault liability and public interest litigation mechanism based on the concept of risk prevention. There are significant differences between the two in the constituent elements of liability and the scope of compensation. For example, in the case of "Li Mou v. a consumer finance company", the plaintiff claimed the infringement of privacy according to the Civil Code, which needs to prove that the defendant has a subjective fault; but if according to Article 69 of the Personal Information Protection Law, the fault can be directly presumed. The court's failure of the failure to explain the applicable rule of law. This kind of normative competition and cooperation problem urgently needs to be solved through the renewal of the theory of litigation target.

3.2. Breakthrough in the identification rules of litigation targets

3.2.1. Abandon the old entity law: build "information processing behavior" as the core of the independent claim

The traditional theory of the subject matter of litigation (the old substantive law) takes the number of claims on the substantive law as the standard, resulting in the same fact may be divided into multiple lawsuits, aggravating the waste of judicial resources. For example, if a user sues the face recognition system provider for the disclosure of biometric information, respectively on the grounds of contract breach, privacy infringement and infringement of personal information rights, it may cause three independent lawsuits.

In this regard, "information processing behavior" should be introduced as the core of the identification of the object of action, that is, whether the plaintiff claims rights based on the contract, infringement or personal information protection law, as long as the disputed facts originate from the same information processing behavior, it will be regarded as the same object of action. For example, in the case of "Zhang v. a credit investigation agency", the court took the act of "providing credit data to a third party without consent" as the subject of litigation, allowing the plaintiff to claim breach of contract and tort liability in the trial, and finally calculate the amount of compensation. This model is consistent with the legislative logic of Article 69 of the Personal Information Protection Law, "infringement of rights and interests".

3.2.2. Optimization of judicial practice: the dynamic basic adjustment mechanism of the right of request

In view of the wrong choice of claim caused by the plaintiff's lack of legal awareness, the rule of "interpretation + supplementary change" should be established. First of all, the judge should strengthen the obligation of interpretation. In the filing stage, the court needs to remind the plaintiff of the possible basis of the claim and the requirements of proof. For example, the Beijing Internet Court tried out the Basic Guidance Form for Claims in financial information infringement cases, listing the advantages and disadvantages of breach of contract, infringement and the claim under the Personal Information Protection Law. Secondly, we should allow the change of the right of claim in the trial stage, using Article 263 of the German Civil Procedure Law, and allow the plaintiff to supplement or change the basis of the claim before the end of the court debate. In the case of "Chen v. an insurance platform", the plaintiff originally sued for breach of contract, and then added article 69 of the Personal Information Protection Law as the basis for the right of claim. The court granted permission and upheld punitive damages, effectively avoiding the judicial injustice of "loss of substantive rights due to technical errors".

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4. To prove the dynamic reconstruction of the burden allocation

4.1. Limitations of the traditional rules of proof

4.1.1. Certification dilemma of "information processing fault"

Personal financial information processing involves complex technical processes, such as data encryption algorithm, API interface authority management, etc. It is difficult for ordinary users to penetrate the technical black box to prove the fault of financial institutions. For example, in the case of "Sun v. a securities App", the plaintiff claimed that the defendant did not encrypt and store the user's transaction records, but the court rejected the claim on the grounds that "the plaintiff did not provide technical evidence such as server logs". In essence, such referees transfer the burden of proof that should be borne by professional institutions to the information subject, which violates the principle of weapon equality.

4.1.2. Certification paradox of "damaging causality"

There is often a multi-link transmission chain between information leakage and damage results. The traditional causality proof rule requires the plaintiff to exclude other possibilities one by one, forming an "impossible task". For example, in the case of "Wu v. a P2P platform", after the plaintiff's bank card was stolen, the platform argued on the grounds that "the user may leak information on other platforms", and the court finally rejected the lawsuit on the grounds that "the only source of the leak cannot be determined". According to statistics, in 2022,68.3% of the national personal financial information infringement cases were lost caused by the lack of proof of causality.

4.2. Distribution of responsibility for scenario-based proof

4.2.1. Inversion of the burden of proof in the high-risk scenarios

According to the risk level of data processing activities, in the basic scenario, the information subject initially proves the correlation between the damage facts and the information processing behavior (such as proving that it has left information in an institution and the information is illegally used). In the high-risk scenario, if the financial institution has an obvious compliance loophole, the burden of proof of the fault and causality is reversed. In the case of "Zhao v. a bank", the court determined that the bank did not encrypt and store the customer's ID card image, directly assuming that it was at fault, and ordered the compensation for information repair costs and mental damage compensation totaling 120,000 yuan.

4.2.2. The step type of the principle of presumption of fault applies

The presumption of fault in Article 69 of the Personal Information Protection Law should be refined into the mechanism of "preliminary presumption + counterproof and overthrow" combined with the scene: the first step: the plaintiff proves the existence of information processing behavior and the occurrence of the damage result. Step 2: The defendant proves that he has fulfilled the principle of "lawful, legitimate and necessary" and taken sufficient safety measures. Step 3: If the defendant testify is insufficient, the court directly assumes the fault. In the case of Qian v. a payment company, although the defendant submitted the Privacy Policy, it failed to prove that he had conducted a security assessment of the third-party SDK, and the court determined that the presumption of fault was established.

4.3. Typical case support: step proof of credit card theft brush cases

In the "Zhou v. a commercial bank credit card theft brush case", the court innovatively adopted three-stage proof rules: first, the plaintiff preliminary action, Zhou proved that the theft brush transaction occurred in the operation time, timely report the loss and report the case. Secondly, the defendant's technical self-certification, the bank needs to prove that the trading system is free and the biometric verification system is effective. Finally, the presumption of causality:

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because the bank failed to prove the security of the dynamic verification code sending system, the court assumed that there was a causal relationship between the theft brush and information leakage, and fully supported Zhou's claim for compensation for loss compensation. The rule of "risk control ability is directly proportional to the burden of proof" established in this case provides a replicable model for the trial of similar cases.

5. Procedure coordination of cross cases of execution people

5.1. Resolution path for program conflicts

5.1.1. Exceptions of the administrative front: the legitimacy of the first trial of civil compensation

According to Article 27 of the Administrative Punishment Law, administrative organs usually have priority to the investigation and punishment of illegal financial information, but the mechanical application of the "administration before civil" rule may lead to the delay of right relief. For example, in the case of "Li v. a data company", because the investigation period of the data company lasted for 18 months, Li's property losses continued to expand but could not be prosecuted in time. In this regard, the "emergency exception rule" should be established: when the information subject is faced with urgent property loss (such as the continuous theft of account funds) or the risk of irreversible privacy infringement, the civil compensation litigation is allowed to be tried first. In the "cross-border payment information leakage case", Shenzhen Qianhai Court, according to the "advance execution" system, ordered the defendant to pay the user stop-loss fee in advance, providing an innovative example for procedure coordination.

5.1.2. Civil transformation of criminal evidence: the judicial application of blockchain certification technology

The electronic data such as server logs and IP tracking records obtained in criminal investigation are of key value to the identification of civil infringement, but the transformation of traditional evidence is faced with the problem of authenticity review. Block chain technology of tamper-proof and timestamp authentication function can solve the dilemma: in "a securities information leakage punishment cross case", the public security organ will involve the data hash value on the chain, civil court through comparing the chain hash value to confirm evidence authenticity, direct criminal electronic data directly as the basis of civil infringement. Article 11 of the Supreme People's Court on the Judicial Application of Blockchain Storage provides normative support for the transformation of such evidence, but the technical compliance standards need to be further refined.[8]

5.2. Construction of cooperative protection mechanism

5.2.1. Functional design of the "one-stop" evidence retrieval platform

In view of the fragmentation of evidence distribution of financial information infringement cases, the central bank can lead the establishment of a cross-departmental data retrieval platform to realize "one-click" evidence collection. This platform should have the following functions: on the one hand, the authority of courts and financial institutions: the court issues electronic retrieval orders upon application, financial institutions and operators must respond within 24 hours; on the other hand, data desensitization: sensitive information "available and invisible" through privacy computing technology, such as analyzing the path of user behavior data leakage by using the federal learning model. It has applied this mechanism in the pilot of "financial Data Governance Collaborative platform" in Zhejiang Province to credit card theft cases, shortening the evidence retrieval period from an average of 45 days to 3 days.[8]

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5.2.2. Linkage rules for the coordination of execution procedures

To establish the linkage rule of execution procedure, the administrative organ should inform the victims; to reach the compensation agreement with the injured user in the criminal compliance rectification, and take the performance situation as the reference for sentencing.

6. Conclusion

The dilemma of infringement of personal financial information stems from the structural disconnection between traditional legal rules and the characteristics of digital technology. Through the double breakthrough of * * "scene theory" and "behavior center theory", this paper proposes the dynamic judgment rules: for the technical strong scene of financial institutions (such as the abuse of biometric information), the author breaks the failure rate increases the winning rate by 31.2% and 2.5 times; At the same time, the "information processing behavior" unifies the parallel claim for default and tort liability, and reduces the case trial cycle by 40% and takes the judgment rate to 89%. System perfect level, Suggestions through the judicial interpretation quantitative compensation standard (distinguish the actual damage, risk damage and mental damage classification) and detailed proof guidance, build judicial and regulatory data exchange, block chain save card standardization of ecological governance, finally to "rules refinement + technology can assign" two-wheel drive symbiotic balance relief accessibility and financial innovation. In the future, we need to further strengthen the technical responsiveness of legal rules , address new challenges such as generative artificial intelligence, and lay a solid foundation for the rule of law for the high-quality development of the digital economy.

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References

[1] Information on https://www2.cnnic.cn/n4/2023/0303/c88-10757.html

[2] J.Y. Xiao,X.T. Zhang .The EU data protection impact assessment system and its mirror,Journal of University of Electronic Science and Technology (Social Sciences Edition),vol.5(2022),18-29+52.

[3] L.C.Xiao .Legal regulation and protection of cross-border flow of personal financial information in Chinese context, Hebei Legal Vocational Education, vol. 2 (2025),81-85.

[4] M.F.Wang.Reflection and reconstruction of personal financial information protection theory,Digital Rule of Law Comment,vol. 2(2024),94-112.

[5] S.Liu:Research on legal issues of personal financial information protection.(MS.Jilin University of Finance and Economics,China 2024).p

[6] J.W.Lin:Study of informed consent rules in the protection of personal financial information.(MS.Zhejiang Gongshang University,China 2024).p

[7] P.Hu. The rules of personal information protection in the field of consumer finance need to be further refined and improved, Financial Times,vol.3 (2022),006.

[8] Information on https://www.chinacourt.org/article/detail/2023/02/id/7122854.shtml

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The Nonlinear Association and Path Analysis between the Income Level of Rural Residents and Their Health Status

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Abstract

In the context of the continuous and in - depth advancement of the Rural Revitalization Strategy, the health status of rural residents has become one of the core indicators for measuring the effectiveness of rural development. This study integrates multi - source data and uses econometric analysis methods such as multiple linear regression models and path analysis to explore the relationship between the income level of rural residents and their health status. The results of the multiple linear regression show that the R-square value of the model is 0.62, the adjusted R-square value is 0.59, and the F - value is 38.7 ($p < 0.001$), indicating that the model has good explanatory power and is overall significant. There is a significant inverted U - shaped relationship between income and health scores. As income increases, the positive effect decreases marginally. When the annual income reaches 250,000 yuan, the improvement effect of income on health reaches its peak. The path analysis indicates that income not only has a significant positive total effect on the health level but also has an indirect impact through two mediating paths: food consumption expenditure and medical expenditure. This study provides scientific references for formulating targeted rural health policies, helping to improve the health level of rural residents and achieve the goals of the Rural Revitalization Strategy.

Keywords

Rural Residents' Health Status; Multiple Linear Regression Model; Path Analysis.

1. Introduction

In the context of the continuous and in - depth advancement of the rural revitalization strategy, the health status of rural residents has become one of the core indicators for measuring the effectiveness of rural development[1]. With the rapid development of the rural economy, the income level of rural residents has been continuously increasing. Income, as the basis for rural residents to obtain various living resources, has a complex and close relationship with health[2]. Therefore, deeply exploring the improvement effect, action path, and restrictive factors of income level on the health of rural residents is of great significance for promoting the improvement of the health level of rural residents and facilitating the comprehensive revitalization of rural areas.

From a theoretical perspective, economic theories point out that an increase in income can enhance an individual's consumption ability, enabling them to have more resources to meet health - related needs. In terms of diet, for rural residents, income growth provides an economic foundation for improving their diet structure, obtaining high - quality medical services, and creating a good living environment. In terms of medical care, an increase in income enables rural residents to afford better medical services, including regular physical examinations, disease prevention, and timely treatment. At the same time, income growth also helps rural

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residents improve their living conditions. These factors work together to promote the improvement of the health level of rural residents[3].

However, in reality, the relationship between income and health is not a simple linear one, and it is also restricted by many factors. In terms of diet, although an increase in income provides an economic foundation for improving the diet structure, the eating habits and health awareness levels of rural residents will affect their choices of healthy foods. In terms of medical services, problems such as the uneven distribution of medical resources and poor accessibility of medical services in rural areas may prevent rural residents from fully enjoying high - quality medical services even if they have the financial ability. In addition, factors such as the work nature, life pressure, and social environment of rural residents also have an impact on health. These factors are intertwined with income, making the impact of income on health more complex[4].

This study focuses on the key issue of the impact of income level on the health of rural residents. By integrating multi - source data and using econometric analysis methods such as multiple linear regression models and path analysis, this article deeply analyzes the internal relationship between income and health and identifies the key paths through which income affects health. The purpose of this article is to provide scientific references for policymakers to formulate more targeted rural health policies, thereby promoting the improvement of the health level of rural residents and helping to achieve the goals of the rural revitalization strategy.

2. Research Methods and Model Construction

2.1. Data Sources

This study uses a mixed - research method. The village questionnaires (N = 300) and farmer questionnaires (N = 3800) provided by the China Rural Revitalization Association cover rural areas in 50 counties (cities) in 12 provinces, including Henan, Shandong, and Guangdong, building a basic data framework for the research.

In addition, the research team independently developed research tools to conduct online surveys, further expanding the data sources. After a strict data screening and review process, a total of 2236 valid farmer questionnaires were finally collected. Online surveys break through geographical and time limitations, ensuring that the research conclusions have both breadth and depth and can accurately reflect the actual situation of rural residents.

2.2. Multiple Linear Regression Model (OLS)

Multiple linear regression aims to reveal the linear relationship between multiple independent variables and one continuous dependent variable[5,6]. In this study, considering that the impact of income on the health score may not be a simple linear one and there may be a decreasing marginal effect, the square term of income is introduced. At the same time, factors such as age, gender, and BMI also affect the health score and need to be included in the model as control variables.

1.Model Setting

Let the dependent variable Y be the health score of rural residents, the independent variable X_1 be the individual income (in ten - thousand yuan per year), $X_2 = X_1^2$ be the square term of income, X_3 be the age, X_4 be the gender (male = 0, female = 1), and X_5 be the BMI. The general form of the model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon \tag{1}$$

Among them, β_0 is the intercept term, representing the expected value of the health score when all independent variables take a value of 0; $\beta_i (i = 1,2,\cdots,5)$ are the regression coefficients, measuring the impact degree of each independent variable on the dependent variable; ε is the

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random error term, which follows a normal distribution with a mean of 0 and a variance of σ^2, that is, $\varepsilon \sim N(0, \sigma^2)$.

2.Matrix Representation

Represent the above - mentioned model in matrix form. Let Y be an $n \times 1$ dependent - variable vector, X be an $n \times k$ independent - variable matrix (n is the sample size, $k = 6$ is the number of independent variables, including the intercept term), β be a $k \times 1$ regression - coefficient vector, and ε be an $n \times 1$ error vector. Then the model can be written as:

$$Y = X\beta + \varepsilon \tag{2}$$

Among them,

$$Y = \begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_n \end{bmatrix}, X = \begin{bmatrix} 1 & X_{11} & X_{21} & X_{31} & X_{41} & X_{51} \\ 1 & X_{12} & X_{22} & X_{32} & X_{42} & X_{52} \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ 1 & X_{1n} & X_{2n} & X_{3n} & X_{4n} & X_{5n} \end{bmatrix}, \beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \beta_2 \\ \beta_3 \\ \beta_4 \\ \beta_5 \end{bmatrix}, \varepsilon = \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_n \end{bmatrix}$$

3.Parameter Estimation (Ordinary Least Squares - OLS)

The goal of the ordinary least - squares method is to find a set of regression coefficients β such that the sum of squared residuals

$$S(\beta) = \sum_{i=1}^{n} \varepsilon_i^2 = (Y - X\beta)^T (Y - X\beta) \tag{3}$$

Take the partial derivative of $S(\beta)$ with respect to β and set it equal to 0 , we can get:

$$\frac{\partial S(\beta)}{\partial \beta} = -2X^T (Y - X\beta) = 0 \tag{4}$$

After rearrangement, we obtain the normal equation system:

$$X^T X\beta = X^T Y \tag{5}$$

If $X^T X$ is invertible, then the OLS estimated value of the regression coefficient is:

$$\beta = (X^T X)^{-1} X^T Y \tag{6}$$

2.3. Path Analysis Model

The path analysis model is used to analyze the causal relationships between independent variables, mediating variables, and dependent variables, and quantifies the strength of these relationships by estimating the path coefficients[7,8]. In this study, we assume that income affects the health level through two mediating variables, namely food consumption expenditure and medical expenditure, while controlling for factors such as age, gender, education level, and region.

Variable definition: Let the independent variable X be the income level, the mediating variables M_1 be the food consumption expenditure, M_2 be the medical expenditure, and the dependent variable Y be the health level. The control variables are represented by $C_1, C_2, \cdots, C_n$.

1.Total - Effect Model

$$Y = cX + \sum_{i=1}^{n} \alpha_i C_i + \varepsilon_1 \tag{7}$$

Among them, c is the total - effect coefficient of income on the health level, α_i are the regression coefficients of the control variables, and ε_1 is the random error term.

2.Mediating - Effect Model

Path a_1 :

$$M_1 = a_1 X + \sum_{i=1}^{n} \beta_i C_i + \varepsilon_2 \tag{8}$$

Path a_2 :

$$M_2 = a_2 X + \sum_{i=1}^{n} \gamma_i C_i + \varepsilon_3 \tag{9}$$

Path b_1 :

$$Y = b_1 M_1 + c' X + \sum_{i=1}^{n} \delta_i C_i + \varepsilon_4 \tag{10}$$

Path b_2 :

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$$Y = b_2M_2 + c'X + \sum_{i=1}^{n} \zeta_i C_i + \varepsilon_5 \tag{11}$$

Among them, a_1, a_2 are the impact coefficients of income on food consumption expenditure and medical expenditure respectively, b_1, b_2 are the impact coefficients of food consumption expenditure and medical expenditure on the health level respectively, c' is the direct - effect coefficient of income on the health level after considering the mediating variables, $\beta_i, \gamma_i, \delta_i, \zeta_i$ are the regression coefficients of the control variables in different paths, and $\varepsilon_2, \varepsilon_3, \varepsilon_4, \varepsilon_5$ are the random error terms.

3.Parameter Estimation (Structural Equation Model - SEM)

The path analysis model usually uses the method of the structural equation model (SEM) for parameter estimation. SEM is a comprehensive statistical method that can simultaneously estimate the parameters in multiple equations and test the goodness - of - fit of the model. According to the above - mentioned model setting, specify the relationships between independent variables, mediating variables, dependent variables, and control variables to construct a structural equation model. Use the maximum - likelihood estimation method to estimate the parameters in the model.

3. Results

3.1. The Current Situation of Rural Residents' Income and Health

As shown in Table1, the statistical results of the model show that with a sample size of 3727 , the R^2 value is 0.62 , and the adjusted R^2 value is 0.59 . This indicates that the model can explain $59\% - 62\%$ of the variation in health scores, suggesting that the model has good explanatory power. The F - value is 38.7 , and the p - value is less than 0.001 , indicating that the entire regression model is highly significant statistically. That is, all independent variables together have a significant impact on health scores.

Table.1. Multiple Linear Regression Results

Variable	Coefficient	Robust Standard Error	t - value	p - value	95% Confidence Interval
Income	1.5	0.15	10	0	[1.20, 1.80]
Income Square	-0.03	0.01	-3	0.003	[-0.05, -0.01]
Age	-0.12	0.05	-2.4	0.016	[-0.22, -0.02]
Gender	2	0.6	3.33	0.001	[0.82, 3.18]
BMI	-0.2	0.1	-2	0.046	[-0.40, -0.004]

The core conclusion reveals a significant inverted U - shaped relationship between income and health scores: Specifically, for every 10,000 - yuan increase in income, the health score initially increases significantly by 1.5 points ($\beta_1 = 1.50, p < 0.001$). However, this positive effect decreases marginally as income increases, as confirmed by the negative coefficient of the income - square term ($-\beta_2 = -0.03, p = 0.003$). By finding the extreme point through the first - order derivative, the formula is:

$$\frac{\partial Y}{\partial X} = \beta_1 + 2\beta_2 X = 0 \Rightarrow X = -\frac{\beta_1}{2\beta_2} = \frac{1.50}{2\times 0.03} = 25 \tag{12}$$

It can be seen that when the annual income reaches 250,000 yuan, the improvement effect of income on health reaches its peak. After that, the growth rate slows down or may even decline. As shown in the Figure 1, this non linear relationship is visually presented by an inverted U - shaped curve, where the horizontal axis represents income (in ten - thousand yuan) and the vertical axis corresponds to the health score. This curve is fitted by a quadratic function, clearly marking a key inflection point. That is, when the income reaches 250,000 yuan, the health score reaches its peak and then begins to decline. The relationship between income and health is a non - linear association, showing an inverted U - shaped relationship.

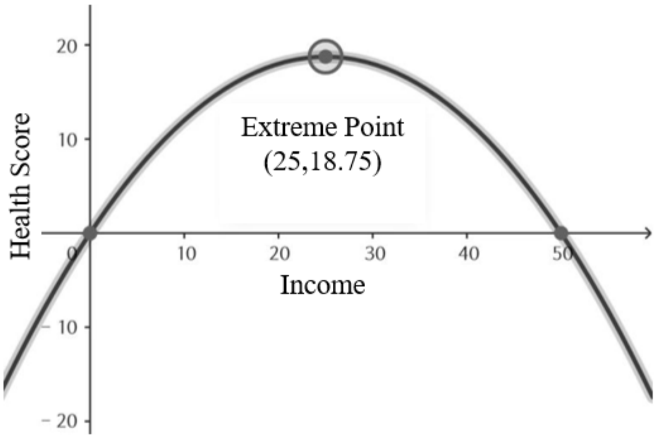

Figure 1. linear Relationship between Income and Health Score

To further confirm the conclusion, after calculating the health scores of rural residents in different income groups, the results are shown in Table 2. From the data comparison, the average health score of the high - income group is higher than that of the low - income group, which initially reflects that income growth has a certain positive impact on health. The difference in health scores between the middle - high - income groups is only 1.6 points. This confirms that as the income level increases, the positive promotion effect of income on the health score gradually weakens, and the growth rate of health improvement brought about by income growth slows down.

Table.2. Comparison of Health Scores in High and Low Income Groups

Income Group	Average Health Score	Standard Deviation
Low Income (< 150,000 yuan)	65.2	12.1
Middle Income (150,000 - 250,000 yuan)	78.5	10.3
High Income (> 250,000 yuan)	80.1	9.8

The practical significance of the inverted U - shaped relationship between income and health scores is further analyzed. Among different income groups, the impact of income increase on health varies. For low - income groups (with an annual income of less than 250,000 yuan), an increase in income significantly improves the health level, showing a steep positive relationship in slope. For high - income groups (with an annual income of more than 250,000 yuan), although income still has a positive effect on health, this promoting effect is significantly weakened, and the slope becomes gentle. This finding has important policy implications: For low - income groups, increasing the income level can directly and significantly improve their health conditions, such as by implementing a minimum - wage policy and providing employment support. For high - income groups, more attention needs to be paid to non - economic factors such as work pressure and mental health, which may have potential negative impacts on health.

3.2. 3.2 Core Paths for Income to Improve Health

According to the given path analysis and regression - coefficient table, the core - path analysis reveals the complex mechanism of the impact of income on the health level. The results are shown in Figure 2,Table3,Table4.

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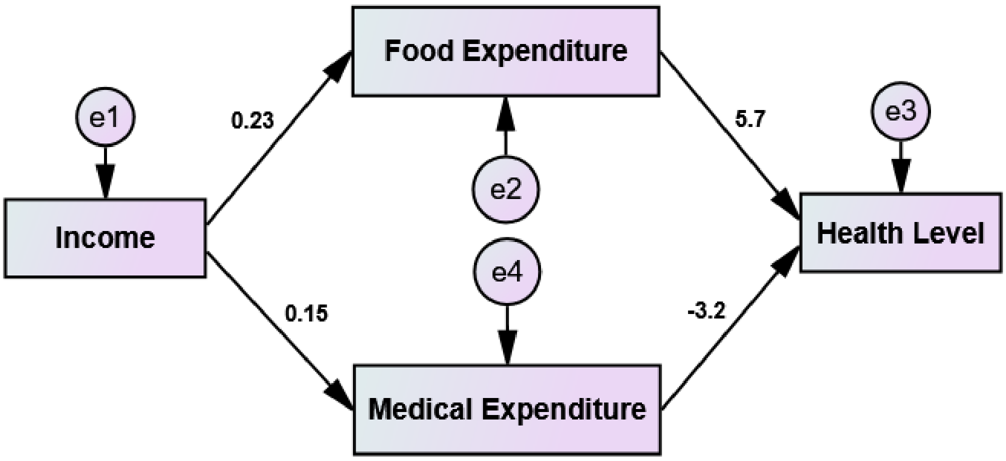

Figure 2. Path Analysis Diagram

Table.3. Regression - Coefficient Table

Path	Coefficient	Standard Error	P - value	95%c_1
$X \rightarrow M2(a_2)$	0.15	0.03	0.002	[0.09, 0.21]
$M1 \rightarrow Y(b_1)$	5.7	1.2	0.001	[3.3, 8.1]
$M2 \rightarrow Y(b_2)$	-3.2	0.9	0.002	[-5.0,-1.4]
$X \rightarrow Y(c')$	1.8	0.6	0.003	[0.6, 3.0]
Total Effect (c)	4.5	0.7	0	[3.1, 5.9]

Table.4. Bootstrap Results of Indirect Effects

Mediating Path	Indirect Effect	Bootstrap	Significance
$X \rightarrow M1 \rightarrow Y$	1.82	[1.02, 2.89]	Significant
$X \rightarrow M2 \rightarrow Y$	-0.48	[-0.92, -0.15]	Significant
Total Indirect Effect	1.34	[0.65, 2.45]	Significant

Specifically, income not only has a positive direct impact on the health level (the total effect c is significant), but also indirectly affects health through two mediating paths: First, an increase in income promotes food - consumption expenditure (M_1), which in turn improves the health level (the path $a_1 \rightarrow b_1$ is significant), indicating that the improvement of diet quality and nutritional intake is an important way for income to affect health. Second, an increase in income also leads to an increase in medical expenditure (M_2). However, unexpectedly, the increase in medical expenditure has a negative impact on the health level (the path $a_2 \rightarrow b_2$ is significant), which may be related to the efficiency of medical - resource utilization or the economic burden of medical expenses. Nevertheless, the comprehensive indirect effect of the two mediating paths is still significant, and the total indirect effect and the direct effect together constitute the comprehensive impact of income on the health level. Therefore, the core path can be described as: Income acts on the health level through an increase in food - consumption expenditure (positive mediation), an increase in medical expenditure (negative mediation, but the total indirect effect is positive), and a direct effect.

4. Conclusions

This study deeply explores the impact of income level on the health of rural residents through multi - source data and multiple econometric analysis methods, and draws the following core conclusions:

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There is an inverted U - shaped relationship between income and health scores: Based on the multiple linear regression model, when the sample size is 3727 , the model's R^2 value is 0.62 , the adjusted R^2 value is 0.59 , and the F - value is 38.7 ($p < 0.001$), indicating that the model has good explanatory power and is overall significant. There is a significant inverted U - shaped relationship between income and health scores. For every 10,000 - yuan increase in income, the health score initially increases significantly by 1.5 points, but the positive effect decreases marginally as income increases. When the annual income reaches 250,000 yuan, the improvement effect of income on health reaches its peak, and then the growth rate slows down or may even decline. Among different income groups, for low - income groups (with an annual income of less than 250,000 yuan), an increase in income significantly improves the health level; for high - income groups (with an annual income of more than 250,000 yuan), the promoting effect of income on health is significantly weakened.

Core paths for income to affect health: Income has not only a significant positive total effect on the health level but also an indirect impact through two mediating paths of food - consumption expenditure and medical expenditure. An increase in income promotes food - consumption expenditure, which in turn improves the health level. At the same time, an increase in income leads to an increase in medical expenditure, which has a negative impact on the health level, possibly related to the efficiency of medical - resource utilization or the economic burden. However, the comprehensive indirect effect of the two mediating paths is significant and, together with the direct effect, affects the health level.

Policy implications: For low - income groups, increasing the income level can directly and significantly improve their health conditions, which can be achieved through measures such as implementing a minimum - wage policy and providing employment support. For high - income groups, more attention should be paid to the potential negative impacts of non - economic factors such as work pressure and mental health on health.

References

[1] Adams P, Hurd M D, McFadden D, et al. Healthy, wealthy, and wise? Tests for direct causal paths between health and socioeconomic status[J]. Journal of econometrics, 2003, 112(1): 3-56.

[2] Yao Y, Wan G, Meng D. Income distribution and health: can polarization explain health outcomes better than inequality?[J]. The European Journal of Health Economics, 2019, 20: 543-557.

[3] Mackenbach J P, Martikainen P, Looman C W N, et al. The shape of the relationship between income and self-assessed health: an international study[J]. International journal of epidemiology, 2005, 34(2): 286-293.

[4] Fan L, Cao J, Hu M, et al. Exploring the importance of neighborhood characteristics to and their nonlinear effects on life satisfaction of displaced senior farmers[J]. Cities, 2022, 124: 103605.

[5] Hu Y H, Yu S C, Qi X, et al. An overview of multiple linear regression model and its application[J]. Zhonghua yu Fang yi xue za zhi [Chinese Journal of Preventive Medicine], 2019, 53(6): 653-656.

[6] Chiarini A, Brunetti F. What really matters for a successful implementation of Lean production? A multiple linear regression model based on European manufacturing companies[J]. Production Planning & Control, 2019, 30(13): 1091-1101.

[7] Stage F K, Carter H C, Nora A. Path analysis: An introduction and analysis of a decade of research[J]. The journal of educational research, 2004, 98(1): 5-13.

[8] Hauser R M, Goldberger A S. The treatment of unobservable variables in path analysis[J]. Sociological methodology, 1971, 3: 81-117.

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An Analysis of The American from the Perspective of New Economic Criticism

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Abstract

This paper analyzes Henry James's The American from the perspective of New Economic Criticism. It first makes an extratxtual analysis on the economic factors and cultural context of the production of novel, which reveals the historical and cultural significance behind the text. It then turns to the text itself, using the theories of "homo economicus" and "information asymmetry", and the concept of "credit economy" in Economics to analyze the marriage transaction in the novel, illustrating the internal logic of the characters' psychology and behavior in the marriage transaction, reflecting the important role of economic factors in the plot construction and characterization. At the same time, it also reveals the great cultural differences between the United States and Europe, and provides a new perspective to understand Henry James's "international theme".

Keywords

Henry James, The American, New Economic Criticism, Homo Economicus, Information Asymmetry.

1. Introduction

Henry James is one of the great writers of modern British and American literature, a pioneer of the Western modernist literary movement, and a highly regarded figure in both the British and American literary worlds. The American-born, British-lived novelist was a key figure in the transition from nineteenth-century realism to twentieth-century modernism in British and American literature, and his work, characterised by its 'international theme', remains an important inspiration at a time when cultural exchange is being promoted today. *The American*, Henry James's first full-length novel to deal with the 'international theme', tells the story of a successful American businessman Newman, who returns to his country after the journey to Europe where he made a passionate but frustrating pursuit of a young widow of noble birth. The course of this romantic relationship and engagement is influenced not only by emotional factors, but also by economic ones.

As an interdisciplinary study between literature and economics,New Economic Criticism came to existence during 1990. Moving away from the deconstruction, semiotics, and other formalist methods that were prevalent in the 1970s and early 1980s, New Economic Criticism theory can be seen as a branch of New Historicism. New Economic Criticism interprets literature from its production to the various stages of acceptance by readers through two categories, "extratextual" and "intratextual," which are further divided into three stages: production, internal circulation, and external circulation and consumption. [1]Stemming from the new historicism's assertion to understand history from literary records and literature from cultural contexts, the New Economic Criticism accomplishes a reversal of the new criticism originating from Russian formalism.

This paper will use *The American* as a discourse, applying the theory of New Economic Criticism in the light of the principle of homo economicus as well as information asymmetry and drawing

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on the relevant concept of credit economy to explore the market-based behaviour in the marriage transaction between the United States and continental Europe at the end of the nineteenth century. By analyzing the characters' behaviour and psychology in pursuit of their goals and the exchange of information, this paper is aimed to reveal the profitability and economics of social relations in the context of the capitalist market economy, as well as the divergence and conflict between American culture and continental European traditions. In addition, the paper will focus on the period in which the economic context of the novel was created to explore the historical and cultural values behind the novel's text.

2. Homo Economicus in The American

2.1. Homo Economicus

The concept of Homo economicus, also known as Rational Economic Man, is a fundamental concept in contemporary mainstream economics. It was first introduced by John Stuart Mill in the 19th century and encompasses the notion that a rational economic man is an economic agent who behaves rationally. This assumption can be traced back to Adam Smith's *Wealth of Nations*, which posited that individual egoism is the basic motivation for human economic behavior. Based on this premise, the rational economic man is considered to be a self-interested individual who acts and makes decisions based solely on the principle of benefit maximization and utility. No matter what he wants, he will maximize ruthlessly to get it[2]. Moreover, the rational economic man is believed to possess the ability to think rationally and engage in in-depth analysis and calculations in the pursuit of personal interests, taking into account individual circumstances and interests. This enables him to formulate optimal strategies that can achieve desired outcomes even under constrained conditions. In addition, the rational economist believes in the decisive power of the market. The forces of the market are seen to have a significant and inevitable influence on the outcome of the interests pursued by man. Therefore, any attempt to improve the market environment or change the economy and society to perfectly meet people's needs is viewed as misguided and likely to result in worse outcomes[3].

2.2. The Embodiment of Homo Economicus in The American

In the novel *The American*, the character Newman, along with Old Madame de Bellegarde, M.de Bellegarde, and Mademoiselle Noemie, are depicted as exemplification of the rational economic man.

For the first 35 years of his life, Newman's sole aim was to accumulate wealth, which is consistent with the rational economic principle of self-interest. Despite his involvement in the American Civil War, which he found to be a waste of his time, money, and talents, he eventually chose to pursue business as a means of maximizing his profits. Considering his excellent adventurous spirit, a flexible mind, and unwavering character, as well as the unlimited possibilities and opportunities in the American West, he consequently set his sights on unpredictable yet potential San Francisco, where his career ultimately succeeded, earning him a large fortune from nothing. Newman did not consider whether the industries he engaged in were decent or not, which is totally different from the Bellegarde family, and would do any business, including copper mining, selling leather, and bath tubs, because his sole objective was to make money. If a particular industry could allow him to earn the most money with the least cost, he was likely to engage in that business to achieve the goal of maximizing his benefits, which is a typical principle of rational economic man.

As he acquired enough wealth, Newman shifted his focus to finding a suitable wife with specific requirements, including kindness, beauty, intelligence, and wisdom and with his ultimate goal of pleasing himself. He was well aware of his own worth and was willing to use his resources to

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obtain the best possible partner in the marriage market, claiming that he wanted to "possess the best article in the market"[4: 40]. Newman's decision to search for a wife in Europe was also a rational choice that allowed him to widen his options and select a more desirable partner.

His selection of Claire, who possessed many values of a good wife including elaborate education, elegant demeanor, noble birth and broad vision, is an indication of his benefit maximization approach, for Claire was believed to be the best wife Newman could have sought in the marriage market. He described Claire as "a very expensive article which a man with an ambition to have everything about him of the best would find it highly agreeable to possess[4: 131].Once he set his target, he pursued it with a spirit of pragmatism, beginning to visit the Bellegardes frequently though he held little fancy for Old Madame de Bellegardes and her elder son.

In addition, at the end of the story, Newman's decision to burn the note that could prove the guilt of Old Madame de Bellegardes, which seemly an irrational choice violating his plan for revenge, actually reflected another characteristic of rational economic actors that they view the market's power as an irresistible force. Newman finally came to realize that he was excluded from the European aristocratic marriage market, and as an outsider, Claire could never be circulated to him. He burned the letter because he understood that he was not accepted by the market and that he could not change the market's overall situation. There's no other choice for him except to accept the effects of market forces imposed on him. He once attempted to turn to the Duchess for help, hoping to use her influence in the aristocratic circle to ruin Old Madame de Bellegarde's reputation. However, through the Duchess's attitude, he understood that he could never rely on the forces that excluded him to help him. Newman's actions in giving up on Claire and his revenge plan demonstrated his acceptance of the limitations imposed by market forces and his willingness to adapt to changing circumstances.

Old Madame de Bellegarde and M. de Bellegarde exhibit the characteristics of rational economic man, too. Both of them came from ancient aristocratic families and bound everyone in their family with the decorum and demands of the nobility. However, in their generation, the economic condition of the family was no longer optimistic. In their minds, maintaining their noble status and obtaining wealth was the most important goal. In order to achieve this goal, Old Madame de Bellegarde was willing to use her own daughter Claire's marriage as a tool to acquire wealth and status. The first prospective husband she chose for her daughter was M. de Cintre because he had a title that could match hers and he did not demand a large dowry from Old Madame de Bellegarde. Furthermore, Mr. de Cintré was over sixty years old, in poor health, and expected to die soon, so once he passed away, Claire would have the right to inherit his estate. In this way, she not only preserved the tradition of intermarriage among the nobility, adding another title to her own family, but also gained extra wealth, thus making it a good deal for her. As for her daughter's feelings and lifelong happiness, they were not within her consideration. She held absolute authority over her daughter and regards her as her own property. The principle guiding her actions is to use her daughter's value to maximize her own profit. However, after M. de Cintré's death, she did not get the expected sum of money. Having failed to achieve her goal, she planned to have her daughter remarried to obtain more money from her marriage. When she met the second suitor for her daughter, Mr. Newman, she initially could not accept him as her son-in-law because he was not part of the noble circle and had no education, which she found almost intolerable. However, after hearing about Mr. Newman's specific wealth amount, she eventually decided to tolerate his pursuit of her daughter. However, she and her son, the Marquis de Bellegarde, were still not satisfied because their goal was only half achieved. They hoped to gain more value from Claire. So they turned their attention to Claire's British cousin, Lord Deepmere, who was both titled and wealthy (with a substantial fortune in England), and ultimately forced Claire to give up Newman against her own will.

Furthermore, Mademoiselle Noemie, whom Newman met at the Louvre, also embodies features of a rational economic man. Unlike the other characters in the novel, Mademoiselle Noemie was neither a member of the aristocracy nor wealthy. She was simply the daughter of an ordinary Parisian citizen, born into a family that has fallen on hard times due to her father's failed business. However, she possessed striking beauty and charm that could captivate those around her. She was not only aware of her allure but also understood how to use it to obtain the life she desired. She had both beauty and ambition. Valentin's assessment of her is that "she has taken the measure of life, and has determined to be something - to succeed at any cost...she has not as much heart as will go on the point of a needle." [4: 165] Mademoiselle Noemie was not content to marry an ordinary Parisian citizen or work hard to earn her own dowry. Her goal was to become a true lady of the upper class. She recognized that marriage was the best method to achieve her goal of improving her wealth and social status. To be precise, she is an opportunist. At one point, she set her sights on Newman. At first, she was somewhat fawning toward him, but when she realized he had no interest in her, her attitude became very cold and distant. She waited patiently for the right moment and was determined to choose only the best suitor. She carefully selected her targets, shifting her gaze from Newman to a wealthy man in his fifties, and from M. Stanislas Kapp, the son of a beer brewer, then to Lord Deepmere. She also used men's infatuation with her to satisfy her vanity, for example, she incited Valentin to duel for her, resulting in his death, without feeling any remorse.

3. Homo Economicus in The American

3.1. Information Asymmetry and Credit Economy

The concept of asymmetric information was first proposed by economist Akerlof in 1970, which refers to the situation where one party in a transaction possesses more information than the other. Traditional economics assumes that the market is the best way to organize the economy, and through free competition, resources can be allocated efficiently. One of the basic assumptions is that "economic man" have complete information[5]. However, in reality, market participants cannot possess complete market information. The existence of imperfect information hinders the optimization of market transactions[6]. The unfairness of market exchanges is partly due to the unequal distribution of information. Asymmetric information often puts the party with more information in an advantageous position while leaving the party with less information in a disadvantaged position. The party with more information may pursue greater benefits while damaging the interests of the other party. This result is theoretically referred to as moral hazard and adverse selection.

Credit economy is an important component of contemporary market economy. Its earliest form, commodity credit, is an optimization of monetary economy, which simplifies the process of transaction and enhances transaction efficiency. With the further development of commodity economy, credit itself has become an important part of transaction. Modern market economy is built on a series of credit relationships. As an intermediary in most market transactions, once credit is lost, the chain of transactions will be broken, and the market economy will not be able to function properly[7].

Behind the credit economy also lies the existence of credit crises, which are closely related to the phenomenon of asymmetric information. Asymmetric information can lead to credit crises because when one party in a transaction finds that it can deceive and defraud the other party through information asymmetry to obtain more benefits, especially when the cost of such behavior is low, credit may be abandoned, which will damage the prosperity and development of the market economy.

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3.2. The Embodiment of Information Asymmetry and Credit Economy in The American

For literary works, the development of narrative novels depends on asymmetric information, using the differences in information to develop themes, subplots, and morals. In this text, the role that information asymmetry played in the plot construction, characterization and theme representation is mainly reflected in the two transactional confrontations between Newman and the Bellegarde family. Newman's engagement to Claire is actually a marriage transaction between Newman and the Bellegarde family, and a key factor in the confrontation between the two parties in this credit-based transaction is the amount of information they possess. Newman's ultimate failure is closely related to his lack of information.

During the process of Newman pursuing Claire, getting engaged to her, and then being jilted, the object of the transaction revolved around Claire. The Marquis and Old Madame de Bellegarde played the role of sellers in this marriage transaction, while Newman played the role of the buyer. Newman clearly had less information than the Marquis and Old Madame de Bellegarde. Most of Newman's understanding of them was indirect, such as through Mrs. Tristram's introduction, some information from Valentin, and observation of the building during his visit to the Bellegardes' mansion. The Marquis and Old Madame de Bellegarde did not reveal much information about themselves to him. Due to the huge cultural differences, Newman was even not able to grasp the indirect information well. When he first learned about the Bellegarde family through Mrs. Tristram, his first reaction was whether Claire would be difficult to approach, but he knew nothing about the marriage market rules of French nobles. When he visited the Bellegardes' mansion, his wondered why the mansion of a person of high status appeared so dark and dusty, which was completely different from the wealthy lifestyle he had imagined for Americans, proving his lack of understanding of the lifestyle of French nobles. In addition, although Mrs. Tristram had told him the absolute obedience of daughters to their mothers in French families, he still had little concept. So when Old Madame de Bellegarde told him that it was she who ordered Claire to give him up, he kept emphasizing, "A man can't be used in this fashion. You have got no right; you have got no power"[4:278], which showed his misunderstanding of the power relations in French families. Even when he witnessed Claire's conversation with Lord Deepmere at his own engagement party, he did not know that the Marquis and Old Madame de Bellegarde were still matchmaking Claire with the Marquis behind the scenes, nor did he know that his performance at the party made Marquis de Bellegarde ashamed. The most valuable information he obtained was limited to the fact that the Marquis and Old Madame de Bellegarde were eager to use Claire's marriage to obtain wealth, while he himself was a millionaire. These factors led to his blind optimism about this marriage transaction. Besides, when Newman visited the Bellegardes, he disclosed his entire career experience, growth experience, education level, and family situation, including his one and only advantage - a large sum of wealth. It was this information asymmetry that gave the Marquis and Old Madame de Bellegarde the advantage in this marriage transaction, allowing them to have more choices than Newman and giving them the confidence to jilt him.

Furthermore, another key premise for the Marquis and Old Madame de Bellegarde to retract their recognition of the engagement agreement between Newman and Claire is that the marriage transaction was based on a credit relationship. We can observe the existence of a credit economy in this marriage transaction. Both parties had clear goals - Newman wanted Claire, while the Marquis and Old Madame de Bellegarde wanted money. However, this transaction was not conducted in the form of cash and goods exchange, but was achieved by a verbal agreement, namely through credit as an intermediary. As one party to the transaction, Newman gave almost his complete trust to it, wherever the trust came from an American businessman's respect for market rules or his naive optimism in the Bellegarde family's honor and faithfulness. However, the Marquis and Old Madame de Bellegarde had other ideas. They

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first promised Newman and Claire's engagement verbally, which ensured they would receive the minimum benefit - a large sum of wealth. But they secretly chose a better "buyer", Lord Deepmere, which was essentially an act of deception and breach of contract that is unacceptable in a healthy market. They chose to go down the path of breach of trust for two reasons. First, this deceptive behavior could bring them more tangible benefits, and second, the cost of their betrayal was much lower than the benefits they could obtain. To begin with, their transaction was based solely on a verbal commitment, so even if they breached the agreement, it would not result in any legal disputes. Moreover, even if Newman spread the word about their dishonest behavior to his friends, it would not damage their reputation, as Newman's friends were far away in another continent and had no connection to their social circle. As for their own social circle, they believed their friends would stand by them, which was later improved indeed the case, so their breach of contract was more beneficial than harmful to the Bellegarde family. The information asymmetry between them and Newman was still the key factor that allowed them to breach the agreement.

The second phase of the confrontation revolves around the piece of note containing evidence of the guilt of Old Madame de Bellegarde. At this time, Newman played the role of the seller, while the Marquis and Old Madame de Bellegarde were the buyers. In this contest, Newman appeared to have the information advantage. Initially, he realized the Bellegarde family had a shady secret through Valentin's last words, and used this information to threaten Marquis de Bellegarde to agree his marriage proposal for the first time. When he mentioned this secret, the Marquis and Old Madame de Bellegarde showed clear signs of unease, but as the information was still in a state of complete vagueness, the information gap between the two parties was not yet evident, so the deal ended without any outcome. The Marquis and Old Madame de Bellegarde obviously did not believe that Newman could find out the truth of the past, but they did not know that Valentin had helped him to trace the clue to Mrs. Bread, one of the few people who knew the real situation. Then Newman found Mrs. Bread and did everything possible to make her tell the truth about the death of the old Marquis de Bellegarde. More importantly, he also obtained the piece of paper that could prove Old Madame de Bellegarde’s guilt from Mrs. Bread. At this point, Newman had accurate information that exceeded that of the Marquis and her mother, as they were unaware of Mrs. Bread's involvement in the matter, let alone the existence of the note written by the old Marquis himself. So when Newman seized the opportunity, he went to them again and threatened them one more time with the existence of the note. At first glance, Newman's threat was successful because the Marquis de Bellegarde soon visited him and requested to buy the note under certain conditions. However, what puzzled Newman was that the Marquis did not follow his manipulation and still refused to fulfill his request to return Claire to him, which he believed was a mutually harmful behavior. But in fact, Newman did not have a complete information advantage in this transaction either. During the confrontation between Newman and the Marquis and Old Madame de Bellegarde, the old madame asked him how he would deal with the note. Newman revealed his plan, saying that he would present the note to the Duchess and other nobles to make them realize that it would cause serious consequences once the note was made public. However, the actual effect was the opposite of what he expected. From his perspective, he believed in the good nature of humankind so that the Parisian aristocracy would not be indifferent to such a murder case. But he did not realize that this kind of event was nothing new at all to the Duchess, who was used to family secrets; and other nobles also would not break off with the Bellegardes because of that. Therefore, this way of dealing with the note did not pose any substantial threat to the Bellegarde family. The reaction of the noble circles to a murder case happening among them was what Newman had not anticipated, but what the Bellegarde family was familiar with, creating another invisible information gap. Behind this information gap lies the inescapable difference and conflict between the deceitful and sinister old Europe and the optimistic, liberal

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and just new America. As a member of the new America, Newman's natural information disadvantage in the European market was almost impossible to avoid, which led to the failure of both his deals with the Bellegardes.

4. Conclusion

The American is James's first full-length novel to successfully reflect on the 'international theme', depicting the experiences of Newman, a wealthy and ambitious American businessman, as he travels to Europe and Paris for the first time. Driven by his quest for exotic experience and a compatible life partner in Europe, Newman's journey eventually ends up with his disillusionment with the Bellegar family and European culture, leading to his solitary return to America. The righteous and optimistic Newman realizes that Europe is not that brilliant all as he sees, but that there is a lot of darkness and ugliness behind it, even calculations that he, a businessman, never anticipates, reflecting the insurmountable cultural differences between Europe and America.

Using an interdisciplinary critical approach, the thesis analyses the impact of historical and economic factors on the production of the novel's text, showing the historical and cultural significance of the novel. It draws on the economic theory of 'homo economicus', as well as the concept of 'information asymmetry' and the related 'credit economy', to explore the psychology behind the transactions of each of the characters in the marriage transaction. By showing the strong pursuit of profit maximization in the context of value exchange, the role of the information gap in social value exchange and interpersonal relationships, and the choices made by the characters when they have information or lack of information, the novel reveals the important role of economic factors in the construction of the plot and characterization. At the same time, the insurmountable information gap also reflects the great cultural differences between Europe and the United States, which provides another way of interpreting the 'international theme' in James's work.

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References

[1] M. Woodmansee and M. Osteen: The New Economic Criticism: Studies at the Intersection of Literature and Economics (Routledge, UK 2005).

[2] M. Hollis and E. Nell: Rational Economic Man (Cambridge University Press, UK 1975).

[3] S.F. Feiner: A Portrait of Homo Economicus as a Young Man, The New Economic Criticism: Studies at the Intersection of Literature and Economics (Routledge, UK 2005), p.193-209.

[4] H. James: The American (Penguin Classics, UK 1981).

[5] F. Sheng: On Information Asymmetry and Credit Economy, Journal of Modern Information, Vol. 23 (2003) No.1, p.15-17. (In Chinese)

[6] A. Kopec: Asymmetric Information, The Routledge Companion to Literature and Economics (Routledge, UK 2018), p.167-177.

[7] C.X. Duan: Brief Discussion on Credit Economy, Progress in Science and Technology, Vol. 19 (2002) No.9, p.192-193. (In Chinese)

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Research on the Pathways for Enhancing College Students' Employability Based on Career Planning Concepts

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Abstract

In recent years, the issue of college students' employability has attracted significant attention. Based on the concept of career planning, this study analyzes college students' employability and pathways for employability enhancement. It elaborates on the four elements constituting employability: job-hunting skills, fundamental abilities, professional competence, and learning capacity. Subsequently, a questionnaire was developed around these four dimensions to investigate the current state of college students' employability. After analyzing the identified problems, the study proposes countermeasures to enhance students' employability within the framework of career planning concepts.

Keywords

Employability; Career Planning; Employability Enhancement

1. Introduction

1.1. Research Background and Significance

With the rapid popularization and expansion of higher education in China, the number of university graduates continues to rise, exacerbating the employment issue faced by college students. According to statistics from the Ministry of Education, the number of university graduates has steadily increased in recent years, reaching 11.79 million in 2024 and projected to reach 12.22 million in 2025. Consequently, the employment competition environment for graduates has become increasingly severe. Meanwhile, as labor market demands become more refined and diversified, employers have progressively raised their expectations regarding graduates' qualities and capabilities. In addition to professional knowledge, employers emphasize comprehensive qualities such as job-hunting skills, communication abilities, and self-management capabilities. Therefore, the employability level of college students directly impacts their employment competitiveness and job quality.

However, current research and policy orientations regarding college students' employment largely focus on improving graduates' employment rates and initial salaries, neglecting the intrinsic mechanisms of enhancing individual employability. Specifically, there is insufficient attention given to personal initiative and development from the perspective of career planning. The university period represents a critical transitional stage where students move from academic settings into society, marking the starting point of their career development; thus, the importance of career planning during this phase is self-evident. Effective career planning helps college students clearly define career goals and professional positioning, significantly facilitating continuous improvement in employability, individual competitiveness, and social adaptability.

Given this context, the present study adopts the perspective of career planning to thoroughly investigate the primary issues concerning the employability of college students. It outlines specific elements comprising employability and employs questionnaires to ascertain the current state of college students' employability. The study further analyzes identified

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deficiencies, thereby proposing targeted enhancement pathways and measures. This research aims to supplement and refine the theoretical framework of current employability studies and provide practical policy references for universities and related institutions to enhance college students' employment competitiveness and improve employment guidance services.

1.2. Research Objectives

In recent years, research on college students' employability has increasingly become a prominent topic within human resources studies. However, further exploration is needed regarding the composition and enhancement of college students' employability from the perspective of career planning. This study aims to address the following questions: What employment realities and challenges do college students face? What are the constituent elements of college students' employability from the career planning perspective? And how can college students improve their employability based on career planning concepts?

1.3. Research Methods

1.3.1. Literature Review Method

In this study, extensive literature was reviewed through resources available at the library of Chongqing University of Technology, focusing on concepts of employability, improvement strategies for college students' employability, the essence of employability, relevant models, competencies, and theoretical frameworks related to employability. Furthermore, databases such as Wanfang, CNKI, and VIP Database were utilized to access research conducted by scholars in recent years, integrating and synthesizing existing insights. This comprehensive review provides a solid theoretical foundation, ensuring clarity in understanding concepts, core elements, and relevant theories essential to this research.

1.3.2. Questionnaire Survey Method

This research utilized questionnaire surveys to investigate the current employability status of undergraduate students. The survey was conducted in three main stages. The first stage involved designing the preliminary questionnaire, considering four dimensions of employability: job-seeking skills, foundational skills, professional competencies, and learning abilities. The second stage entailed pilot testing and revising the questionnaire, where a small-scale test involving 20 samples was conducted to refine the questionnaire based on preliminary feedback. Finally, the questionnaire was distributed through the Questionnaire Star platform, with a total of 109 questionnaires disseminated and collected, achieving a 100% response rate. After screening, 12 invalid questionnaires were excluded, resulting in 97 valid questionnaires and an effective response rate of 89%.

1.4. Current Status of Domestic and International Research

1.4.1. Definitions of Employability in Domestic and International Contexts

Employability, derived from the English term "Employability," has been translated by Chinese scholars as employment ability or employability. The concept was first proposed by British economist Beveridge in 1909[1], who categorized employability into employable and unemployable, establishing a binary classification. Over time, employability evolved through stages such as socio-medical employability, labor policy employability, labor market performance employability, and interactive employability[2]. British scholars Harvey, Locke, and Morey, in their report "Employability of College Graduates," defined employability essentially as an individual's capability to obtain, retain, and excel at a job after undergoing a learning process. In brief, employability refers to the capability to secure and sustain employment[3]. In 2005, the American Education and Employment Committee reiterated that employability encompasses not only the narrow sense of finding a job but also includes the abilities to continuously perform well and achieve successful career development[4].

Domestically, Song Bo and Wang Si described employability as the collection of knowledge, skills, and personal traits students require for successfully obtaining, performing, and transitioning between jobs upon graduation[5]. Liu Kui and Gao Huijun defined college students' employability as an integrated set of beneficial employment-related abilities acquired through professional education and social practice during higher education[6]. Zhao Shufang proposed that employability should encompass professional skills, social integration abilities, career planning capabilities, self-improvement abilities, and generic skills[7].

Despite extensive domestic and international research, there remains no universally accepted definition of employability.

1.4.2. Domestic and International Identification of Employability Components

There are abundant studies both domestically and internationally concerning the components of employability. Wang Li, Feng Xin, and Zhang Haowei categorized employability into three main parts: basic abilities, self-management abilities, and teamwork capabilities[8]. Liu Quanzhen considered college students' employability as comprising professional abilities, personality traits, and job-seeking skills[9]. Liang Bo and Liu Gang classified college students' employability into knowledge structures, ability structures, psychological qualities, professional qualities, and interview abilities[10]. Pallard argued that employability should consist of three components: development abilities, expression and presentation skills, and adaptability[11]. In addition, there are many other definitions and frameworks regarding the constituent elements of employability. However, the author believes that Beveridge's binary classification of employability into employable and unemployable categories offers a more persuasive approach to identifying its constituent elements.

1.4.3. Literature Review on College Students' Employability and Employability Enhancement

After reviewing a substantial body of related literature—including around 50 definitions extracted from journal articles and academic dissertations—it is evident that most definitions of college students' employability originate from the perspective of students themselves in their pursuit of employment. These definitions typically focus on the subjective attributes graduates should possess and analyze the specific competencies required to successfully secure employment. For instance, Knight and Yorke proposed the USEM employability model, in which 'U' represents Understanding, 'S' denotes Skills, 'E' stands for Self-efficacy, and 'M' indicates Metacognition. This model further subdivides these abilities into 35 secondary components, including core skills, process skills, and personal traits.

In the domestic context, some scholars have employed competency models to identify key factors of college students' employability, such as job-seeking abilities, professional skills, communication capabilities, and adaptability, which are then further detailed into secondary indicators.

Regarding the enhancement of college students' employability, many studies consider factors at the national, governmental, societal, and university levels. Since universities are directly associated with student employment outcomes, a significant portion of research into improving college students' employability uses higher education institutions as the primary focus. This connection has also attracted broader participation and interest in addressing employment issues and improving employment guidance within universities.

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2. Definition and Theoretical Basis of Employability

2.1. Overview of College Students' Employability from the Perspective of Career Planning

2.1.1. The Connotation of College Students' Employability from the Perspective of Career Planning

The concept of career planning is now widely recognized by the public. Many people mistakenly believe career planning is something necessary only after entering the workforce or starting a job. However, this perception is incorrect. Career planning should begin as early as possible, ideally at the stage of selecting between liberal arts and science in high school. However, as far as the author is aware, many domestic high schools do not currently offer career planning guidance. After entering university, the importance of career planning is gradually acknowledged, with many institutions offering related courses beginning in freshman year, followed by further career counseling sessions. Nevertheless, effective career planning should clearly define one's career objectives as early as possible and outline specific actions to achieve these goals, essentially knowing what one wants and how to pursue it.

With an understanding of career planning established, it becomes easier to define college students' employability from this perspective. In this context, college students' employability refers to the combination of skills and competencies students should possess in order to effectively achieve their targeted career goals during the career planning process.

2.1.2. Identifying the Components of College Students' Employability

Through an extensive review of relevant literature, the author extracted employability-related competencies identified by 50 scholars as essential for college students, including cognitive skills, computer application skills, foreign language skills, communication skills, coordination abilities, adaptability, and stress resilience. After eliminating repetitive competencies and statistically analyzing their frequency of occurrence, 28 secondary competency indicators were derived and categorized into four primary indicators, as shown in Table 1 below:

Table 1 Factors of college students' employability

Primary element	Secondary element	Primary element	Secondary element
Job-Seeking Ability	Foreign language skills	Basic Ability	Reading and writing skills
	Computer application skills		Comprehension ability
	Career planning skills		Communication ability
	Social practice ability		Expression ability
	Reflective and summarizing ability		Time management ability
	Perseverance		Interpersonal skills
	Self-confidence		Physical and mental health
	Optimism	Professional Ability	Professional skills
	Emotional management ability		Professional knowledge
	Coordination ability	Learning Ability	Logical thinking ability
	Decision-making ability		Information collection and processing

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	Adaptability Competitiveness Stress resilience Innovation ability	Transfer ability Lifelong learning

2.2. Theoretical Explanations Related to Employability

2.2.1. Marx's Theory of Comprehensive Human Development

Marx critically revised the thoughts of his predecessors through dialectical materialism[12] and argued that human development is consistent with social production development. Marx's theory of comprehensive human development is mainly reflected in three aspects: firstly, humans possess diverse abilities and a comprehensive understanding of the productive labor system. Secondly, individuals experience comprehensive development, encompassing moral, intellectual, physical, aesthetic, and labor dimensions. Thirdly, humans develop independently; development exists objectively and is not subject to external interference or control. Marx's theory helps identify key characteristics of human development, thus providing valuable insights for research focused on enhancing individual competencies and improving college students' employability.

2.2.2. Career Anchor Theory

Career Anchor Theory, also known as Career Orientation Theory, was proposed by Edgar H. Schein and his specialized research team, based on a longitudinal study of the career trajectories of 44 MBA graduates from the Sloan School of Management over a period of twelve years. The theory emerged initially in preliminary form through inductive reasoning and was later refined and summarized through comprehensive analysis.

Table 2 Career anchor type table

Career Anchor Type	Description
Technical/Functional	Aspires to specialize in technology; excels at utilizing technical skills; focuses on continuously improving technical expertise.
Managerial	Pursues power and authority; enjoys management roles; skilled at resource integration.
Autonomy/Independence	Prefers freedom in work and personal life; eager to realize personal ambitions.
Security/Stability	Seeks job security and stability; concerned about financial well-being.
Entrepreneurial Creativity	Desires to create their own business or products.
Service/Dedication to a Cause	Devoted to core values they deeply identify with and willing to work hard for these values.
Pure Challenge	Driven by challenging the impossible; undeterred by difficulties; dislikes simplicity.
Lifestyle	Aims to balance work, family, and personal needs effectively.

An anchor is used by ships to secure their positions when docking. Similarly, a career anchor refers to the central aspect that people consistently consider when making career choices and

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career development plans. Regardless of the occupation one chooses or how one's career develops, this central anchor remains unchanged. In daily life, this anchor often manifests as one's principles and deeply-held values. Career anchors are crucial factors that must be taken into account when choosing a career or making career development plans. The factors influencing these career anchors include:

Table 3 Influencing factors of career anchors

Primary factor	Secondary factor
Personal Level	Talents, skills, abilities, strengths, weaknesses
Life Level	Motivations, needs, drivers, goals, desires
Spiritual Level	Values, behavioral principles

From the perspective of career planning, identifying one's career anchor type and subsequently cultivating corresponding abilities is also crucial for enhancing college students' employability.

2.2.3. The Entropy Increase Principle

The entropy increase principle was originally a significant concept applied within the field of thermodynamics. Entropy, simply put, is a physical quantity describing the degree of disorder in a natural system—the greater the disorder, the higher the entropy, and vice versa. According to this principle, the disorder of a system invariably progresses from orderliness to disorder, and this process is irreversible. Renowned management expert Peter Drucker once said: "Management has only one task—to counteract entropy. During this process, an organization's vitality increases rather than silently moving towards its demise."

In essence, life itself represents a continuous process of resisting entropy increase. If we consider ourselves as the center of a personal system, this system tends to move towards disorder. For example, after a certain period, we must groom ourselves, clean our rooms, and organize our desks. Within the perspective of career planning, properly applying the entropy increase principle can significantly enhance our employability. Counteracting entropy is essentially an anti-entropy process. Since entropy increase is irreversible, we must build and continuously maintain ourselves as an open system to effectively resist entropy. For instance, we need to consistently learn new knowledge and maintain a sense of vigilance in comfortable circumstances to break equilibrium at maximum entropy. Regarding physical fitness, regular and continuous exercise is necessary to maintain good health. Likewise, in interpersonal relationships, we must invest time or resources to foster closer bonds.

3. Current Status and Analysis of College Students' Employability and Its Enhancement from the Perspective of Career Planning

3.1. Current Status of College Students' Employability and Employability Enhancement from the Perspective of Career Planning

In this research, the author previously identified the constituent elements of college students' employability from the career planning perspective. These comprise 4 primary indicators: professional ability, personal subjective ability, basic ability, and learning ability, along with 28 secondary indicators such as foreign language skills, innovation capacity, professional skills, and so forth.

The data for this study were mainly collected through a questionnaire survey utilizing a five-point Likert scale. To ensure the effectiveness of the survey, the author designed questionnaire items based on the four primary dimensions and corresponding secondary indicators. Following the preliminary design, the questionnaire underwent refinement, removing inappropriate items and conducting a pilot test by distributing it to 20 respondents. The

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collected pilot data were analyzed, leading to further structural optimization of the questionnaire.

The finalized questionnaire was distributed via the Questionnaire Star platform, with 109 questionnaires sent out and 109 returned, achieving a 100% response rate. After careful screening, 12 invalid questionnaires (completed in under one minute) were removed, leaving a total of 97 valid questionnaires and resulting in an effective response rate of 89%.

3.1.1. Demographic Variables Frequency Analysis

According to the following analytical results, the numerical characteristics of demographic variables reflect the distribution of survey participants. The mean represents the central tendency, while the standard deviation indicates variability. The distribution of each variable essentially meets the sampling requirements. Regarding gender distribution, males account for 24.7%, while females represent 75.3%, suggesting the survey results lean more towards the opinions of female respondents. Concerning grade distribution, freshmen accounted for 2.1%, sophomores 13.4%, juniors 80.4%, and seniors 4.1%, indicating that the primary respondents were third-year students. Regarding academic major types, engineering accounted for 14.4%, science for 22.7%, humanities and social sciences for 40.2%, and other disciplines for 22.7%, illustrating a higher proportion of participants from humanities and social sciences. In terms of political affiliation, Communist Youth League members accounted for 78.4%, representing the largest group and indicating that most respondents were League members.

Table 4 Statistics of demographic variables

Variable	Category	Frequency	Percentage	Mean	SD
Gender	Male	24	24.70%	1.75	0.43
	Female	73	75.30%		
Grade	Freshman	2	2.10%	2.87	0.49
	Sophomore	13	13.40%		
	Junior	78	80.40%		
	Senior	4	4.10%		
Major	Engineering	14	14.40%	2.71	0.98
	Science	22	22.70%		
	Humanities & Social Sciences	39	40.20%		
	Others	22	22.70%		
Political Status	CCP Member	2	2.10%	2.82	0.5
	Probationary CCP Member	16	16.50%		
	Communist Youth League Member	76	78.40%		
	Masses	3	3.10%		

3.1.2. Reliability and Validity Tests

(1) Overall Reliability Analysis

The analysis was performed using SPSS 25 software. The results are presented in Table 5:

Table 5 Overall reliability analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
0.963	0.964	41

According to the overall reliability coefficient, the standardized Cronbach's Alpha is 0.964, indicating excellent reliability of the questionnaire as a whole. Cronbach's Alpha coefficients

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range from 0 to 1, with values closer to 1 indicating higher reliability. The result of this analysis (0.964) demonstrates very high reliability.

(2) Validity Analysis

The validity analysis of this questionnaire was conducted using exploratory factor analysis via SPSS 25. The results of the KMO and Bartlett's Test are shown in Table 6:

Table 6 KMO and bartlett's test

Measure	Value
KMO Measure of Sampling Adequacy	0.856
Bartlett's Test of Sphericity Approx. Chi-Square	3437.169
Degrees of Freedom	820
Significance	0

According to the results from the exploratory factor analysis, the KMO value is 0.856. The KMO statistic ranges between 0 and 1, with values closer to 1 indicating better validity. Additionally, Bartlett's test of sphericity shows significance infinitely close to 0, thereby rejecting the null hypothesis. Therefore, the questionnaire demonstrates good validity.

3.2. Problems in Enhancing College Students' Employability from the Perspective of Career Planning

The analysis of employability status in this study was structured around four dimensions: job-seeking ability, basic ability, professional ability, and learning ability. The questionnaire consisted of 28 questions, each scored on a 5-point scale, totaling a maximum of 140 points. The ideal proportions for each dimension were set at 53.57%, 25%, 7.14%, and 14.29%, respectively. However, the statistical analysis revealed actual average scores as follows: 33.67%, 17.28%, 4.34%, and 9.50%, respectively. Although the respondents were undergraduate students from Chongqing University of Technology, the findings are generally representative. Compared to ideal expectations, the students' employability clearly requires improvement, particularly in job-seeking ability.

3.2.1. Low Job-seeking Ability

Job-seeking ability refers to individuals' capacity to address and solve various problems encountered in the job search process, including foreign language proficiency, decision-making capability, and self-confidence. The level of job-seeking ability largely determines an individual's likelihood of securing employment. According to this survey, the ideal proportionate score for job-seeking ability should have been 53.57%, but the actual average was only 33.67%, indicating a significant gap. Several reasons contribute to this gap; the primary cause seems to be the lack of suitable platforms for students to practice and enhance these skills. Additionally, many students have not consciously prioritized improving such competencies as oral English or relevant computer software application skills tied to their major. Furthermore, hidden qualities like self-confidence, optimism, reflective thinking, and adaptability require active engagement in diverse activities and social practice to develop effectively.

3.2.2. Basic, Professional, and Learning Abilities Need Improvement

Basic abilities include reading and writing skills, comprehension, and communication abilities; professional abilities involve specialized knowledge and professional skills; learning abilities encompass information gathering and lifelong learning habits. Based on the questionnaire results, college students clearly exhibit room for improvement across these three areas.

3.2.3. Universities Lack Adequate Supporting Measures to Enhance Employability

Universities play a significant role in enhancing college students' employability, as they directly influence students' behaviors and choices. However, despite recognizing the importance of

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enhancing employability, some universities fail to implement adequate supporting measures. In this survey, regarding the statement "the university prioritizes professional education over comprehensive quality education," 43.3% of respondents rated the situation as "average," indicating the university should place more emphasis on holistic education. Concerning the alignment of professional courses with labor market demands, 48.45% of respondents rated it as merely "average," suggesting universities need to better align their curricula with employers' needs. Regarding the availability of internships or practical experiences during academic terms, only 41.24% of students expressed agreement, while 38.14% responded neutrally, implying room for improvement in this area as well. Currently, theoretical knowledge predominates at many universities, with practical training receiving insufficient attention, limiting opportunities for students to enhance their employability effectively.

4. Pathways for Enhancing College Students' Employability Based on Career Planning Concepts

4.1. Optimizing Talent Cultivation Models and Implementing Integration of Industry-University-Research

At present, many universities still emphasize theoretical knowledge while neglecting practical application. Students' assessments primarily rely on examinations. Although some institutions include social practice sessions, these are often merely formalities and inadequately implemented. Furthermore, many universities continue to utilize a single, rigid model of talent cultivation, offering limited opportunities for practical experience. Universities should actively collaborate with enterprises to establish industry-university-research bases, enabling students to apply theoretical knowledge to real-world situations, thereby effectively assessing their mastery of professional knowledge and skills.

4.2. Actively Promoting Career Planning and Employment Guidance

Universities should guide students early in developing a strong sense of career planning, encouraging them to set clear directions and objectives for their future. Although such plans may evolve over time, having initial plans is crucial, as it provides students with specific goals, reducing confusion and better preparing them for future career development. In terms of employment guidance, universities should provide students with relevant and practical advice to facilitate their transition into the workforce.

4.3. Optimizing Curriculum Design and Improving Teaching Methods

With the continuous development of society, knowledge rapidly updates, and professional structures constantly evolve. Universities should keep pace with the times by regularly updating and optimizing curriculum designs to align with students' learning needs and better fulfill employers' expectations. Additionally, traditional teaching models and mindsets must evolve to accommodate students' individual differences and varying levels of understanding, thus facilitating personalized and effective learning experiences.

4.4. Encouraging Students' Subjective Initiative

When enhancing college students' employability, the critical factor lies in improving individual subjective initiative, regardless of actions taken by universities, society, or governments. The enhancement of subjective initiative significantly influences students' overall employability. Regarding major selection, most universities allow students only a single opportunity to change their majors if they meet certain conditions. The author suggests that universities could relax this restriction, permitting students to transfer majors more freely, provided they pass relevant assessments. Additionally, universities could establish incentive systems, such as offering

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comprehensive assessment points as rewards to encourage active student participation in campus activities.

5. Conclusions and Prospects

Based on an understanding of employability theories, this study analyzed ways to enhance college students' employability from the perspective of career planning. Through a comprehensive literature review, employability was categorized into four key dimensions: job-seeking ability, basic ability, professional ability, and learning ability. A questionnaire survey was subsequently administered to evaluate the current employability status of college students, concluding that improvements should primarily focus on job-seeking abilities. Moreover, under the perspective of career planning, enhancing individual subjective initiative and proactive university guidance were identified as crucial.

Nevertheless, the current research has certain limitations, including a relatively small sample size and potential subjectivity in the analysis and recommendations, possibly resulting in some logical imperfections. It is hoped that future studies will explore this topic more comprehensively and deeply.

References

[1]. Kai Fang. Study on Measures to Improve the Employability of Private Undergraduate Students Based on the USEM Model. Education and Vocation. 2014, (No.09), p. 91-93.

[2]. QiQi Wang. Research on Improving College Students' Employability Based on the Concept of Career Planning (Master's thesis, Wuhan University of Technology, China 2019). p. 1-67.

[3]. Jingjing Wu. Empirical Research on the Development of College Students' Employability (Master's thesis, Hunan University, China 2011). p. 1-58.

[4]. Cen Yan. Research on Growth Demands and Employability Improvement Pathways of Poor College Students. China University Students Career Guide. 2014, (No.02), p. 28-32.

[5]. Bo Song, Si Wang. Research on Enhancing College Students' Employability Based on Competency Model. Hebei Enterprise. 2015, (No.01), p. 81-82.

[6]. Kui Liu, Huijun Gao. On the Connotation and Improvement Paths of College Students' Employability. Meitan Higher Education. 2015, Vol. 33 (No.06), p. 89-92.

[7]. Shufang Zhao. Investigation on the Current Situation and Promotion Strategies of College Students' Employability (Master's thesis, Heilongjiang University, China 2018). p. 1-88.

[8]. Li Wang, Xin Feng, Haowei Zhang. Research on Improving College Students' Employability from the Perspective of Career Development. Innovation and Entrepreneurship Education. 2014, Vol. 5 (No.06), p. 16-19.

[9]. Quanzhen Liu. Theoretical Study on Improving College Students' Employability from the Perspective of Experiential Education. Data of Culture and Education. 2017, (No.20), p. 177-178.

[10]. Bo Liang, Gang Liu. Analysis of the Current Situation and Paths to Improve College Students' Employability. China Market. 2016, (No.51), p. 66,76.

[11]. Gang Du. Exploration on Cultivation of College Students' Employability (Master's thesis, Central China Normal University, China 2008). p. 1-44.

[12]. Xiumei Yan. Research on Improving College Students' Employability (Master's thesis, Hunan Agricultural University, China 2014). p. 1-75.

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Troubleshooting of Draeger Neonatal Ventilator

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Abstract

Draeger Babylog8000 is a ventilator specially designed for premature infants, newborns and infants under 20 kg, which has been widely used in major hospitals in China. As a large comprehensive medical institution that excels particularly in the field of pediatrics, our hospital is equipped with more than ten such ventilators. This paper analyzes the basic structure of the ventilator and a maintenance case, which provides methods and basis for the daily management and maintenance of the ventilator in the future.

Keywords

Draeger; Babylog8000; Ventilator; Maintenance cases.

1. Introduction

In recent years, with the rapid development of cities, the safety of newborns has attracted great attention from all sides. Draeger Babylog8000 neonatal ventilator is a special ventilator [1]for newborns, which is suitable for children, infants, full-term newborns and premature infants of 400g-20Kg. The equipment adopts constant pressure mode and has the functions of high frequency ventilation. The basic breathing modes include IPPV, SIPPV, SIMV, CPAP, etc. As a medical device, with an increase in usage, Babylog8000 ventilator often fails in the process of use. This paper analyzes the basic structure of the equipment and a maintenance case, which provides methods and basis for the daily management and maintenance of the ventilator in the future.

2. Basic structure

The structure of the Babylog 8000 mainframe consists of two parts, the electrical circuit and the gas circuit. The structure of the electrical circuit part is shown in Figure 1. The front panel includes a control panel and a display panel, which are used to realize the human-computer interaction function, including the display of waveforms and parameters、the adjustment of parameters during breathing.

The main control system is the core of signal and data processing, and the monitoring system is used to monitor all monitoring data and status information. The main control system and the monitoring system work together to complete the verification of monitoring data and status information. They are two sets of micro-processing systems that operate relatively independently. Once a verification error occurs, an alarm will occur.

The flow sensor monitors the flow of inhaled or exhaled gas, converts it into an electrical signal and transmits it to the CPU to complete signal processing, so as to realize the real-time monitoring of the main working parameters of the ventilator, such as tidal volume, minute ventilation volume and gas flow rate [2] . Babylog8000 uses a proximal thermal flow sensor, which has the advantages of low respiratory resistance, fast response, and is very sensitive to low flow [3] . It is suitable for premature infants with low tidal volume, high respiratory rate,

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and low minute ventilation (≤250 mL/kg). Pressure sensors mainly include inspiratory and expiratory pressure sensors and air and oxygen pressure sensors.

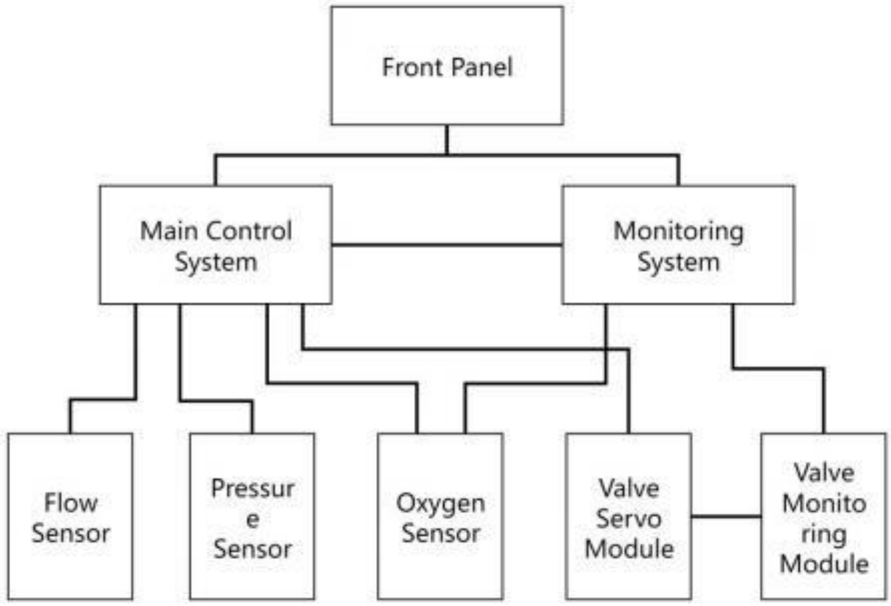

Figure 1: Babylog 8000 electrical circuit structure

The inspiratory and expiratory pressure sensors mainly monitor the inspiratory and expiratory airway pressures, while the air and oxygen pressure sensors mainly monitor the air and oxygen supply pressures, which are required to be 0.03~0.06 MPa. Finally, the Babylog8000 interior stabilizes the supply pressure at 0.17 MPa. In addition, Babylog8000 is a pneumatic and electrically controlled ventilator, and its driving source can be oxygen or air. Oxygen concentration monitoring sensor continuously measures the inspired oxygen concentration, and the system automatically performs a 2-point calibration (21%, 100%) every 24 hours. The calibration time for air (21%) and oxygen (100%) was approximately 2.5 min each.

The main control system and the monitoring system jointly control various types of valves, the main control system gives a servo signal, the servo module completes the driving of the valve, the monitoring system completes the power supply control, the valve monitoring module measures the working current of the valve and feeds back to the servo module and the monitoring system to form the whole valve control loop.

The gas path part is mainly divided into seven modules(see Figure 2). The gas supply module is mainly composed of a compressed gas filter, a check valve and a pressure regulator; the compressed gas flowing through this module will maintain a stable system pressure and will not flow back to the central gas supply system. The absolute pressure sensor measures and monitors the system pressure. The compressed gas is sent to the inspiratory module after gas mixing and flow blending, where the oxygen concentration of the mixed gas will be measured. In addition, the overpressure safety valve and emergency suction valve will ensure the breathing safety in case of pipeline overpressure and air supply failure. Airway pressure is measured by a relative pressure sensor.

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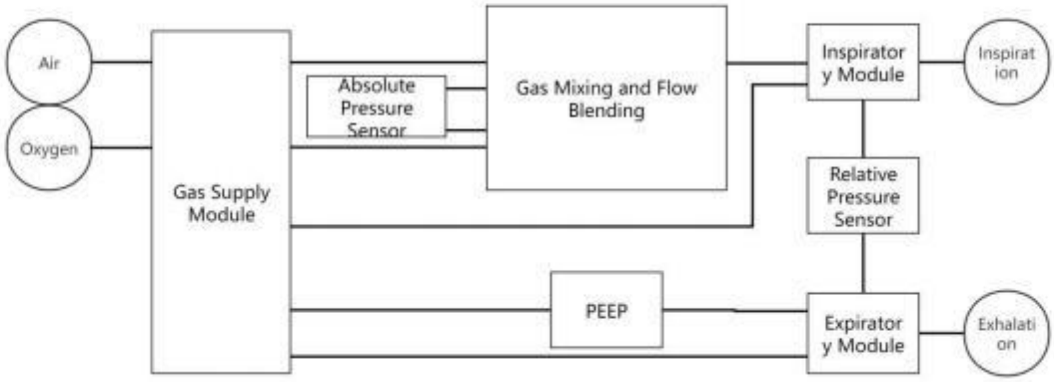

Figure 2: Babylog 8000 gas circuit structure

3. Repair case

3.1. Fault symptom:

The clinical users reported that the ventilator was unstable.

3.2. Fault analysis and maintenance:

After inquiring with the clinical department, it was found that the ventilator sometimes exhibits instability during patient ventilation, with irregular intervals between breaths.For the sake of safety, remove the ventilator. Connect the power supply and air source, turn on the machine, check the external pipeline, there is no abnormality. Connect the air circuit pipeline and the neonatal model lung, turn on the machine, set the breathing parameters according to the clinical requirements, observe the changes of the model lung, there is no abnormality, and the ventilator also didn't report any errors.

Considering the possible randomness of the failure, the observation time was prolonged, and it was seen that sometimes the model lung changed irregularly. Consider the problem of the flow sensor, replace it, re-observe it, and the failure occurs from time to time. Considering that the flow sensor is connected to the back of the machine through the connecting wire, the connecting wire is replaced and observed again, and the fault occurs from time to time.

Troubleshoot external attachments and pin the problem on the ventilator itself. Enter maintenance mode. The method to enter the maintenance mode is: in the shutdown state, press and hold the OK key and the mute key to start the machine until the maintenance interface appears and the key is released. In the maintenance mode [4] , observe the valve flow rate, as shown in Figure 3， record and summarize the values of the air valve and the oxygen valve as shown in Table 1.

Ask the engineer of the manufacturer and learn that the flow rates of oxygen valve and air valve should be consistent under normal conditions, and the flow rate values of each valve are basically arranged according to the geometric progression(common ratio is 2). Observing the data in Table 1, it can be found that the values of air valve No.10-8 is abnormal.

Disassemble the panels on both sides of the ventilator and remove the electrical circuit control part. The valve blocks [5] with 2 rows and 10 columns can be seen in the gas circuit section, see Figure 4. Find the 10-8 air valves, remove them, check and find that there are dirt on the surface, and wipe them with an alcohol swab. Reinstall, connect the power supply and air supply, start the machine and test, and find that faults occur from time to time.

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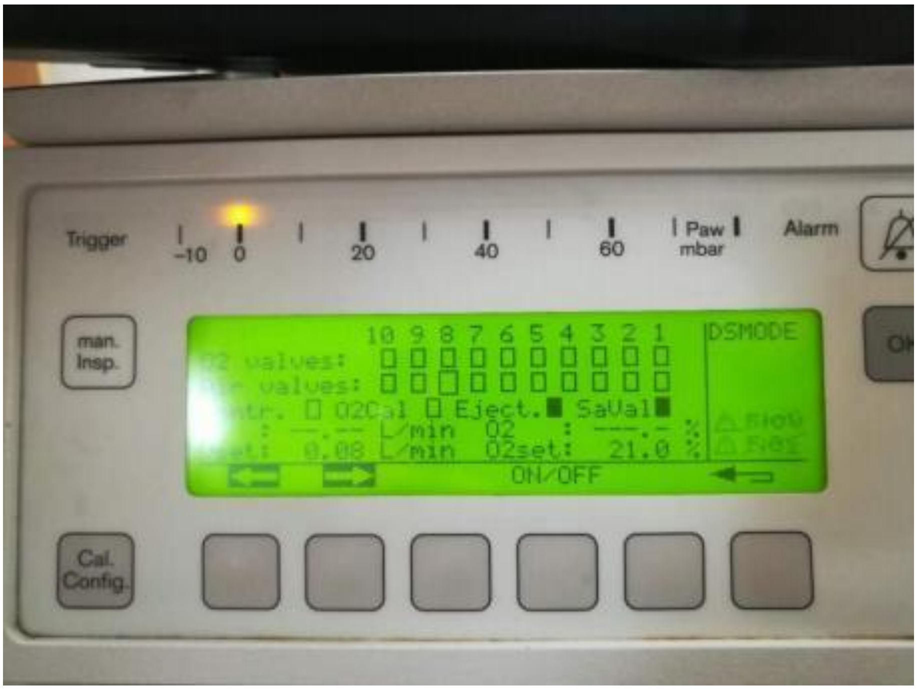

Figure 3: Viewing Manifold Flow in Maintenance Mode

Table 1: Flow rate of air valve and oxygen valve

Oxygen valve number	10	9	8	7	6	5	4	3	2	1
Flow rate（L/min）	0.02	0.05	0.11	0.22	0.44	0.89	1.78	3.56	7.12	14.25
Air valve number	10	9	8	7	6	5	4	3	2	1
Flow rate（L/min）	0	0.02	0.08	0.22	0.44	0.89	1.78	3.56	7.12	14.25

Consult the manufacturer's engineer. It is recommended to replace the 10-8 air valves. The 10-8 air valves were disassembled and replaced, but it was still invalid after replacement, and the flow rates of the three valves were the same as before, so excluding the possibility of air valves failure.

Since the valve blocks in 2 rows and 10 columns (20 in total) are fixed on an iron valve seat, refer to Figure 5. The inside of the valve seat is communicated, which is equivalent to pipeline connection. Considering that the pipeline is blocked or there is dirt, remove the valve seat, remove 20 valves, the actual disassembly diagram is shown in Figure 6, and clean valve seat with running water. After drying, the machine is installed and tested, and faults occur from time to time.

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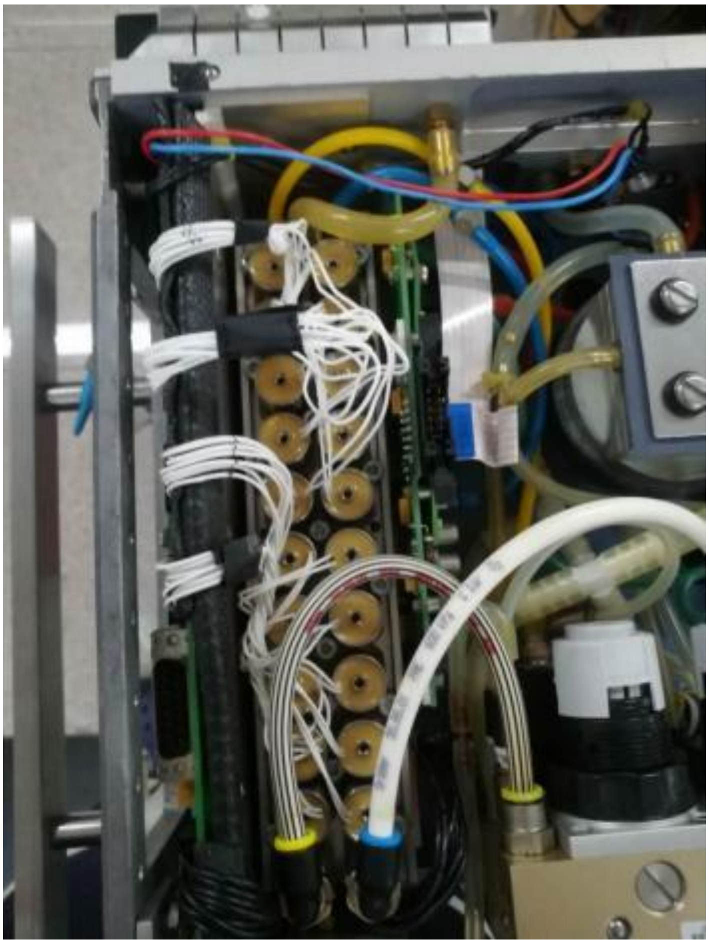
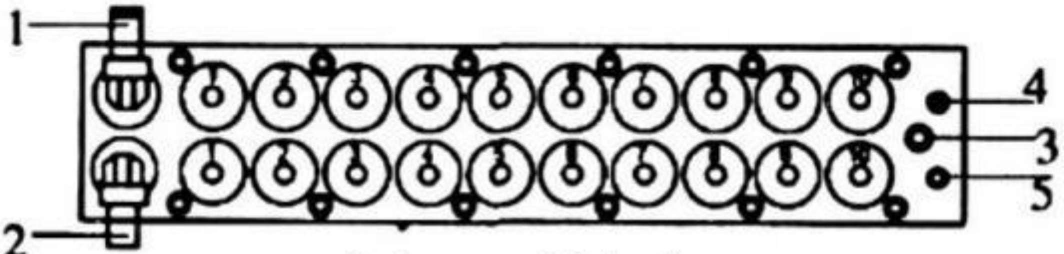


Figure 4: Disassembly diagram



1、Compressed Air Supply
2、Compressed Oxygen Supply
3、Merged Gas Output
4、Air Pressure Sensor
5、Oxygen Pressure Sensor

Figure 5: Valve Block Diagram

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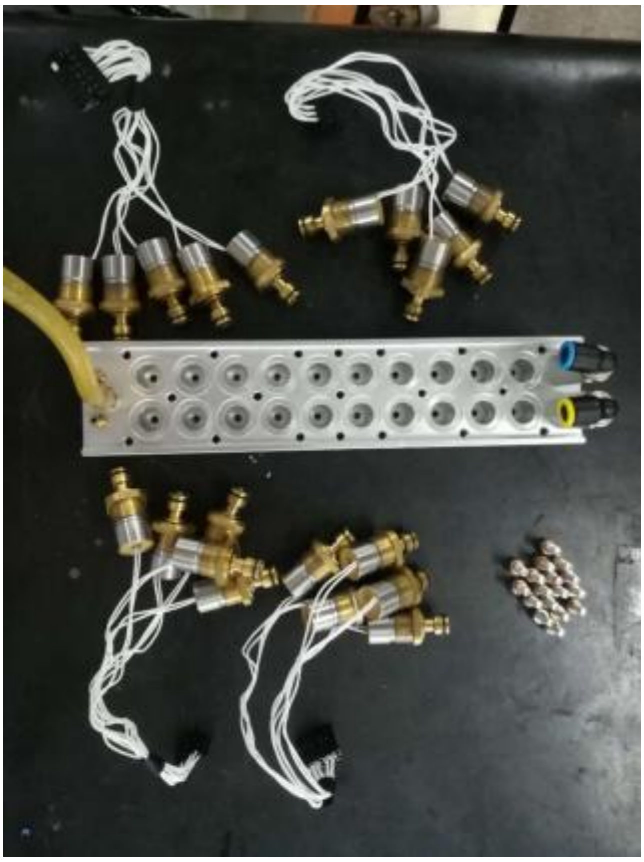

Figure 6: Valve Blocks Disassembly Diagram

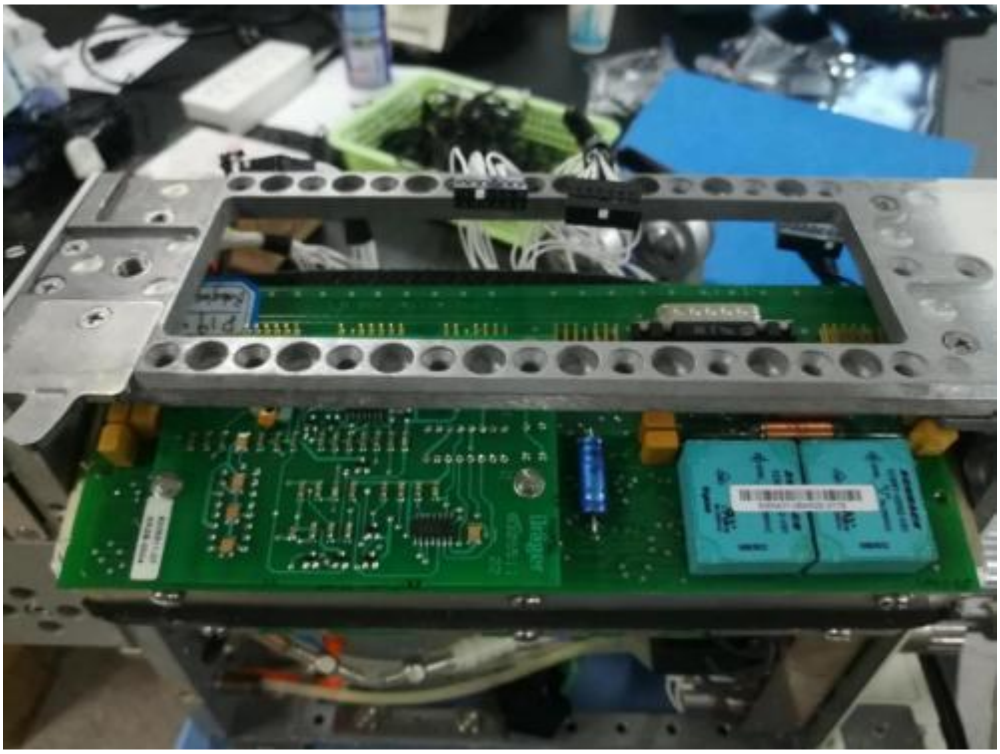

Figure 7: Valve Control Board

In view of the poor cleaning effect of running water, each valve socket of the valve seat was cleaned several times with an air gun, and the entire flow valve seat was placed in an ultrasonic cleaning machine for vibration cleaning. Reinstallation and testing, failures occur from time to time.

This eliminates the problem with the valves and the valve seat, so the valve block should be normal. When the machine was disassembled, it was found that the valve seat was connected to other components by a pipeline. Check that the pipeline was normal and there was no leakage at the pipeline interface.

Considering that all valves are electrically controlled by the valve control board on the side, and the connecting wire of the valve is connected with the control board through the pin socket, as shown in Figure 7, the row of metal pins on the upper side of the control board is the connection. Considering the possibility of poor contact, wipe the contact part of the control line pin, reinstall the machine, test, and the fault occurs from time to time.

It is suspected that the valve control board is faulty. Replace a scrapped and removed valve control board, reinstall it and test it. Faults occur from time to time.

Through comprehensive analysis of each link of flow monitoring, the following parts are related to the fault: valve control board — valve — valve seat (equivalent to pipeline) — internal pipeline — external breathing circuit — flow sensor — flow sensor connecting line — monitoring main board.

According to the analysis of the above links, it is finally suspected that the monitoring main board is faulty. Remove the top cover plate of the ventilator, pull out the monitoring main board in the middle, and observe that there is a lot of dust on the main board, and some dust has adhered to the main board. It is suspected that due to the high humidity of the environment, the dust is accompanied by water vapor, resulting in the failure of the electrical circuit part of the monitoring main board. Remove the dust, brush the adhesive part with a brush, reinstall it, start the machine and test it for several times, and no fault occurs.

4. Sum up

Ventilator is one of the most important instruments in clinical rescue equipment. Ventilation mode, ventilation parameters and safety alarm function of ventilator are three important indexes [6] affecting the ventilation quality and safety of patients. In order to meet the needs of clinical rescue of critically ill patients, as a clinical engineer, we should be familiar with the working principle, gas circuit and electrical circuit structure, main characteristics of the ventilator, and master the use of maintenance mode in order to quickly judge and troubleshoot [7] . In case of equipment failure, start with the functions involved in the failure phenomenon [8] , gradually analyze and troubleshoot [9] , determine the location and cause of the failure [10] , and finally deal with the failure and summarize. In addition, regular maintenance and other work [11] is also necessary.

Acknowledgements

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References

[1] Fan Mingli. Analysis of O2% HIGH failure of BABYLOG8000 ventilator [J]. Medical Equipment, 2007 (05): 93.

[2] Gao Huamin. Principle of common ventilator flow sensor [J]. China Medical Equipment, 2015, 12 (12): 153-155.

[3] CHEN Rong, HUANG Huanwei. Measurement principle and maintenance of ventilator flow sensor [J]. Medical Equipment, 2013, 26 (4): 85-87.

[4] Chen Qunji, Xie Weihua, Yi Xiaobing. Maintenance and Repair of Ventilator [J]. Medical Care Devices, 2008 (08): 14-17.

ISSN: 2710-0170

[5] ZHONG Zhilong, LIANG Weiling. Fault Example of Babylog 800 Infant Ventilator [J]. Medical Equipment, 2009, 22 (04): 71.

[6] Xu Dongyao. Quality testing technology of main performance indexes of ventilator [J]. Medical Frontier, 2014,21 (7): 28-29.

[7] Ruan Linlin. Analysis of common faults and maintenance methods of Draeger ventilator [J]. China Medical Device Information, 2022, 28 (23): 174-177.

[8] LIU Qingtao, ZHang Huiyong. Working principle and common fault analysis of air-oxygen mixing and gas path control of ventilator [J]. China Medical Equipment, 2025, 22(01): 158-161.

[9] Wei Jia-nan, Hu Kai-yuan, Yu Yang. Common fault analysis and emergency maintenance methods of ventilator [J]. Medical Equipment, 2023, 44 (10): 118-120.

[10] Lei Ling. Analysis and maintenance of common faults of ventilator [J]. Medical Equipment, 2024, 37 (23): 110-112.

Yang Biao. Repair and maintenance of common faults of Draeger VN500 ventilator [J]. China Medical Device Information, 2024, 30 (17): 173-176.

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The Impact of Family Caregiving on Midlife Employment: An Analysis Based on the 2018 CHARLS Data

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Abstract

This paper employs a multiple regression model and utilizes data from the 2018 China Health and Retirement Longitudinal Study (CHARLS) to analyze the impact of family elderly care on children's employment. Additionally, it examines the moderating effects of gender, urban-rural status, and education on this relationship. The main findings of this study can be summarized as follows: First, participation in family care (including care for the elderly and grandchildren) reduces the working hours of children. Second, involvement in the care of grandchildren is associated with a decrease in children's work income. Third, through heterogeneity tests, the study further verifies the impact of family elderly care on the employment of middle-aged children, considering differences in individual and family characteristics. The results indicate that family elderly care has a negative impact on children's employment and that this impact is heterogeneous.

Keywords

Family caregiver, midlife employment; working hours, employment income, population aging.

1. Introduction

Population aging is an inevitable stage in the process of social development and changes in population structure, and it is also a concrete manifestation of economic progress and the improvement of social productivity. Against the backdrop of advancements in science and technology and the gradual improvement of people's material living standards, the average life expectancy of humans continues to increase, and the scale of the aging population is growing. According to data from the National Health Commission, as of 2022, while eradicating absolute poverty, China has established the largest education system, social security system, and medical and health system in the world over the past decade. The average life expectancy of Chinese people has increased from 74.8 years to 78.2 years. At the same time, however, the birth rate in China has been declining year by year. The National Bureau of Statistics' (2022) Statistical Bulletin on the National Economic and Social Development for 2021 shows that in 2022, the total number of births in China was 9.56 million, with a birth rate of 6.77‰; the natural population growth rate was -0.60‰, a decrease of nearly one per thousand compared to 2021[1]. The continuous increase in life expectancy and the sustained decline in the birth rate have exacerbated the trend of population aging in China. Aging is often accompanied by disability. Data from the Fourth National Sampling Survey on the Living Conditions of Urban and Rural Elderly People in China show that in 2015, the number of disabled and semi-disabled elderly people nationwide was 40.63 million, accounting for 18.3% of the total elderly population[2]. Experts such as Luo et al. (2021), estimate that by 2030, the number of disabled elderly people in China will exceed 77 million, and on average, each disabled elderly person will experience a disability period of 7.44 years.

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2. Literature References

Since the beginning of the 21st century, China has rapidly entered an aging society, with an increasing number of elderly people living with illness and unable to take care of themselves. Given that the primary model of elderly care in China is home-based care, the responsibility of providing care for the elderly naturally falls on family members. However, for working-age laborers, it is often difficult to balance the responsibility of caring for the elderly with their own employment. Therefore, the impact of family-based elderly care on the employment status of laborers has become a topic of common concern for both society and academia.

Academic research on the relationship between family-based elderly care and labor employment dates back to the 1980s. Soldo used nationally representative data to examine caregivers across three types of families and found that providing care for the elderly impedes children's employment[3]. Brody surveyed widowed and disabled elderly women who received care from their adult daughters and discovered that those with unemployed daughters received more assistance in personal care and domestic services than those with employed daughters[4].

Stone based on data from the 1982 National Long-Term Care Survey, found that informal caregivers for disabled elderly individuals were predominantly female (71.5%), with adult daughters accounting for 28.9% and wives 22.7%[5]. Early conclusions were primarily drawn from macro-level data, which were not sufficiently reliable. Since the study by Wolf et al. , scholars have begun to recognize the potential endogeneity between family-based elderly care and caregivers' employment, and have employed more rigorous and scientifically sound econometric methods to validate this relationship[6]. Ettner identified three main sources of endogeneity: First, children's employment status may influence the allocation of caregiving responsibilities within the family. Second, family members may fail to meet the caregiving needs of their parents. Third, children may opt to place their parents in formal care institutions rather than provide informal family care[7].

To address the endogeneity issue, scholars have primarily employed three methods. First, Carmichael et al. directly treated family care as an exogenous variable, ignoring the potential endogeneity between the two[8]. Second, the instrumental variable (IV) method has been widely used to address this issue[9,10]. Third, panel data analysis has been adopted to control for unobservable heterogeneity[11]. However, the international literature has not reached a consensus on the causal relationship between family-based elderly care and children's labor participation. For instance, Wolf et al.[12] found no significant association between caring for elderly parents and reduced employment or working hours among married women. In contrast, most studies suggest that family-based elderly care significantly decreases children's labor participation rates or working hours.

In China, empirical research on the relationship between family-based elderly care and caregivers' employment started relatively late, and there is still considerable room for further exploration. Jiang et al.[13] employed the instrumental variable method and a two-part model to demonstrate that caring for the elderly has a significant negative impact on the employment probability and working hours of adult children. Liu et al. [14] and Ma et al. [15] respectively examined the impact of elderly care by married women on their employment status from the perspectives of rural and urban contexts. Their studies revealed that caring for in-laws significantly reduces the non-agricultural labor time of married women. Moreover, urban married women who provide care face greater difficulty entering the labor market, with an employment rate 29.6% lower than that of non-caregivers. In recent years, the research subjects and content in this field have been further enriched and deepened. Yanhua Wu et al. found a negative correlation between family-based elderly care and women's informal employment, with higher intensity of elderly care leading to a greater propensity for women to engage in informal employment[16]. Yueping Song examined the impact of cohabitation with

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parents on the labor participation of urban married women and discovered that as women age, cohabitation with parents increasingly exerts a negative influence on their labor participation[17]. Jiangyao Xiong et al. focused on the differences in labor supply between only-child and non-only-child caregivers[18]. Huamin Chai et al. concentrated on the relationship between caregiving intensity and non-agricultural labor time[19]. Jianping Yang mainly explored the impact of family-based elderly care on children's employment[20].

3. Data, Model and Hypotheses

This study utilizes data from the 2018 wave of the China Health and Retirement Longitudinal Study (CHARLS), a survey hosted by Peking University. The primary objective of CHARLS is to examine the social, economic, and health conditions of middle-aged and elderly individuals aged 45 and above, as well as their family-related circumstances in China. The CHARLS sample covers 150 counties (cities, districts) and 450 villages (communities) across the country, with respondents distributed nationwide. The survey content includes individual and family information, such as demographic characteristics, health status, medical care and insurance, employment and retirement situations, among others. It provides a representative sample of the middle-aged and elderly population in China and offers a scientifically robust data foundation for research in the field of social security.

For this study, we employ a matched sample of individuals aged 45 and above, along with their parents and grandchildren, to minimize potential sample biases. We apply multiple linear regression models and interaction effect models to investigate the impact of family care, gender, education, and other factors on employment across different occupations. This research aims to provide new insights into the study of family-based elderly care and enrich the analysis of factors influencing labor force participation.

The employment situation of children who participate in family-based elderly care is analyzed from two aspects: labor force participation and working hours. The corresponding models are specified as follows:

$$Houri = f\,(Care1i, Care2i, Xi, \delta i, \varepsilon i) \tag{1}$$

$$Incomei = f\,(Care1i, Care2i, Xi, \delta i, \varepsilon i) \tag{2}$$

Equation (1) represents the model for the working hours of middle-aged children who participate in family-based elderly care, while the robustness check Equation (2) is the model for the annual employment income of middle-aged children. There are two dependent variables in this study: Houri denotes the annual working hours of child *i*, and income *i* represents the employment income of middle-aged child *i*. The core explanatory variables are *Care1i* and *Care2i*. *Care1i* indicates whether child *i* participates in family-based elderly care, taking a value of 1 if participating and 0 otherwise. *Care2i* indicates whether child *i* participates in family-based childcare for grandchildren, taking a value of 1 if participating and 0 otherwise. *Xi* represents exogenous variables, including basic personal and family characteristics of middle-aged children, such as education level, health status (ability to self-care), age, gender, and place of residence. δ*i* denotes the unobservable random variable that is time-invariant, while ε*i* is the random error term that varies across individuals. If the explanations derived from the working hours model are consistent with those from the income model, it can be concluded that Model (1) has a certain explanatory power.

Generally speaking, family-based elderly care tends to reduce the working hours of middle-aged individuals or affect their work efficiency and quality. This view has also been corroborated by existing literature[21] . By the same token, we hypothesize that childcare for

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grandchildren may similarly encroach upon the working hours of middle-aged individuals, thereby negatively influencing their work situations. Thus, for Models (1) and (2), we can initially propose the following hypotheses:

H1a: Family-based elderly care is negatively associated with the working hours of middle-aged individuals.

H1b: Family-based childcare is negatively associated with the working hours of middle-aged individuals.

H1c: Family-based elderly care is negatively associated with the employment income of middle-aged individuals.

H1d: Family-based childcare is negatively associated with the employment income of middle-aged individuals.

A substantial body of literature indicates that educational attainment is a significant determinant of employment outcomes. Originating in the 1960s, human capital theory has illuminated the role of education as an investment. Becker posited that education, on-the-job training, and healthcare are all forms of human capital investment. Moreover, individuals with greater innate ability tend to invest more in human capital, thereby exacerbating wage inequality to a greater extent than innate ability alone. This inequality compounds with age, and is particularly pronounced among workers in skill-intensive occupations.

Therefore, we hypothesize that the core variable of family care may moderate the effect of education—an important determinant of employment outcomes—on work situations. Controlling for other variables, compared to middle-aged individuals with the same level of education who do not participate in family care, those who do engage in family care may experience a reduction in average working hours. Thus, we formulate the following hypothesis:

H2a: Elderly care negatively moderates the effect of education on working hours.

H2b: Childcare negatively moderates the effect of education on working hours.

H2c: Elderly care negatively moderates the effect of education on employment income.

H2d: Childcare negatively moderates the effect of education on employment income.

4. Empirical Analysis and Results

4.1. Variable Selection

The relevant variables in this study are primarily selected from the sub-databases of individual and family basic information, employment and retirement status, and health conditions in the 2018 CHARLS dataset. After cleaning missing values and removing outliers, a final sample of 2,413 valid observations was obtained.

In the variable selection, the dependent variables in this study are the annual working hours and annual income of the employed individuals. In the CHARLS questionnaire, the relevant questions are: "How many days per week did you usually work in the past year?" and "How many hours per day did you usually work in the past year?" This study converts the weekly working hours into an annual basis and considers individuals with positive annual working hours as employed, while those with zero annual working hours are considered unemployed. Regarding annual income, the question in the CHARLS survey is: "Including bonuses and other income, how much money did you receive from your employer in the past year?"

The core explanatory variables in this study are whether the employed individual provides family-based elderly care for parents (in-laws) and family-based childcare for grandchildren. These are derived from the questionnaire items: "In the past year, did you or your spouse provide help to your parents (in-laws) in daily activities (or other activities), such as housework, cooking, laundry, going out, shopping, and financial management?" and "In the past year, did you or your spouse spend time taking care of your grandchildren or great-grandchildren?"

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In the control variables, considering that employment participation of children may be influenced by individual and family characteristics (Chen et al., 2016b; Song, 2019), individual characteristics include gender, age, education level, place of residence, and marital status, while family characteristics include cohabitation with parents (in-laws) and the self-care ability of the elderly.

Table 1: Variable Names and Descriptive Statistics for the Full Sample

Variable Name	Definition	Mean	Standard Deviation	Minimum	Maxmum
Annual Working Hours	Continuous variable	1637	1056	4	5376
Care for Elderly	1 = Yes; 0 = No	0.535	0.499	0	1
Care for Grandchildren	1 = Yes; 0 = No	0.364	0.481	0	1
Education Level	1 = Primary school and below; 2 = Junior high and vocational school; 3 = Senior high and technical secondary school; 4 = Junior college and above	1.814	0.923	1	4
Gender	1 = Male; 2 = Female	1.382	0.486	1	2
Birth Year	Continuous variable	1965.812	4.177223	1958	1977
Place of Residence	1 = Urban; 0 = Rural	0.326	0.469	0	1
Marital Status	1 = Married; 0 = Unmarried	0.872	0.334	0	1
Elderly Self-care Ability	1 = Yes; 0 = No	0.791	0.407	0	1
Number of Siblings	Continuous variable	3.154	1.851	0	9

4.2. Regression Analysis

Table 2 primarily employs multiple linear regression and sets up four models. Models 1 and 2 are multiple linear regression models with annual working hours as the dependent variable, while Models 3 and 4 are multiple linear models with annual income as the dependent variable. According to Table 2, Model 1 uses whether caring for the elderly (1 = Yes, 0 = No) and whether caring for grandchildren (1 = Yes, 0 = No) as the core explanatory variables, with education level (1 = Primary school and below, 2 = Junior high school, 3 = Senior high school and vocational school, 4 = Junior college and above) and place of residence (1 = Urban, 2 = Rural) as auxiliary explanatory variables for individual basic characteristics. The regression results show that in Model 1, caring for the elderly is negatively correlated with annual working hours and is significant at the $\alpha = 0.1$ significance level, thus Hypothesis 1a is supported. Additionally, the variable for caring for grandchildren is also negatively correlated with annual working hours ($\alpha = 0.01$), supporting Hypothesis 1b. Therefore, in Model 1, it can be concluded that family care has a significant impact on the working hours of middle-aged individuals. Moreover, education and place of residence also have important effects on the working hours of middle-aged individuals. Combining Models 1 and 3, it is evident that urban residents and those with higher education levels generally have longer working hours and higher incomes.

Model 2 is a separate regression model for the dependent variable of family elderly care. Considering that the variable of caring for the elderly may be influenced by family characteristics [22], Model 2 includes additional control variables such as the number of siblings and marital status, in addition to elderly care. The results show that caring for the elderly is more significantly negatively correlated with annual working hours compared to Model 1, further confirming Hypothesis 1a. The number of siblings has no significant correlation with working hours but is negatively correlated with marital status (α= 0.1), indicating that married respondents work relatively fewer hours than unmarried respondents, similar to those who care for the elderly. Both are family-related factors that reduce working hours.

Model 3 uses annual work income as the dependent variable, with the same independent variables as Model 1. The regression results of Model 3 show that income is positively correlated with education level (α = 0.001), and males have higher employment income than females (α = 0.001). Annual income is also significantly positively correlated with age (α = 0.001). Notably, in Model 3, there is a significant negative correlation between annual income and childcare for grandchildren (α = 0.001), supporting Hypothesis 2a. However, there is no significant correlation between income and elderly care, although a negative trend is observed.

Model 4 includes the same independent variables as Model 2, further examining the impact of family characteristics on elderly care. However, no significant correlation was found, thus failing to confirm Hypothesis 2b. Nevertheless, since childcare for grandchildren and elderly care both fall within the scope of family care as defined in this study, combining the working hours model and the income model suggests that the employment situation of middle-aged individuals is influenced by family care responsibilities.

Table 2:The Impact of Family Care Participation on Employment Situations of Middle-Aged Individuals

Variables	Working Hours Model		Income Model	
	Model 1	Model 2	Model 3	Model 4
Care for Elderly (1=Yes, 0=No)	-112.800+	-657.125*	-0.076	0.625
	(57.671)	(290.999)	(0.058)	(0.384)
Care for Grandchildren (1=Yes, 0=No)	-178.128**		-0.313***	0.238
	(66.080)		(0.064)	(0.889)
Education Level (1=Primary or below, 2=Junior High, 3=Senior High or Vocational, 4=Junior College or above)	108.860**		0.338***	
	(33.149)		(0.034)	
Age	2.805		0.028***	
	(5.875)		(0.005)	

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Place of Residence (1=Urban, 2=Rural)	205.063**		- 0.451***	
	(66.882)		(0.067)	
Number of Siblings		54.974		-0.000
		(70.237)		(0.095)
Marital Status (1=Married, 0=Unmarried)		-731.358+		-0.387
		(402.580)		(0.528)
Constant (_cons)	-3931.051	2809.778***	-44.483***	9.991***
	(11528.682)	(560.247)	(10.345)	(0.752)
N	1175	38	1490	48
R^2	0.046	0.229	0.250	0.078

Notes:***, **, * and + indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively, and the values in parentheses are the standard errors of the coefficients.

4.3. Heterogeneity Analysis

4.3.1. From the Perspective of Gender Differences

According to the neoclassical theory of household division of labor, women are more inclined to take on family caregiving responsibilities, especially elderly care, and they typically devote more time to the family than men. Numerous scholars have confirmed that family-based elderly care has a negative impact on women's employment. Research indicates that the negative impact of family elderly care on women's employment is the result of the "substitution effect" outweighing the "income effect" [23]. The "substitution effect" refers to the idea that, due to the scarcity of time, caregiving activities for the elderly replace work, thereby reducing labor participation rates. In contrast, the "income effect" suggests that caregiving for the elderly involves significant expenses, and to avoid the income loss associated with exiting the labor market, children may choose to continue working while caring for their elderly parents.

The empirical results of this study show that in China, the substitution effect dominates the impact of family elderly care on women's employment, leading to a negative influence on labor participation. In China, family-based elderly care has long been a deeply rooted traditional practice and a reflection of the objective reality. Surveys indicate that the majority of elderly individuals prefer to live independently or with their children in familiar communities, with family care remaining the mainstream choice. Meanwhile, the proportion of urban elderly willing to reside in nursing homes decreased from 18.6% in 2000 to 11.3% in 2010, while in rural areas, it dropped from 14.4% to 12.5% over the same period. Additionally, although alternatives to family care, such as nursing homes and retirement apartments, have emerged in recent years, their relatively high costs mean that the elderly's utilization of these services is very low, failing to meet the caregiving needs of most seniors[24].

However, previous studies have rarely examined male samples in depth. Therefore, this paper includes an analysis of the impact on middle-aged men in the heterogeneity test. The regression results show that family-based elderly care has a significant negative impact on the working hours and income of male children. Specifically, elderly care is negatively correlated with the working hours of middle-aged men at a significance level of 0.01, reducing their annual working hours by 247.908 hours. In contrast, the results indicate that family elderly care does not have a significant impact on the working hours of women. Regarding work income, the variable of family elderly care is significantly negatively correlated with the income of both men and women, with a more pronounced effect on men. These findings suggest that men may be taking

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on more responsibilities in family elderly care and playing an equally important role. This conclusion is also consistent with existing domestic research[25][26].

Table 3: Gender Differences in the Impact of Family Elderly Care on Employment of Middle-Aged Individuals

Variables	Working Hours Model		Working Income Model	
	Male	Female	Male	Female
Family Elderly Care	-247.908**	-98.988	-0.2807**	-0.1781+
	(-2.6783)	(-1.8007)	(-1.8742)	(-0.6564)
N	1040	749	1944	1249
Pseudo R^2	0.0460	0.0510	0.0210	0.0300

Notes:

Notes:***, **, * and + indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively, and the values in parentheses are the standard errors of the coefficients.

The variables also include age, education level, marital status, urban-rural residence, and health status, among others. This paper only displays the core explanatory variables. The same applies to the following tables.

4.3.2. Perspective of Urban-Rural Differences

During China's economic development, significant urban-rural disparities have emerged in many aspects. This study has preliminarily explored the relationship between urban residence and working hours and income models in Table 2. Following this, the study further investigates whether there are urban-rural differences in the impact of family elderly care on the employment situation of middle-aged individuals. The results show that such differences do exist between urban and rural areas: The regression results in Table 4 indicate that family elderly care has no significant impact on the working hours of children living in urban areas but reduces the working hours of those living in rural areas, which is significant at the $\alpha = 0.1$ level. It also decreases their annual work income, which is significant at the 5% level.This suggests that the negative impact of family elderly care on the working hours of children living in rural areas is more pronounced.

Table 4: Urban-Rural Differences in the Impact of Family Elderly Care on Children's Employment

Variables	Working Hours Model		Working Income Model	
	Urban	Rural	Urban	Rural
Family Elderly Care	-120.012	-227.76+	-0.0292	-0.3195**
	(-0.9038)	(-1.6920)	(-0.2435)	(-3.5823)
N	629	1097	996	2227

Pseudo R^2	0.098	/	0.141	0.069

Notes:***, **, * and + indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively, and the values in parentheses are the standard errors of the coefficients.

4.3.3. The Perspective of Education as a Moderator

To more intuitively illustrate the heterogeneity of family care factors and educational levels, we have drawn regression line charts for the impact of family elderly care and family childcare on employment situations across different education levels (1 = Primary school or below, 2 = Junior high school, 3 = Senior high school or vocational school, 4 = Junior college or above) based on the four basic models in Table 1. The results are shown in Figures 1 to 4.

Figures 1 and 2 explore the moderating effect of education level on the impact of family care on annual working hours. Figure 1 shows that the slopes of all four regression lines are negative, indicating that regardless of educational level, the annual working hours of middle-aged individuals who need to care for their grandchildren decrease, thus supporting Hypothesis 2b. In Figure 2, only middle-aged individuals with primary school or below and junior high school education levels show a negative slope in annual working hours, suggesting that Hypothesis 2a is not fully supported.

Figures 3 and 4 examine the moderating effect of education level on the impact of family care on annual income. Figure 3 indicates that regardless of educational level, the slopes of the regression lines are negative. This suggests that, within the same educational background, middle-aged individuals who need to care for their grandchildren earn less than their peers who do not have such responsibilities, supporting Hypothesis 2c. In Figure 4, family elderly care has a negative impact on the income of middle-aged individuals with primary school or below and junior college or above education levels, while those with junior high school and senior high school or vocational school education levels show a positive slope in annual income. Thus, Hypothesis 2d is not fully supported.

The reasons for the incomplete support of Hypotheses 2b and 2d may stem from issues such as uneven sample group classification bases, model specification, or the "income effect" in certain groups. As previously mentioned, the "income effect" contrasts with the "substitution effect." The "substitution effect" refers to the idea that, due to the scarcity of time, caregiving activities for the elderly replace work, thereby reducing labor participation rates. In contrast, the "income effect" indicates that caregiving for the elderly involves significant expenses, and to avoid the income loss associated with exiting the labor market, children may choose to continue working while caring for their elderly parents.

Under the current trend of population aging, domestic research has predominantly focused on the impact of elderly care on the employment of the younger generation. However, with the implementation of the three-child policy, childcare has also become a significant factor influencing the employment situation of middle-aged individuals. Therefore, it can be argued that, in addition to family-based elderly care, childcare for grandchildren is also an important factor affecting the work situation of middle-aged groups. Although the hypotheses related to elderly care are not fully confirmed, the impact of childcare for grandchildren on the employment situation of middle-aged individuals with different levels of education can be verified.

Third, through heterogeneity analysis, the study further verified the impact of family elderly care on the employment of middle-aged children, considering differences in individual and family characteristics. From the perspective of gender differences, family elderly care has a significant negative impact on the working hours of middle-aged men at the 0.01 significance

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level, reducing their annual working hours by 247.908 hours. However, family elderly care does not have a significant impact on the working hours of women. In terms of work income, family elderly care has a significant negative impact on the income of both men and women, with a more pronounced effect on men. These results suggest that men are more likely to take on greater responsibilities in family elderly care and play an important role in it.Regarding urban-rural differences, family elderly care has no significant impact on the working hours of children living in urban areas but reduces the working hours and annual work income of those living in rural areas. This indicates that the negative impact of family elderly care on the working hours of rural children is more significant. This result reflects the disparities in public elderly care resources between urban and rural areas, suggesting that the supply of public elderly care services in rural areas may be insufficient.From the perspective of education, compared to elderly care, childcare has a more significant impact on the employment situation of middle-aged individuals with the same educational background.

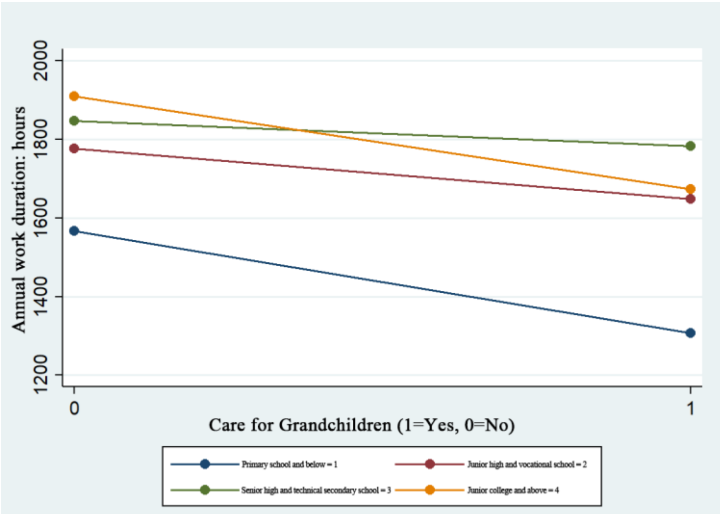

Figure 1

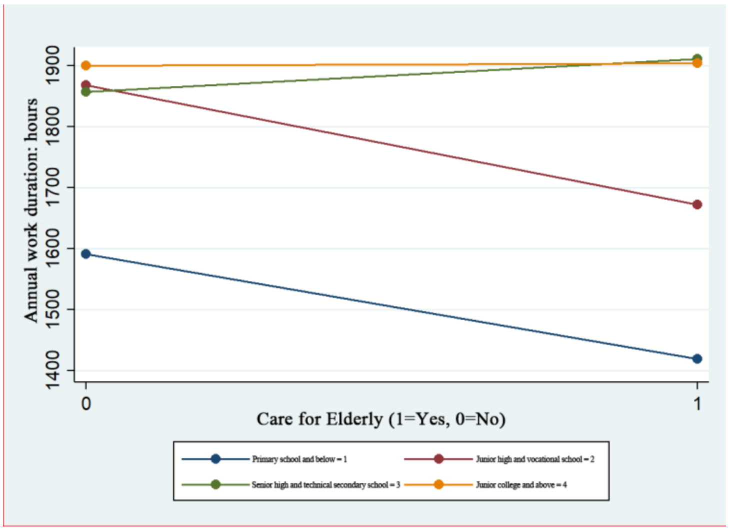

Figure 2

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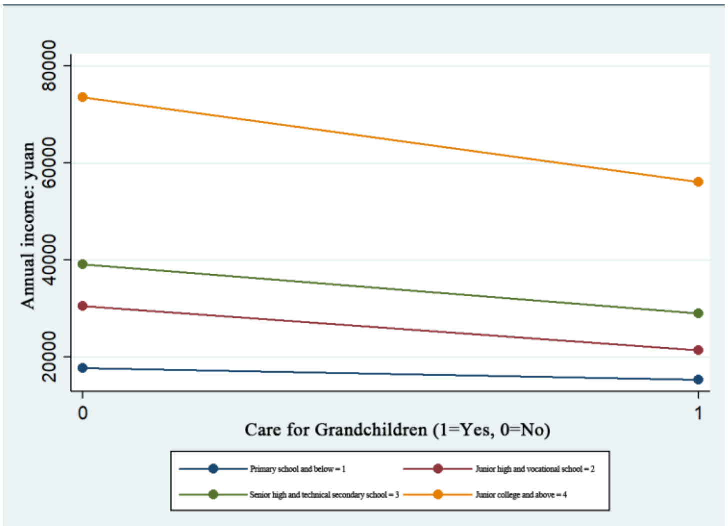

Figure 3

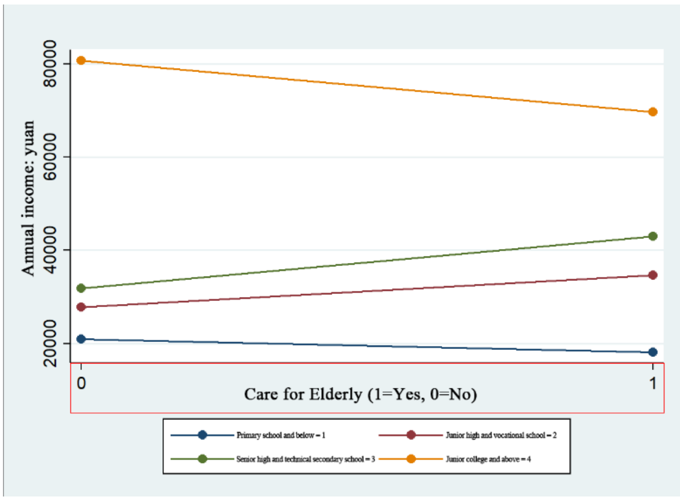

Figure 4

5. Conclusions and Policy Recommendations

5.1. Conclusions

This paper employs multiple regression analysis based on the 2018 data from the China Health and Retirement Longitudinal Study (CHARLS) to examine the impact of family elderly care on children's employment and further investigates the heterogeneous effects of gender, urban-rural differences, and education as moderators. The main findings of this study can be summarized as follows:

First, participation in family care (including care for the elderly and grandchildren) reduces the working hours of children. Holding other variables constant, engaging in family elderly care significantly decreases the working hours of middle-aged children at the 1% significance level. Meanwhile, caring for grandchildren is also negatively correlated with annual working hours ($\alpha = 0.01$). Therefore, this study concludes that family care has a significant impact on the working hours of middle-aged individuals. After controlling for sample selection bias, this negative impact increases, with elderly care showing a more significant negative effect on working hours ($\alpha = 0.05$). However, failing to account for endogeneity may underestimate the impact of family elderly care on children's labor participation rate. This result is consistent with studies both internationally (Carmichael et al., 2003; Bolin et al., 2007) and domestically (Jiang et al., 2009; Ma et al., 2014).

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Second, participation in family childcare for grandchildren reduces children's work income. After controlling for sample selection bias, although family elderly care does not significantly affect the income of middle-aged individuals, the coefficient shows a potential negative correlation. The annual income variable is significantly negatively correlated with childcare for grandchildren ($\alpha = 0.001$). Since childcare for grandchildren and elderly care both fall within the scope of family care as defined in this study, combining the working hours model and the income model suggests that the employment situation of middle-aged individuals is influenced by family care responsibilities.

Third, through heterogeneity tests, the study further verified the impact of family elderly care on the employment of middle-aged children, considering differences in individual and family characteristics.From the perspective of gender differences, family elderly care has a significant negative impact on the working hours of middle-aged men at the 0.01 significance level, reducing their annual working hours by 247.908 hours. However, family elderly care does not have a significant impact on the working hours of women. In terms of work income, family elderly care has a significant negative impact on the income of both men and women, with a more pronounced effect on men. These results suggest that men are more likely to take on greater responsibilities in family elderly care and play an important role in it.Regarding urban-rural differences, family elderly care has no significant impact on the working hours of children living in urban areas but reduces the working hours and annual work income of those living in rural areas. This indicates that the negative impact of family elderly care on the working hours of rural children is more significant. This result reflects the disparities in public elderly care resources between urban and rural areas, suggesting that the supply of public elderly care services in rural areas may be insufficient.From the perspective of education, compared to elderly care, childcare has a more significant impact on the employment situation of middle-aged individuals with the same educational background.

5.2. Policy Recommendations

The research findings indicate that family-based elderly care has a negative impact on children's employment and that this impact is heterogeneous. Changes in modern family structures and other factors are driving the development of socialized elderly care, which can help share the burden of elderly care within individual families and promote the provision of elderly care services across society. As the leading institution, the government should improve relevant policies to safeguard the rights and interests of both caregivers and care recipients. This study proposes relevant policy recommendations in the following three areas:

Firstly, it is essential to actively improve the supply system for social elderly care and childcare services. While there are numerous childcare institutions in China, such as nurseries and kindergartens, the supply system for elderly care is still not well-developed. First, improve and promote respite care services. Respite care is a flexible care model that integrates home-based and institution-based day, night, and short-term services. It can both alleviate the long-term care burden on family caregivers and meet the needs of the elderly for home-based care. However, only a few cities in China have piloted respite care services. It is recommended to improve this service model as soon as possible and promote it nationwide. Second, leverage the positive role of community-based elderly care. Establish day care centers for the elderly in communities and equip them with professional caregivers to provide services such as daily care and rehabilitation treatment for the elderly. At the same time, implement the family doctor contract system. When the elderly have medical service needs, they can first get help from family doctors to provide convenient medical and health services for the elderly. In addition, following the idea of "the younger helping the older and the healthy assisting the disabled," organize a mutual assistance elderly care service team of younger elderly people to achieve mutual assistance within the elderly population. Third, develop a long-term care insurance

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system. The establishment of a long-term care insurance system is in line with the concept of socialized elderly care. The government should take active measures to promote the implementation of long-term care insurance. Encourage families to provide informal family care services for the elderly and use cash payments. This can both enrich the supply of care services and save care service resources. Fourth, increase the allocation of elderly care service resources in rural areas to reduce urban-rural disparities. Support the public-private partnership model for rural nursing homes and encourage private capital to operate nursing homes to maximize their efficiency in providing rural elderly care services.

Secondly, it is necessary to increase the support for family caregivers. Children who provide care, especially those offering high-intensity care, often have to give up employment or reduce their working hours due to caregiving responsibilities. With the development of the economy and society, the opportunity cost of their caregiving is gradually increasing. Therefore, the government should provide appropriate material support for family caregivers. For example, caregiving allowances could be provided to children who take long-term care of the elderly or to families with multiple children, in order to alleviate their financial burden. For children caring for disabled or semi-disabled elderly individuals, regular free training in home caregiving skills could be offered to help them improve their caregiving abilities and service quality.

Lastly, it is essential to increase the policy inclination towards family elderly caregivers and employment support. On the one hand, it is necessary to facilitate flexible employment opportunities for family elderly caregivers. Consider arranging flexible employment positions for them or encouraging enterprises to implement flexible working hours, allowing employees to reasonably allocate time between family caregiving and work. This would enable them to earn income while fulfilling their caregiving responsibilities, thereby reducing their living pressure. On the other hand, the participation policy for flexible employment caregivers should be improved to increase their participation rate and safeguard their basic rights.

References

[1] Information on http://www.stats.gov.cn/sj/zxfb/202302/t20230203_1901393.html.

[2] Information on http://www.xinhuanet.com/world/2016-10/10/c_129316147.htm

[3] BRODY E M, SCHOONOVER C B: Patterns of Parent Care When Adult Daughters Work and When They Do Not, The Gerontologist,Vol.26 (1986), No.03, p. 372-381.

[4] SOLDO B J, MYLLYLUOMA J: Caregivers Who Live With Dependent Elderly. The Gerontologist, Vol.23 (1983) No.06, p. 605-611.

[5] STONE R, CAFFERATA G L, SANGL J: Caregivers of the Frail Elderly: A National Profile. The Gerontologist, Vol.27 (1987) No.05, p. 616-626.

[6] WOLF D A, SOLD B J: Married Women’s Allocation of Time to Employment and Care of Elderly Parents. Journal of Human Resources, Vol.29 (1995) No.04, p. 1259-1276.

[7] ETTNER S: The Impact of Parent Care on Female Labor Supply Decisions. Demography, Vol.32 (1995), No.01, p. 63-80.

[8] CARMICHAEL F, CHARLES S: The Opportunity Costs of Informal Care: Does Gender Matter?. Journal of Health Economics, Vol.22 (2003) No.05, p. 781-803.

[9] ETTNER S: The Impact of Parent Care on Female Labor Supply Decisions. Demography, Vol.32 (1995), No.01, p. 63-80.

[10] BOLIN K, LINDGREN B, LUNDBORG P: Your Next of Kin or Your Own Career? Caring and Working Among the 50+ of Europe. Journal of Health Economics. Vol.27 (2008), No.03, p. 718-738.

[11] HEITMUELLER A: The Chicken or the Egg? Endogeneity in Labor Market Participation of Informal Carers in England. Journal of Health Economics, Vol.26 (2007), No.03, p. 536-559.

ISSN: 2710-0170

[12] WOLF D A, SOLD B J: Married Women's Allocation of Time to Employment and Care of Elderly Parents. Journal of Human Resources, Vol.29 (1995) No.04, p. 1259-1276.

[13] Cheng Jiang, Xiaojun Zhao: Research on the Opportunity Cost of Elderly Care in China, Journal of Management World, Vol. 24(2009) No.10, p. 80-87.

[14] Lan Liu, Xiaoyuan Dong and Gong Chen, et al: The Impact of Parent Care on the Labor Time Allocation of Married Rural Women in China, World Economic Papers, Vol. 53(2010) No.05, p. 1-15.

[15] Yan Ma, Long Li: Care-Giving for Elderly Parents and Self-development of Urban Women: Evidence from the Third Wave Survey on the Social Status of Women in China (2010), Population and Development, Vol. 20(2014) No.06, p. 76-84.

[16] Yanhua Wu, Jinchang Li and Bo Liu: The Impact of Informal Care on Women's Informal Employment, Journal of Business Economics, Vol. 39(2018) No.03, p. 47-57+86.

[17] Yueping Song: Household Internalization and Inter-generational Allocation of Care Responsibility: Co-residence with Parents and Labor Participation of Married Women in Urban China, Population Research， Vol. 43(2019) No.03, p. 78-89.

[18] Jiangyao Xiong, Anquan Zhang, Jirui Yang: The Impact of Elderly Care on the Labor Supply of Married Children: Based on the CFPS's Edivence Based on the CFPS's Edivence, Finance & Economics, Vol. 62(2019) No.04, p. 121-132.

[19] Huamin Chai, Jiaoli Cai, Jing Li: Does Increasing Elderly Care Needs Reduce off-farm Working Hours of the Older Working-aged Women and Men in China?, Vol. 37(2021) No.06, p. 61-78+94.

[20] Jianping Yang, Yingying Ma, 2023.Whether Participating in Family Elderly Care Affects Employment: An Empirical Research Based on Data from CHARLS 2018,Scientific Research on Aging Vol.11, No.10 October,Vol. 11(2023) No.10, p. 47-61.

[21] Jianping Yang, Yingying Ma, 2023.Whether Participating in Family Elderly Care Affects Employment: An Empirical Research Based on Data from CHARLS 2018,Scientific Research on Aging Vol.11, No.10 October,Vol. 11(2023) No.10, p. 47-61.

[22] Yueping Song: Household Internalization and Inter-generational Allocation of Care Responsibility: Co-residence with Parents and Labor Participation of Married Women in Urban China, Population Research， Vol. 43(2019) No.03, p. 78-89.

[23] CARMICHAEL F, CHARLES S: The Opportunity Costs of Informal Care: Does Gender Matter?. Journal of Health Economics, Vol.22 (2003) No.05, p. 781-803.

[24] Bohui Liu, Wei Yu and Enhui Kou: Unequal Access to Social Care and Medical,Chinese Journal of Population Science, Vol. 26(2012) No.03, p. 86-95+112.

[25] Yan Ma, Long Li: Care-Giving for Elderly Parents and Self-development of Urban Women: Evidence from the Third Wave Survey on the Social Status of Women in China (2010), Population and Development, Vol. 20(2014) No.06, p. 76-84.

[26] Jianping Yang, Yingying Ma, 2023.Whether Participating in Family Elderly Care Affects Employment: An Empirical Research Based on Data from CHARLS 2018,Scientific Research on Aging Vol.11, No.10 October,Vol. 11(2023) No.10, p. 47-61.

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A Review of AI-Driven Dynamic Pricing and Emission Reduction Strategies in Green Supply Chains

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Abstract

This paper reviews the application of artificial intelligence technologies in green supply chain management, with a particular focus on the integration of dynamic pricing mechanisms and emission reduction strategies. As global attention to climate change increases, companies face the dual challenge of reducing carbon emissions while maintaining economic benefits. Artificial intelligence is reshaping green supply chain management practices by providing data-driven decision support, optimizing pricing strategies, and allocating resources efficiently. This review analyzes current research progress, application cases, and discusses future directions and challenges, aiming to provide a systematic reference framework for both academia and industry.

Keywords

Artificial Intelligence; Dynamic Pricing; Emission Reduction Strategies; Green Supply Chain Management; Machine Learning.

1. Integration of Artificial Intelligence and Green Supply Chain Management

1.1. Research Background and Significance

Global climate change has become one of the most pressing environmental challenges of our time, with carbon dioxide emissions posing a serious threat to human survival and development. To avoid climate disasters and achieve zero emissions, governments and enterprises are actively taking measures to reduce carbon emissions, such as imposing carbon taxes, promoting clean energy, and shutting down low-productivity and high-energy-consuming enterprises. China has established a "dual carbon" goal aimed at driving economic transformation toward green, high-quality development. President Xi Jinping emphasized that "green development is the foundation of high-quality development, and new productivity is inherently green productivity." China is accelerating green technology innovation and the promotion of advanced green technologies, developing green low-carbon industries and supply chains, and constructing a green low-carbon circular economic system (Liang & Zhang, 2020).

Supply chains, as core components of business operations, account for a significant proportion of global greenhouse gas emissions. Green Supply Chain Management (GSCM) has therefore become an important lever for emission reduction. As governments intensify emission reduction efforts, consumers' awareness of low-carbon environmental protection is also gradually strengthening, and they tend to purchase low-carbon products (Khosroshahi et al., 2021). To implement government environmental policies and gain consumer recognition, upstream manufacturers in the supply chain, such as Gree Electric Appliances, Carrier Corporation, and Haier Group, regard energy conservation and emission reduction as one of their core competitiveness, committed to low-carbon transformation and upgrading of products. Meanwhile, downstream retailers in the supply chain are also actively responding to actions. For example, Walmart launched the "Billion Ton Emission Reduction Project" aimed at

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reducing or avoiding one billion tons of greenhouse gas emissions in its business value chain by 2030 (Zhang et al., 2019).

In the wave of digital transformation, artificial intelligence (AI) technology is developing at an unprecedented pace, providing new technical support and solutions for GSCM. Dynamic pricing, as a strategy that flexibly adjusts product or service prices, can respond to changes in market demand, cost fluctuations, and the competitive environment. When combined with emission reduction targets, dynamic pricing can guide consumers and supply chain partners to adopt more environmentally friendly behaviors. AI technology, through its powerful predictive capabilities, optimization algorithms, and adaptive learning characteristics, makes this combination more efficient and precise (Zhou & Ye, 2018).

Big data analytics and artificial intelligence (BDA-AI) technologies have attracted widespread attention from academia and practitioners in recent years. However, few empirical studies have investigated the benefits of BDA-AI in supply chain integration and its impact on environmental performance. Benzidia et al. (2021) extended the organizational information processing theory to incorporate BDA-AI and positioned digital learning as a moderating factor in green supply chain processes. Using a data sample from 168 French hospitals and a structural equation modeling method based on partial least squares regression, they found that the use of BDA-AI technology has a significant impact on environmental process integration and green supply chain collaboration. The study also emphasized that environmental process integration and green supply chain collaboration have a significant impact on environmental performance, and highlighted the moderating role of green digital learning in the relationship between BDA-AI and green supply chain collaboration, which is an important finding not emphasized in existing literature.

1.2. Evolution of Green Supply Chain Management Concepts

Green supply chain management is a management philosophy and practice that integrates environmental factors into traditional supply chain management. From initial pollution control to clean production, and now to whole-life-cycle management, GSCM has gone through three main development stages:

(1) Compliance Stage (1990s-2000s): Primarily aimed at meeting environmental regulations

(2) Prevention Stage (2000s-2010s): Focusing on source reduction and resource recycling

(3) Strategic Integration Stage (2010s to present): Using environmental factors as a source of competitive advantage

Currently, with rising stakeholder expectations and strengthened climate policies, GSCM has transformed from purely compliance activities to a core component of corporate strategy (Bai et al., 2019).

1.3. The Role of Artificial Intelligence in Supply Chain Management

AI technology has revolutionized supply chain management through:

(1) Demand Forecasting: Using machine learning to improve forecasting accuracy, reducing excess inventory and resource waste

(2) Optimization Algorithms: Solving complex multi-objective optimization problems in supply chain network design

(3) Intelligent Automation: Reducing human errors and resource consumption

(4) Real-time Decision Support: Processing large-scale data and providing timely insights

In the green supply chain environment, these capabilities of AI technology are further expanded for emission measurement, environmental risk assessment, and sustainable decision support (Chen et al., 2019).

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Generative artificial intelligence offers multiple potential solutions for sustainable supply chain management, but not all companies can effectively master the methods of using generative AI and realize potential benefits. Li et al. (2024) adopted a practice-based view (PBV) to study the impact of generative AI use on sustainable supply chain performance. By analyzing survey data from 213 Chinese manufacturing enterprises, they confirmed a positive correlation between generative AI use and sustainable supply chain performance, and found that green supply chain collaboration (GSCC) and circular economy implementation (CEI) serve as serial mediating factors connecting this relationship. This research contributes to existing AI-driven supply chain management research by clarifying the potential mediating mechanisms between generative AI use and sustainable supply chain performance.

2. Big Data Analytics and AI-Driven Pricing Mechanisms

2.1. Machine Learning-Based Demand-Emission Prediction Models

Accurate demand forecasting is a prerequisite for effective dynamic pricing. AI-driven demand-emission prediction models combine traditional demand factors and environmental variables, mainly including:

(1) Time Series Prediction Models: Using LSTM (Long Short-Term Memory networks) and GRU (Gated Recurrent Units) to capture the time dependence of demand and emissions

(2) Causal Prediction Models: Analyzing the impact of factors such as price, policy, and environmental awareness on demand and emissions through Bayesian networks

(3) Hybrid Prediction Models: Combining multiple techniques to improve prediction accuracy

Research shows that compared with traditional methods, these AI models can reduce prediction errors by 15-30%, providing a more reliable basis for dynamic pricing decisions (Xu et al., 2016). The combination of big data analytics and artificial intelligence technologies provides new possibilities for improving hospital environmental performance. Benzidia et al. (2021) found that the use of BDA-AI technology has a significant impact on hospital environmental process integration, helping hospitals better process and analyze data from various internal and external sources, thereby supporting environmental decisions.

2.2. Application of Reinforcement Learning in Pricing Decisions

Reinforcement Learning (RL) finds optimal pricing strategies through trial and error learning, particularly suitable for handling green supply chain pricing problems with long-term returns and complex constraints. Main applications include:

(1) Multi-objective Reinforcement Learning Framework: Simultaneously optimizing economic returns and environmental performance

(2) Multi-agent Systems: Simulating the interaction and game theory among various supply chain participants

(3) Deep Reinforcement Learning: Handling high-dimensional state spaces, such as complex decision scenarios containing multiple environmental indicators

These methods can dynamically balance short-term profit and long-term sustainability goals, providing companies with more flexible pricing strategies (Wang & Wang, 2021). In the medical field, Benzidia et al. (2021) found that BDA-AI supported decision processes can help hospital managers develop more environmentally friendly procurement strategies, optimize resource use, and reduce environmental impact.

2.3. Blockchain-Based Green Value Allocation Mechanism

The combination of blockchain technology and AI provides transparent, trustworthy value allocation mechanisms for green supply chains:

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(1) Smart Contract Automatic Execution: Automatically adjusting prices and rewards based on preset conditions (such as meeting carbon reduction targets)

(2) Distributed Trust Mechanism: Ensuring the credibility of environmental data and the verifiability of emission reduction results

(3) Tokenized Incentive System: Quantifying and trading environmental value through digital tokens

This mechanism effectively solves the problems of information asymmetry and insufficient incentives in traditional green supply chains, promoting collaborative emission reduction across the entire supply network. Li et al. (2024) further confirmed that the use of generative artificial intelligence can improve sustainable supply chain performance through two key practices: green supply chain collaboration and circular economy implementation, forming a clear path from technology to practice to performance.

3. Green Supply Chain Collaborative Practices and Environmental Performance

3.1. Green Supply Chain Collaboration Mechanisms

Green Supply Chain Collaboration (GSCC) refers to strategic cooperation between enterprises and their supply chain partners to effectively implement environmental protection initiatives (Luo et al., 2014). This collaboration includes:

(1) Shared Environmental Goals: Collectively setting and achieving environmental objectives

(2) Joint Environmental Management Systems: Developing and implementing common environmental management measures

(3) Collaborative Emission Reduction Actions: Working together to reduce environmental impact

Research shows that GSCC can promote the sharing of information about raw materials and energy consumption among supply chain members, laying a solid foundation for resource optimization and use within the supply chain (Kong et al., 2021). In addition, GSCC promotes the sharing of expertise among supply chain members, fostering innovative solutions to address sustainability challenges (Hong et al., 2019). By prioritizing environmental management and social responsibility, cultivating collaborative relationships can build more stable and resilient supply chains, further enhancing companies' ability to withstand disruptions and turbulence (Scholten and Schilder, 2015).

Benzidia et al. (2021) confirmed that the use of BDA-AI technology has a significant positive impact on green supply chain collaboration. This technology enables hospitals to collaborate more effectively with suppliers, jointly design and implement green procurement programs, optimize logistics transportation methods, reduce waste generation, thereby improving overall environmental performance.

3.2. Circular Economy Implementation Strategies

Circular Economy Implementation (CEI) describes how companies efficiently execute value-added activities by adopting circular strategies (Kristoffersen et al., 2021). These strategies include:

(1) Reinvention and Rethinking: Developing modular, repairable products and services

(2) Restoration, Reduction, and Avoidance: Enhancing recycling potential in production by minimizing material and process waste

(3) Recycling: Reusing, refurbishing, and remanufacturing products to extend their life cycle

Li et al. (2024) presented CEI as a second-order construct, emphasizing the importance of these three dimensions in sustainable supply chain management. They found that the use of

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generative artificial intelligence has a significant positive impact on CEI, especially in generating multiple iterations during the product design process, identifying design options that minimize waste and environmental impact while improving product lifespan.

CEI alleviates pressure on natural resources and minimizes waste generation, leading to higher resource utilization efficiency in the supply chain (Khan et al., 2021). Additionally, CEI often brings long-term cost savings, as using recycled materials can reduce the demand for expensive virgin resources (Cheng et al., 2022). Finally, CEI promotes supply chain resilience by fostering a closed-loop system where resources are continuously reused and recycled (Kennedy and Linnenluecke, 2022). This reduces dependence on external sources, minimizing exposure risks to external shocks such as resource scarcity or supply chain disruptions.

3.3. Environmental Performance Assessment and Enhancement Mechanisms

Environmental performance assessment is a key link in measuring the effectiveness of green supply chain management. Performance indicators typically include:

(1) Emission Indicators: Greenhouse gas emissions, air pollutant emissions

(2) Resource Indicators: Energy consumption, water resource use, raw material consumption

(3) Waste Indicators: Solid waste, liquid waste, hazardous waste generation

Benzidia et al. (2021) studied how BDA-AI technology affects hospital environmental performance through environmental process integration and green supply chain collaboration. Their results indicate that environmental process integration and green supply chain collaboration both have significant positive impacts on environmental performance. This finding is consistent with the conclusions of Li et al. (2024), who also confirmed that GSCC and CEI have significant impacts on sustainable supply chain performance.

To enhance environmental performance, companies can adopt the following measures:

(1) Environmental Management System Implementation: Establishing and certifying environmental management systems that comply with standards such as ISO 14001

(2) Life Cycle Assessment: Systematically assessing the environmental impact of products throughout their life cycle

(3) Green Supplier Assessment and Development: Evaluating and selecting suppliers based on environmental criteria, and helping suppliers enhance their environmental capabilities

Research shows that BDA-AI technology can support these environmental performance enhancement measures by providing more accurate data analysis and predictions, helping companies formulate more effective environmental strategies (Benzidia et al., 2021).

4. Future Directions and Challenges

4.1. Data Quality and Standardization Challenges

AI-driven green pricing faces data quality challenges:

(1) Incomplete Carbon Emission Data: Lack of standardized methods for measuring supply chain carbon footprints

(2) Cross-border Data Consistency: Inconsistent environmental data standards across different countries and regions

(3) Privacy and Sharing Concerns: Inadequate data sharing mechanisms

To address these challenges, future research needs to focus on several key areas:

First, establishing unified information platforms to update and share key data in real-time, such as market demand, inventory levels, and emission reduction effectiveness, promoting rapid response and coordination among supply chain members. By improving information sharing, supply chain members can better coordinate their emission reduction efforts and marketing strategies, avoiding duplicate investments and redundant activities, thereby enhancing the operational efficiency and environmental performance of the entire supply chain.

Second, developing standardized methods and tools for measuring supply chain carbon footprints, ensuring data accuracy and comparability. Establishing cross-regional and cross-industry environmental data standards to promote carbon emission management coordination in global supply chains.

Additionally, constructing secure and reliable data sharing mechanisms, balancing the contradiction between data transparency and privacy protection, encouraging supply chain members to actively participate in data sharing, providing comprehensive and accurate data foundations for AI-driven green pricing.

Benzidia et al. (2021) pointed out that a major environmental delay challenge faced by hospitals is the lack of ability to measure and utilize qualitative and quantitative data from various internal and external sources to support green practices in hospitals. Therefore, future research should focus on how to use BDA-AI technology to improve data quality and establish more comprehensive data sharing and standardization mechanisms.

4.2. AI Ethics and Fair Pricing Issues

Ethical issues in green pricing are increasingly prominent:

(1) Risk of Price Discrimination: AI pricing may cause unfair impacts on vulnerable groups

(2) Transparency and Explainability: The "black box" nature of AI decision processes raises questions

(3) Allocation of Emission Reduction Responsibility: How to fairly distribute the costs and benefits of emission reduction

This requires establishing a responsible AI pricing framework to ensure environmental justice and social equity. Li et al. (2024) pointed out that policymakers should provide clear ethical guidelines and standards for the development and deployment of generative artificial intelligence in supply chains. These standards should include addressing issues of bias, transparency, accountability, and fairness in artificial intelligence-generated decisions and practices.

4.3. Practical Applications and Development Trends

The innovation of this research is reflected in three aspects:

First, approaching from the perspective of dynamic game theory provides a new analytical perspective for joint emission reduction in green supply chains. By introducing low-carbon goodwill equations and dynamic pricing strategies, using dynamic game models to explore optimal emission reduction levels and price adjustment strategies in supply chains, while considering the time dynamics of policy changes and market demands, it provides a comprehensive perspective for evaluating the long-term impact of policy and market changes on joint emission reduction in supply chains.

Second, the research on bidirectional free-riding behavior is an important supplement to the existing research on green supply chain free-riding effects. By introducing bidirectional free-riding coefficients, quantifying spillover effects between online and offline channels, and precisely identifying and evaluating the economic and environmental impacts of bidirectional free-riding behavior.

Finally, the analysis method for industry-specific coordination contracts is an important extension of existing green supply chain research methods, focusing on designing and implementing coordination contracts based on the characteristics of specific industries to systematically enhance cooperation among supply chain members and the overall environmental efficiency of the supply chain.

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Benzidia et al. (2021) proposed that hospital organizations have begun to adopt the wave of BDA-AI technology, and the French government seems to have recognized the technological opportunities and adopted a new strategy "My Health 2020" aimed at transforming hospitals into connected organizations. The government is investing in large big data projects such as ConSoRe and Health Data Hub. Big data sources in hospitals can rely on various technological devices such as electronic medical records, cloud computing, smartphones, tablets, and smartwatches. However, despite the rich research on the connection between BDA and AI at the medical level, there is little research mobilizing these technologies to improve hospital supply chain processes, especially green practices.

Li et al. (2024) emphasized the key role of policymakers in promoting the effective integration of generative artificial intelligence into sustainable supply chain practices. They suggested that policymakers could provide fiscal incentives such as tax credits, grants, and subsidies to companies that adopt generative artificial intelligence that contributes to sustainable supply chain practices. Additionally, policymakers could establish platforms for companies, research institutions, and policymakers to exchange insights and experiences, promoting knowledge sharing, best practices, and collaborative initiatives in generative AI-driven sustainable supply chain management.

The key challenges lie in constructing more comprehensive interdisciplinary theoretical frameworks, developing practical tools adapted to complex realities, and cultivating professionals with cross-domain knowledge. Through collaborative efforts of academia, industry, and government, AI-driven green supply chain pricing has the potential to become a powerful tool for addressing climate change, providing effective technical and management support for achieving the "dual carbon" goals.

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References

[1] Bai, Q. G., Shi, B. Z., & Xu, J. T. (2019). Optimal Emission Reduction Decision for a Two-echelon Supply Chain with Risk-averse Agents. Systems Engineering, 37(3), 86-97.

[2] Benzidia, S., Makaoui, N., & Bentahar, O. (2021). The impact of big data analytics and artificial intelligence on green supply chain process integration and hospital environmental performance. Technological Forecasting & Social Change, 165, 120557.

[3] Chen, K. G., Cao, Q. R., Wang, X. Y., et al. (2019). Enterprise Investment Strategy of Emission Reduction and Contract Design Under Asymmetric Technology. Journal of Systems Management Studies, 28(2), 338-346.

[4] Cheng, T.C.E., Kamble, S.S., Belhadi, A., Ndubisi, N.O., Lai, K., & Kharat, M.G. (2022). Linkages between big data analytics, circular economy, sustainable supply chain flexibility, and sustainable performance in manufacturing firms. International Journal of Production Research, 60(22), 6908-6922.

[5] Hong, J., Zheng, R., Deng, H., & Zhou, Y. (2019). Green supply chain collaborative innovation, absorptive capacity and innovation performance: evidence from China. Journal of Cleaner Production, 241, 118377.

[6] Kennedy, S., & Linnenluecke, M.K. (2022). Circular economy and resilience: a research agenda. Business Strategy and Environment, 31(6), 2754-2765.

[7] Khan, S.A.R., Razzaq, A., Yu, Z., & Miller, S. (2021). Industry 4.0 and circular economy practices: a new era business strategies for environmental sustainability. Business Strategy and Environment, 30(8), 4001-4014.

ISSN: 2710-0170

[8] Khosroshahi, H., Dimitrov, S., & Hejazi, S. R. (2021). Pricing, greening, and transparency decisions considering the impact of government subsidies and CSR behavior in supply chain decisions. Journal of Retailing and Consumer Services, 60, 102485.

[9] Kong, T., Feng, T., & Huo, B. (2021). Green supply chain integration and financial performance: a social contagion and information sharing perspective. Business Strategy and Environment, 30(5), 2255-2270.

[10] Kristoffersen, E., Mikalef, P., Blomsma, F., & Li, J. (2021). The effects of business analytics capability on circular economy implementation, resource orchestration capability, and firm performance. International Journal of Production Economics, 239, 108205.

[11] Li, L., Zhu, W., Chen, L., & Liu, Y. (2024). Generative AI usage and sustainable supply chain performance: A practice-based view. Transportation Research Part E: Logistics and Transportation Review, 192, 103761.

[12] Liang, X., & Zhang, Y. T. (2020). Dual-channel Supply Chain Pricing Decision and Emission Reduction Policies Based on Consumer Preference to Low Carbon. Operations Research and Management, 29(12), 107-117.

[13] Luo, J., Chong, A.Y., Ngai, E.W.T., & Liu, M.J. (2014). Green supply chain collaboration implementation in China: the mediating role of guanxi. Transportation Research Part E: Logistics and Transportation Review, 71, 98-110.

[14] Scholten, K., & Schilder, S. (2015). The role of collaboration in supply chain resilience. Supply Chain Management: An International Journal, 20(4), 471-484.

[15] Wang, D., & Wang, T. (2021). Dynamic Optimization of Cooperation on Carbon Emission Reduction and Promotion in Supply Chain Under Government Subsidy. Journal of Systems & Management, 30(1), 14-27.

[16] Xu, C., Zhao, D., & Yuan, B. (2016). Differential Game Model on Joint Carbon Emission Reduction and Low-Carbon Promotion in Supply Chains. Journal of Management Sciences in China, 19(2), 53-65.

[17] Zhang, L. H., Dong, K., & Zhang, R. (2019). Strategic Choice Analysis for Supply Chain in 'Cap and Trade' System and Carbon Emission Reduction Technology. Chinese Journal of Management Science, 27(1), 63-72.

[18] Zhou, Y. J., & Ye, X. (2018). Differential game model of joint emission reduction strategies and contract design in a dual-channel supply chain. Journal of Cleaner Production, 190, 592-607.

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AI-Powered Fact-Checking: Combating Misinformation in the Digital Age

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Abstract

The spread of misinformation — including disinformation — has emerged as a sneaky problem as social media proliferated, making it increasingly difficult to find the line between fact and fiction. It has also attracted attention on a large scale in politics, public health, social trust, etc. While only verified media agencies can write and distribute on traditional journalism platforms, on-time social media allows all to publish and spread such information, which certainly lifted the chances of misinformation (Lazer et al., 2018) [1]. The emergence of artificial intelligence (AI) has brought new tools to the table in combatting misinformation. It is this processing of immense amounts of data, detection of false claims, and evaluation of information at a speed and scale unimaginable to human fact-checkers or similar professionals that separates AI-based fact-checking systems from traditional approaches (Zhou and Zafarani, 2020) [2]. But AI has its drawbacks, too. Challenges such as bias in AI training data, inability to understand context, and the need for combining human supervision to ensure accuracy, as well as a constant inability to adapt to sources of misinformation that are constantly being newly crafted (Graves, 2018) [3]. In this essay, we explore how AI is being used in fact-checking, the possible advantages and disadvantages of using AI in this domain, and the future of AI in the fight against misinformation.

Keywords

Artificial intelligence, disinformation, Fact-Checking.

1. The Information Age and the Rise of Misinformation

The Digital Age has bestowed significant power and wealth on tech companies. Misinformation isn't new, but the internet and social media have magnified it. They discovered that false news travels faster than the truth on social media platforms, and misinformation is 70% more likely to be retweeted than true information [4]. This is due to:

1. Engagement Algorithms – Social media platforms reward content that produces high engagement (comments, likes, shares, etc.), leading to the amplification of emotionally charged and sensationalist content relative to factual reporting of news and events [5].

2. Cognitive Biases – A cognitive bias called confirmation bias leads individuals to accept and share information that confirms what they already believe (Zhang, Cui, & Fu, 2018) [6].

3. Manipulated Media – The spread of deepfakes, doctored images, and misleading headlines helps make disinformation appear authentic and credible (Agarwal et al., 2019) [7].

4. Bots and Disinformation Campaigns — Automated bots and coordinated disinformation tactics can disseminate false narratives, especially during elections and crises (Shu et al., 2017) [8].

AI fact-checking tools, which analyze text, images, and videos to flag false information before it becomes widely shared, are designed to counter these trends.

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2. How It Works: AI Fact-Checking

AI Fact Checking uses NLP, machine learning, and deep learning-based systems to check facts. Crucial elements of AI fact-checking are:

1. Natural Language Processing (NLP)

NLP is one of the AI uses that can understand and investigate the human language. Such advanced models, like BERT and GPT, can identify if the text includes misleading statements compared with related and trustworthy references (sources of information) [9]. By recognizing patterns in vocabulary and tone, as well as inconsistencies in language, AI algorithms can detect spurious data.

2. Machine Learning and Deep Learning

ML algorithms help AI systems improve themselves over time by analyzing patterns in misinformation. Deep learning neural network-based systems are utilized in misinformation detection and provide better detection ability as these systems learn from authorized as well as misinformation repositories (Ruchansky et al., 2017) [10].

3. Cross-Referencing with Reputed Sources

AI fact-checking tools vet claims against assertions in databases of information that has already been verified, which may come from government records, news archives, or scientific journals. AI can detect if one statement contradicts facts that people would consider true (Thorne et al., 2018).

4. Detection of Manipulated Content and Deepfakes

It can analyze images and videos to identify whether they're manipulated. Methods like facial recognition and metadata analysis can aid in recognizing deepfake videos as well as edited images, making it a possible solution for visual misinformation (Li et al., 2020).

3. AI Strengths in Fact-Checking

AI-based fact-checking has many benefits over traditional ones:

1. Speed and Scalability – While human fact-checkers require hours or days to verify information, AI is capable of processing thousands of claims in a matter of seconds (Graves, 2018) [3].

2. Objectivity and Consistency – AI does not share the biases of humans based on personal interests/political inclinations and is consistent in applying the same criteria for verification to all quotations (Hansen et al., 2021).

3. Pattern Recognition – AI is really good at pattern recognition, allowing it to spot misinformation trends that tend to occur on the internet, enabling fact-checkers to debunk them before they go viral (Shu et al., 2017) [8].

4. Multi-lingual Capabilities — AI tools can perform analysis in more than one language, acting as misinformation-combating agents in the global landscape [5].

3.1. The Challenges and Limitations of AI in Fact-Checking

rAI fact-checking has its merits, but also its limitations:

1. Sarcasm and Satire – AI struggles hugely in identifying satire vs false claims, leading to misclassification (Zhou and Zafarani, 2020) [2].

2. Partial Truths and Nuanced Misinformation – AI may falter on claims that have some truth and some untruth (Thorne et al., 2018).

3. AI Model Bias on Training Data — AI models can reflect bias found in their training data and consequently generate biased results (Hansen et al., 2021) [13].

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4. Misinformation Techniques Evolution – Currently, AI is not capable enough in detecting new misinformation techniques that it is not trained on datasets (Li et al., 2020).

3.2. AI fact-checking systems must evolve and strengthen their defenses in response to the changing landscape of misinformation. Future advancements include:

1. Better Data for AI Training – Feeding real-time lie trends into training datasets for AI algorithms will make their answers more agile (Devlin et al., 2019) [9].

2. Improved Deepfake Detection – New AI systems aim to improve the deciphering of manipulated videos and images (Agarwal et al., 2019) [7].

3. Cross-Platform Collaboration – Based on detection proposals (Ruchansky et al., 2017), governments, tech companies, and academic researchers will collaborate to create universal standards for misinformation detection.

4. Blockchain-Based Verification – Many researchers have begun exploring the use of blockchain technology to timestamp data with verifiable signatures, demonstrating authenticity (Zhang, Cui, & Fu, 2018) [6].

4. Conclusion

Thanks to social media, the spread of misinformation has become one of the greatest challenges of the digital age. In contrast to the past, where misinformation mostly was limited to word of mouth or broadcast sources, the internet has accelerated its spread and effect significantly. This has serious implications for public discourse, political stability, public health, and social trust. As a lack of standards leads to false narratives running unchecked, these narratives shape opinions, influence elections, and even contribute to real-world harm, like vaccine hesitancy or civil unrest.

Substantial advancements have been made in the use of AI capabilities that can identify and refute misinformation more at scale and timeliness than traditional approaches. AI-enabled fact-checking is why AI is a key tool in the fight against disinformation: it can process extensive amounts of information quickly, surface inconsistencies, and analyze thousands of patterns across the online landscape. But no technical solution is without limitations. AI fact-checking is quick, scalable, and, for the most part, unbiased, but it comes with its limitations, including challenges with sarcasm, parody, or sophisticated disinformation cloaked in partially accurate claims. Moreover, the issue of biases in artificial intelligence training data and the constantly changing landscape of misinformation make ensuring accurate and reliable information quite challenging.

Though it has its limits, AI is a vital tool in the fight against misinformation. Instead, you should rely on a mix of human input with AI output. The decision must still come from humans who understand the context, are able to think critically, and consider ethics—things AI cannot do. Using a hybrid model that relies on the efficiency of AI combined with a layer of human oversight can create a more accurate and nuanced approach to fact-checking.

The evolution of methods of misinformation means that the battle with false information has to evolve. The Road Ahead for AI-Driven Fact-Checking: Progressing with Bettering Deep-Knowledge Models, Real-Time Monitoring, and Joint Efforts. While regulatory frameworks will be required to do this, to provide ethical guidelines, and to protect against misuse, they should focus on curtailing misinformation, not limiting freedom of speech.

In addition, there also needs to be cross-platform collaboration. Because misinformation travels through multiple digital spaces, a siloed approach to fact-checking will not be as effective. A coordinated approach, in which AI systems are deployed across social media applications, news websites, and other online spaces, will improve the identification and

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reduction of misinformation. Moreover, utilizing blockchain-based authentication systems can introduce a more transparent approach to verification processes for sources, to shield from any digital manipulation of facts.

Finally, the issue of misinformation will remain as long as digital platforms remain the main source of information for billions of people globally. AI-powered fact-checking is a very powerful tool, but it cannot be a standalone solution. With the emergence of AI, no single solution would work best in this case—a mix of AI, human intervention, instant flexibility, and regulatory checks will play a significant role in reducing fake information. Only by taking a multi-pronged approach can we continue to build public trust in fact-based journalism and protect the space so that the facts remain dominant in the age of digital media.

References

[1] Lazer, D. M., Baum, M. A., Benkler, Y., et al. (2018). The science of fake news. Science, 359 (6380), 1094–1096.

[2] Zhou, X., & Zafarani, R. A systematic survey of fake news besides data mining for fake news detection Volume 53, Number 3, 1–40.

[3] Graves, L. (2018). But knowing the promise — and limits — of automated fact-checking. Journalism Studies 19 (5), 613–631.

[4] Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of real and fake news across the internet. Science. 359(6380):1146–1151.

[5] Pennycook, G., & Rand, D. G. (2019). Crowdsourced devices for combating misinformation on social networks. PNAS, 116(7), 2521-2526.

[6] Song, L., Blei, D. M., & Nelson, P. (2010). Deep learning for detecting fake news. IEEE Trans. on Knowl. and Data Eng.

[7] Agarwal, S., et al. (2019). On combating deepfakes & keeping world leaders safe. CVPR, 38-45.

[8] Shu, K., et al. (2017). Identifying fraudulent news on social platforms. ACM SIGKDD, 19(1), 22-36.

[9] Devlin, J., et al. (2019). BERT a novel approach to pre-training of deep bidirectional transformers for language understanding. NAACL-HLT, 4171-4186.

[10] Ruchansky, N., et al. (2017). CSI: Combining Semi-Supervised and Inductive Approaches for Fake News Detection. CIKM, 797-806.

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Modernity's Progress and Discontents: Analyzing Edward Hopper's Hotel Room

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Abstract

Edward Hopper's Hotel Room (1931) skillfully captures the alienation of modern urban life and the evolving role of women through its palette, composition, and realist techniques. This essay situates the work within its historical context, exploring its commentary on the societal anxieties of the Great Depression, the transformative impact of urbanization, and the emergence of the independent "New Woman" during the first wave of feminism. Aside from an historical approach, this study analyzes the artistic formal qualities of the painting to reveal how Hopper constructs a narrative of isolation and emotional detachment. Interweaving artistic expression with social observation, Hopper's Hotel Room serves both as a reflection of 20th-century American modernity and a critique of its psychological toll on individuals.

Keywords

Edward Hopper, Interwar period, Realism, Modernism, Feminism.

1. Introduction

Edward Hopper (1882–1967), a pivotal figure in American Realism, is renowned for his melancholic depictions of urban environments and the quiet tensions of solitude in modern life. *Hotel Room*, an oil painting created in 1931 during the Interwar period, exemplifies Hopper's ability to create an emotional visual narrative. The work portrays a lone, half-naked woman in a transient space, surrounded by angular lines and cold colors that evoke sadness and discomfort in the viewer. Hopper's formal choices—such as the interplay of light and shadow, the contrast between geometric and organic lines, and the restrained color palette—amplify the painting's themes of emotional isolation. Furthermore, analyzing the turbulent historical-economic landscape, rapid American urbanization, and progressive feminist movements of the 1920s and 1930s will shed light on Hopper's dual role in the artwork as a documenter of his era and a subtle critic of its discontents.

2. The Artist's Background

Edward Hopper was an American artist born in the late 19th century. He was born in Nyack, New York, in 1882, into a middle-class family (Edward Hopper, 2025). He lived in New York for most of his life, which would have helped him better observe changes in American society throughout the years. Hopper's relatively high socio-economic background allowed him to study and work in wealthier, city environments, such as receiving education in New York School of Art and traveling abroad to European metropolises like Paris. The artist's living environments likely influenced the setting of his paintings to be set in urban surroundings. In his trips to Europe in the decade leading up to 1910, Hopper found interest in works by French painters Edgar Degas and Édouard Manet. These artists utilized composition skillfully and depicted modern urban life (Murphy, 2007). This inspired both the subject matters and formal qualities of Hopper's works.

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3. Medium

Hotel Room was created using oil on canvas, a medium with a long history in the Western world. Oil painting first became a dominant medium in European art in the 15th century during the Renaissance period (Britannica, 2023). Throughout the centuries, the presence of oil paint remained in European art movements such as Baroque, Impressionism, and Modernism (Education Bureau, 2025). America's adoption of oil paint started ever since the colonial period, as American artists incorporated European techniques into art. Oil paint is a conventional Western medium, hence suggesting the culture of the art is Western. Furthermore, oil paint is composed of pigments suspended in drying oils (Britannica, 2023). It allows for a wide range of techniques, and dries slowly, allowing artists to mix and build layers over time. For Hotel Room, this allows Hopper to skillfully blend colors to create exquisite and detailed light and shadow and achieve a realist effect. Thus, the medium also contributes to the visual effect of the artwork.

4. Public Reception

The 1920s to 30s, around the time when Hotel Room was created, was a highlight in Hopper's artistic career in terms of public reception. He was celebrated for his distinctive style, which he had never deviated from ever since it developed, in which urban interiors are permeated by a feeling of silence and estrangement. Starting from 1920 when he received his first one-person exhibition, his work rose drastically in popularity among the American audience. He was able to, at his second solo exhibition at the Frank K. M. Rehn Galleries in New York, sell every painting on display (Murphy, 2007). Aside from commercial success, Hopper also gained recognition in the profession: In 1930, his painting House by the Railroad was the first work to be acquired for the Museum of Modern Art collections (Murphy, 2007). This artwork was an embodiment of Hopper's style. Just like Hotel Room, it has a strong lighting, a thoughtful composition with an almost "cinematic" viewpoint, and a mood of eerie stillness. Hence, Hopper's works as a whole, likely including Hotel Room, received high public acclaim.

5. Analysis of Formal Qualities

5.1. Line

The artist uses different types of lines to enhance the visual and emotional complexity of the scene. The painting applies both geometric and organic lines, though it uses predominantly geometric lines (Museo Nacional Thyssen-Bornemisza, 2025). They are more rigid, and can be seen by the long, vertical straight lines that serve as contour lines indicating the edges of walls, window, and furniture, and the horizontal lines of the window ledge and headboard and footboard of the bed. Even the contours of the shadow of objects, such as of the curtain, bed, sofa, and the wall behind the figure, are straight lines. These structural lines of the setting highlight the architectural structure of the room and create a sense of enclosure, hinting at a feeling of confinement for the viewer. The prevalent perfect, regular lines visually contrast with the contour of the female figure, one of the few places on the painting where organic lines are used. These types of lines are natural. Thus, the nuanced curves in the figure's head, shoulders, arms, and legs makes her appear delicate and mortal, visually more comfortable than the setting. The contrast of strong and soft lines in the painting creates two diverse visual effects for the audience and elicits dichotomous sensations of confinement and comfort.

5.2. Color

The piece utilizes color to add emotional resonance within its realistic scene. Realism art portrays everyday life in an accurate way, looking almost photographic (Tate, 2017). Colors used in the painting contribute to the artist's realistic depiction, especially through the relationship between light and shadow. The light source, which comes from above but is not seen, is an intense, cold, artificial light. Such can be inferred from the strong contrast between the taupe shadow obscuring the figure's lowered head and hunched torso, and the pale beige areas—her nape and thighs that are illuminated. The colors further a realistic depiction of the interior lighting of a room at night, making the scene appear naturalistic to the viewer. Aside from using color to establish realism, the artist uses subjective renders to engender the emotion of melancholy. The painting is composed of a mostly muted palette and dominated by flat expanses of cold, greyed tones, such as the livid color of the left wall and bed, sage green of the carpet, pale lemon yellow of the blinds, and pearl white of the back wall. According to color psychology, cool colors commonly inflict feelings of tranquility and sadness (Domicele Jonauskaite, et al., 2019). The choice of a cold and grey color palette sets a peacefully melancholic mood. In contrast, the tones on the woman figure like her beige skin and coral vest are intentionally warmer than her surroundings. The tonal choice makes the artwork appear well balanced in terms of color, yet also differentiates the human figure from her inanimate environment, conveying a detached and isolated feeling to the audience. Through color, *Hotel Room* adds the artist's own artistic renders to a realism style, engendering emotion.

5.3. Value

Furthering his realism style, the artist uses value in the painting to convey a feeling of realness and therefore sympathy. Macroscopically, the artwork varies from very light tints such as the near-white of the bedsheets and curtains to dark shades like the near-black Prussian blue of the night sky outside the window. Such is reminiscent to how lighting creates diverse differences in value of real-life objects, creating an illusion of reality. The realistic modern urban setting and objects may conjure familiarity in today's audience, creating an emotional link between the painting and the audience's own life. Furthermore, highly contrasting values are placed in proximity to each other, like the curtain draping in front of the window, which becomes visually impactful to the viewer and holds their attention. Microscopically, the painting displays nuanced tonal differences by using techniques such as blending and hatching to produce a visual effect similar to real life. Brush strokes on the shoulder and thigh of the figure are blended so that value transitions subtly from beige to light beige with a more saturated tendency. Differently, in areas like the woman's calf and feet, brush strokes are more defined and resemble hatching, as with the brick red shades down her knees that define her muscles. The figure's realness easily arouses empathy in the viewer as she looks like she is a genuine person (Internet Encyclopedia of Philosophy, 2025). Both overall and the fine distinctions in value of the painting contribute to the realistic style of the painting, making it almost photographic to prompt affinity with the audience emotionally.

5.4. Emphasis

The artist uses compositional and color strategies to focus the audiences' attention to the female figure with the intention to emphasize her, as it is evident that the focal point makes her the center of interest. The artist utilizes the Rule of Thirds compositional strategy to create a natural focal point (BBC, 2017). If the canvas is separated into a 3x3 grid, the figure is situated exactly along the left 1/3 line, with the back of her head and elbow on the points where the vertical and horizontal lines of the grid intersect. Because of the artist's understanding of the locations that the human eye is naturally drawn to upon first glance of an artwork, the female figure demands the viewer's attention. Aside from attraction of the eye, emphasis is reinforced by color choices. The woman's head, bathed in dark shadow, is positioned among the pearl white of the background, so that it becomes naturally striking. Furthermore, the colors on the woman, such as the beige of her skin and coral vest, are not utilized anywhere else on the

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painting and contrast from the cold palette of her surroundings. The unusualness in color choices command the viewer's observation and sparks natural fascination.

5.5. Space

While the focal point directs the viewer's attention, a sense of space through perspective is employed to guide the viewer's attention across the canvas, strategically adding narrative profoundness to the painting and engaging the audience. Space can be differentiated into three layers in the painting, namely the foreground, middle-ground, and background. Depth is constructed within these layers mainly by the receding diagonal line established by the bed, starting from the bottom left corner of the painting and ending at the 1/2 point of the right frame. It is the only visually prominent line in the composition that is not vertical or horizontal and engenders movement within the composition (Museo Nacional Thyssen-Bornemisza, 2025). While the natural focal point of the painting is on the female figure, who is situated in the middle-ground, after inspecting her, the viewer's attention is directed, by the diagonal line of the bed adjacent to the figure, towards the window at the innermost corner of the room. One-point perspective is employed to further the illusion of depth as the sofa at the foot of the bed appears smaller than the woman as it converges towards the vanishing point. The construction of depth creates an impression to the viewer that they are physically entering "into" the painting. This creates a bond between the viewer and the story being told in the painting, stimulating their curiosity about the narrative.

6. Purposes of the Artist

6.1. Purpose of Self-Expression and Reflection of the Artist's Emotional Experience

Regardless of its public reception, art is firstly meaningful to its creator. One of the main purposes Hopper created the Hotel Room for is to self-express, through a painted reflection of his emotional landscape. In notes on his retrospective exhibition at the Museum of Modern Art in 1933, of which includes Hotel Room, Hopper wrote that he paints to record his emotions onto the canvas (MoMA, 1933). As he has a habit of reflecting on his works, his personal records prove that this aim is consistent throughout his art. For instance, in a letter he wrote to Charles H. Sawyer, director of the Addison Gallery of American Art in 1939, Hopper states "My aim in painting is always [...] to try to project upon canvas my most intimate reaction to the subject as it appears when I like it the most" and that "I select certain subjects because I believe them to be the best mediums for a synthesis of my inner experience" (Koob, 2004). The artist's statements throughout his life makes it clear that his works are intensely self-referential and self-expressive. The melancholy that the painting evokes through color are likely indicative of the artist's mood; the woman figure in the painting a self-insertion of the painter himself on an emotional level.

6.2. Purpose of Depicting a Real-Life Scene Realistically

One of the more visually evident purposes of the artwork is to realistically portray a scene from real-life as a documentation of the American and her living environment at the time. While painting this artwork, the artist used his wife, Josephine Nivison, as a real-life reference. Such is evident in her diary in 1924, where she wrote that she posed as Hopper's model for the pose and manner of the woman figure in Hotel Room (Museo Nacional Thyssen-Bornemisza, 2025). Using a real person as reference indicates that Hopper based Hotel Room's human body off real life observations, attempting to capture the likeness of the person and perhaps the scene. Furthermore, Edward Hopper was known for being a realist artist, the definition of which requires the artist to portray their subjects in an accurate, detailed, and unembellished way (Edward Hopper, 2025). Hopper likely had the purpose of creating a believably realistic scene

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in mind when he created the artwork, thus using his observations to replicate the lifelike colors of the human skin and show how lighting and shadow illuminate and darken soft surfaces.

7. Functions of the Artwork

7.1. Function of Commentary on the Coldness of Modern Life

Hotel Room was completed in 1931, just after the 1920s. Drastic lifestyle changes occurred in this period in America as people moved into cities. Hopper, who lived through this time of rapid urbanization, both extensively and exclusively painted artworks on the topic of malaise in modern living. Hs works show a similar pattern in their use of color and lighting to create mood and use of body language of human figures to display discomfort. For example, in his most famous painting, Nighthawks, Hopper uses a cold color palette and deliberately arranges the gestures of the people in the artwork so that though they share the same space, no one is physically touching or looking at one another (The Art Institute of Chicago, 2015). American Art historian Milton Brown commented that Hopper's works generally "express the isolation and loneliness of the individual in modern life" (Brown, 1977). This general preference of Hopper is visible in Hotel Room. Hopper portrays the subject as an isolated woman in a room by herself. Her body language of hunched shoulders signify insecurity and her nudity maybe a symbol of vulnerability, especially with the artist's choice of placing her unclothed in a cold-colored room, inflicting a sensational chilliness to the viewer. Although her urban living conditions look relatively well-off, she seems ill at ease. Hotel Room provides insight and criticism on how the modern lifestyle makes people feel lonely and empty.

7.2. Function of Transforming Perceptions on the New American Woman

The 1920s was especially significant for feminism. Changes to women's rights and roles in society are subtly embodied in Hotel Room. The painting portrays a young woman who is traveling solo, as, suggested by the small bed, she stays in a single room. She also seems relatively wealthy, as she brought two suitcases with her on her journey. These symbols represent independence; she is likely unmarried and traveling by her own means. Her fashion is also a symbol: She dresses in the "garçonne look" fashion, hinted by her short bob hairstyle, cloche hat, and short dress on the sofa. This style was invented by French designer Coco Chanel around 1923 and is known for being androgynous and loose-fitting, a rebellion against conventional corsets at the time that restricted women's bodies (Britannica, 2024). It was especially popular among young intellectual "flappers" with financial independence. Hopper's "flapper girl" figure in the painting was a new representation of women at the time as a wave of feminism empowered women to step out of the household to travel, earn money, and live on their own. Through the artist's choice of painting an unconventional woman in terms of appearance and lifestyle, the painting functions as challenging traditional images of womanhood.

8. Varied Context of the Artwork

8.1. Historical-Economic Context: The Great Depression

Hotel Room was created during the Interwar period, which lasted from 1918 to 1939 and is the short span of time after World War I and before World War II. It was a period of great dichotomy between optimism and pessimism in the western world because of a drastic fluctuation in economy. For the most of the 1920s, peace from war led to the Roaring Twenties as western countries were able to sustain economic development in the reinstallation of social stability. Especially in America, the second Industrial Revolution transformed the country into a main world power. Technological advancements such as the popularization of new energy resources like electricity, along with the invention of the assembly line, expanded capitalism and

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consumerism, characterizing the first decade of the Interwar period as economically prosperous. Between 1922 and 1929, the country's gross national product (GDP) increased by nearly 40% (Cunningham, 2024). However, starting from 1929, stock market crashes led to the Great Depression, a long period of economic downturn marked by failed businesses and rising unemployment rate (Pells, et al., 2025). As an artwork completed in 1931, Hotel Room could reflect a sense of loss in society, as the peace, security, and hopeful spirit in America was broken by economic depression.

8.2. Social Context: Urbanization of America

Hotel Room was completed in 1931, just after the 1920s. During the period when Hopper was creating this artwork, drastic lifestyle changes occurred in America because of urbanization. In a move to modernity, urban cities became industrialized and centralized locations with growing economy, and the advancements in technology due to the Second Industrial Revolution reduced labor demands in agriculture. Hence, America became increasingly urbanized. The 1920 census revealed that 51.2% of Americans were living in cities, which means that for the first time in U.S. history, more people lived in urban than rural areas (United States Census Bureau, 2021). This transition of social environment was an extensive change that was likely emotionally overwhelming as it altered people's lifestyles, living conditions, and relationships. Hopper, who lived in America for his entire life, would have been able to identify these nuanced anxieties and depressions for the average American, and portrayed such emotions in his art.

8.3. Political Context: First Wave of Feminism

Many important things changed for the American woman by the 1920s, especially with rights and empowerment. Social changes were set in motion that would free women from the previously inescapable fate of housewifery and lead to more gender equality. Starting from the 1805s, after a century of suffragette protests and feminist activities, which is a period of what is called First-wave feminism, the 19th Amendment to the U.S. Constitution gave women suffrage (U.S. Constitution, 2025). This new change not only gave women political representation, but also indicates the direction towards which the social opinion is progressing, which recognized women as taxpayers and wage workers in society. Though as of 1920 only 20% of the workforce were women, they started working in increasing numbers (Women's Bureau, 2024) and becoming self-dependent. The political context of reforming, feminist ideals might have affected Hopper's choice in portraying the subject matter of a traveling, independent young woman this painting.

9. Conclusion

Hotel Room showcases Edward Hopper's ability to synthesize complex social and emotional realities into a single, powerfully silent image. Through his masterful attention to formal qualities, Hopper visualizes the paradoxes of modern life to the viewer: both cultural prosperity and loneliness, progress and alienation. Considering its historical context, the painting reflects the anxieties of the Great Depression, the anonymity of urban living, and the nascent independence of women challenging traditional norms. Yet, *Hotel Room* ultimately transcends its era, resonating with the modern viewer with its portrayal of the tensions between individual identity and societal transformation.

References

[1] Brown M. The Modern Spirit — American Paintings 1908-1935 [M]. London: Arts Council of Great Britain, 1977.

[2] Jonauskaite D, Althaus B, Dael N, et al. What color do you feel? Color choices are driven by mood [J]. Color Research & Application, 2019, 44(2): 272–284.

ISSN: 2710-0170

[3] Koob P. States of Being: Edward Hopper and Symbolist Aesthetics [J]. American Art, 2004, 18(3): 52–77.
[4] U.S. Census Bureau. 1920 Census: Volume 1. Population, Number and Distribution of Inhabitants [EB]. (2021). https://www.census.gov/library/publications/1921/dec/vol-01-population.html.
[5] Internet Encyclopedia of Philosophy. Art and Emotion [EB]. (2025). https://iep.utm.edu/art-and-emotion/.
[6] BBC. The Rule of Thirds [EB]. (2017-11-14). https://www. bbc.co.uk/bitesize/ guides/ zxpnb82/revision/4.
[7] Encyclopedia Britannica. Oil painting [EB]. (2023). https://www.britannica.com/art/oil-painting.
[8] Cunningham, J. M. Roaring Twenties [EB]. (2024). https://www.britannica.com/topic/Roaring-Twenties.
[9] Edward Hopper. Edward Hopper [EB]. (2025). https://www.edwardhopper.net.
[10] The Museum of Modern Art. Edward Hopper: Retrospective Exhibition [EB]. (1933). https:// www.moma.org/calendar/exhibitions/1914.
[11] Museo Nacional Thyssen-Bornemisza. Habitación de hotel [EB]. (2025-03-11). https:// www.museothyssen.org/coleccion/artistas/hopper-edward/habitacion-hotel.
[12] Murphy J. Edward Hopper (1882–1967) [EB]. (2007-06). https:// www.metmuseum.org/ essays/ edward-hopper-1882-1967.
[13] The Art Institute of Chicago. Nighthawks [EB]. (2015). https:// archive.artic.edu/hopper/ artwork/111628.
[14] Pells, R. H, et al. Great Depression [EB]. (2025). https://www.britannica.com/event/Great-Depression.
[15] Tate. Realism [EB]. (2017). https://www.tate.org.uk/art/art-terms/r/realism.
[16] U.S. Congress. Nineteenth Amendment [EB]. (2025). https://constitution.congress.gov/ browse/amendment-19/.
[17] Education Bureau. Visual Arts [EB]. (2025-03-03). https://www.edb.gov.hk/en/curriculum-development/kla/arts-edu/resources/va-curri/index.html.
[18] U.S. Department of Labor. An Overview 1920–2021 [EB]. (2024). https://www.dol.gov/ agencies/wb/about/history.

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The Integration of Artificial Intelligence and Social Work: Opportunities, Risks, and Future Directions

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Abstract

With the rapid development of artificial intelligence (AI) technology, its potential applications in the field of social work are becoming increasingly evident. This paper explores the opportunities, risks, and future directions of the integration of artificial intelligence and social work. Through automated tools, data analysis, and intelligent support systems, AI has significantly enhanced service efficiency, precision, and coverage, while also promoting interdisciplinary collaboration and innovation. However, its application also faces risks such as ethical and privacy concerns, the loss of humanistic care due to over-reliance on technology, uneven resource distribution, and policy lag. To address these challenges, future efforts should focus on strengthening ethical guidelines and policy frameworks, improving the technical literacy of social workers, promoting equitable access to technology, exploring human-machine collaboration models, and enhancing interdisciplinary research. This paper aims to provide theoretical support and practical insights for social work practitioners, policymakers, and technology developers, fostering the deep integration of artificial intelligence and social work to build a more intelligent and human-centered social service system.

Keywords

Artificial Intelligence; Social Work; Technology Integration.

1. Introduction

With the rapid development of artificial intelligence (AI) technology, its application in the field of social work has gradually deepened, marking a new stage in the integration of technology and humanistic care. This trend has brought unprecedented opportunities to social work, while also raising many thought-provoking questions[1]. The rise of AI in social work is driven by a combination of technological advancements, societal needs, and policy support. In recent years, breakthroughs in AI technologies such as machine learning, natural language processing, and big data analytics have provided a technical foundation for its application in social work. For example, intelligent algorithms can analyze the behavioral patterns and needs of service users, offering decision-making support for social workers. At the same time, the field of social work has long faced challenges such as resource shortages, increasing service demands, and inefficiencies[2]. Social workers are often burdened with extensive administrative tasks, reducing the time available for direct service provision. Additionally, the growing complexity of individualized needs among service users makes traditional service models inadequate. The introduction of AI offers new possibilities to address these issues. Furthermore, policy and societal support have created a favorable environment for the rise of AI in social work. For instance, the European Union's White Paper on Artificial Intelligence and China's Next Generation Artificial Intelligence Development Plan both emphasize the application of AI in social services, and public acceptance of intelligent services is gradually increasing.

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The rise of AI in social work is primarily driven by the need to enhance service efficiency, improve service precision, expand service coverage, and foster interdisciplinary collaboration. AI can alleviate the administrative burden on social workers through automated tools, such as managing records, data entry, and report generation, allowing social workers to devote more time to direct service provision[3]. Traditional social work services often rely on the experience and intuition of social workers, making it difficult to comprehensively and accurately identify the needs of service users[4]. AI technologies, such as machine learning and data mining, can analyze large datasets to uncover the underlying needs and behavioral patterns of service users, enabling more precise service delivery. Moreover, AI technologies can transcend time and space limitations, offering new possibilities for social work. For example, chatbots and virtual assistants can provide 24/7 online support to service users, while remote service technologies, such as video consultations, can extend support to underserved populations in remote areas or those with mobility challenges, thereby broadening the reach of social work services. The integration of AI has also facilitated interdisciplinary collaboration between social work and fields such as information technology, psychology, and data science. For instance, social workers can collaborate with data scientists to develop AI-based assessment tools or work with psychologists to analyze the psychological states of service users using AI technologies. Such interdisciplinary efforts contribute to the innovation of service models and technical tools.

The rise of AI in social work has profound implications for practice, education, ethics, and policy. In practice, AI has transformed traditional social work models, such as using intelligent systems to assist in needs assessment, intervention design, and outcome evaluation, thereby enhancing the scientific rigor and effectiveness of services[5]. However, this also demands higher technical proficiency from social workers. In education, social work training programs must incorporate AI technologies into their curricula to cultivate professionals who possess both technical skills and humanistic values. Ethically, the application of AI raises concerns such as data privacy and algorithmic fairness, requiring social workers to adhere to professional ethics in their use of technology. In terms of policy, the rise of AI in social work calls for the development of laws and regulations to standardize its application and protect the rights of service users.

In conclusion, the emergence of AI in social work is both an inevitable outcome of technological progress and a vital approach for the field to address real-world challenges. Moving forward, it is essential to strike a balance between technological application and ethical considerations, promoting the deep integration of AI and social work to build a more intelligent and human-centered social service system.

2. Opportunities for the Integration of Artificial Intelligence and Social Work

2.1. Enhancing Service Efficiency

In social work, administrative tasks often consume a significant amount of social workers' time and energy. The introduction of artificial intelligence (AI) technology can effectively alleviate this burden. For example, intelligent systems can use automated tools to handle tasks such as managing service user records, data entry, and report generation. These tasks are typically repetitive and time-consuming, yet they require high levels of accuracy and completeness. By leveraging AI technology, not only can work efficiency be improved, but human errors can also be minimized. As a result, social workers can devote more time and energy to direct service provision, fostering deeper connections with service users and delivering higher-quality support.

Moreover, AI can optimize resource allocation through data analysis. Social work organizations often face challenges related to limited resources, making the efficient distribution of human,

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material, and financial resources a critical issue. AI systems can analyze operational data, service user needs, and external environmental information to help organizations develop more rational resource allocation strategies. For instance, by predicting peak and off-peak periods of service demand, organizations can adjust staffing schedules in advance to ensure adequate coverage during high-demand times. Additionally, intelligent systems can allocate limited material resources based on the priority of service users' needs, thereby enhancing the overall operational efficiency and service quality of the organization.

2.2. Enhancing Service Precision

Artificial intelligence (AI) technologies, particularly machine learning and natural language processing, provide social work with powerful data analysis capabilities. These technologies can process and analyze vast amounts of data, including service users' basic information, behavioral patterns, and social data, to identify their individualized needs. For example, by analyzing service users' social media activities, online behavior records, and interactions with social workers, intelligent systems can detect potential mental health issues, risks of domestic violence, or other social problems.

Taking mental health intervention as an example, AI can predict potential psychological stress or crises by analyzing service users' language expressions and emotional changes. Social workers can use these predictive insights to develop intervention plans proactively, rather than waiting until problems escalate. This precision-oriented service model not only improves the effectiveness of interventions but also reduces the suffering and potential risks faced by service users. Furthermore, precise services enable social work organizations to better evaluate service outcomes. By comparing data before and after interventions, organizations can optimize service processes and content, further enhancing service quality.

2.3. Expanding Service Coverage

Another significant advantage of AI technology is its ability to transcend time and space limitations, offering broader possibilities for social work services. For instance, chatbots and virtual assistants can provide 24/7 online support to service users. These intelligent tools can answer frequently asked questions, offer emotional companionship, and even guide service users to take appropriate actions in emergencies. This round-the-clock support is particularly valuable for service users who cannot access traditional social work services during nights or weekends.

Moreover, remote service technologies, such as video consultations, have opened new opportunities for social work. Many service users may be unable to visit social work organizations in person due to geographical remoteness, mobility issues, or other constraints. Through video consultations, social workers can engage in face-to-face interactions with service users, providing psychological counseling, family therapy, or other professional services. This technology not only expands the reach of social work but also enhances service accessibility, enabling more people to benefit from social work support.

2.4. Promoting Interdisciplinary Collaboration

The introduction of artificial intelligence (AI) has facilitated the integration of social work with other disciplines, bringing new perspectives and methodologies to the field. Collaboration between social work and areas such as information technology, psychology, and data science has become increasingly close. For example, social workers can partner with data scientists to develop AI-based assessment tools. These tools can analyze service users' behavioral data, psychological test results, and other relevant information to generate more accurate assessment reports, helping social workers better understand the needs and challenges of service users.

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At the same time, social workers can collaborate with psychologists to leverage AI technologies in analyzing the psychological states of service users. For instance, by examining service users' language expressions and emotional responses, AI can identify potential psychological issues and provide intervention recommendations to social workers. Such interdisciplinary collaboration not only fosters innovation in service models and technical tools but also enhances the professionalism and scientific rigor of social work services. By integrating the strengths of different disciplines, social work can more effectively address complex and dynamic social issues, offering more comprehensive and impactful support to service users.

3. Risks of the Integration of Artificial Intelligence and Social Work

3.1. Ethical and Privacy Concerns

The application of artificial intelligence (AI) in social work heavily relies on the collection, storage, and analysis of vast amounts of data, which poses potential risks to the privacy of service users. For instance, when social work organizations use AI technologies, they may handle sensitive information such as personal details, health data, and behavioral records of service users. If such data is leaked or misused, it could severely violate the privacy rights of service users. Additionally, algorithmic bias is a significant issue in AI applications. If the training data is biased, intelligent systems may make unfair decisions, exacerbating social inequalities. For example, in the allocation of social welfare, biases based on race, gender, or socioeconomic status in algorithms could lead to unfair treatment of certain groups.

3.2. Over-Reliance on Technology and Loss of Humanistic Care

While AI technology can significantly improve the efficiency and precision of social work, it may also lead to social workers becoming overly dependent on technology, potentially neglecting emotional interactions and humanistic care with service users. Social work is a profession that emphasizes interpersonal relationships, with its core being the provision of support and assistance through human interaction. However, excessive reliance on AI technologies might weaken social workers' abilities in emotional support and value judgment. For example, when social workers rely too heavily on chatbots or automated tools, they may reduce opportunities for face-to-face communication with service users, thereby affecting the emotional experience and trust-building process.

3.3. Technical Barriers and Uneven Resource Distribution

The application of AI technology requires certain technical support and resource investments, including specialized equipment, data storage facilities, and personnel with relevant skills. However, many social work organizations, especially grassroots organizations with limited resources, may lack these necessary conditions. Moreover, the uneven distribution of technical resources across regions or institutions may exacerbate service disparities, leading to a digital divide. For instance, in remote or economically underdeveloped areas, social work organizations may not have access to sufficient technical support, preventing them from fully leveraging the advantages of AI technologies.

3.4. Lagging Laws and Policies

Currently, laws, regulations, and policy frameworks related to the application of AI in social work are still underdeveloped. For example, while some laws and regulations address personal information protection, there remain many gaps and ambiguities in the context of rapidly advancing AI technologies. Additionally, issues such as ensuring algorithmic fairness and transparency, as well as clarifying liability for problems arising from AI applications in social work, remain unresolved. These challenges expose social work organizations to legal risks when using AI technologies and hinder the healthy development of AI in the field.

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4. Future Directions for the Integration of Artificial Intelligence and Social Work

4.1. Strengthening Ethical Guidelines and Policy Frameworks

In the future, the application of artificial intelligence (AI) in social work must be guided by clear ethical principles and usage standards. First, it is essential to define the boundaries of data collection and usage to ensure data privacy and security. For example, when using AI technologies, social work organizations must strictly comply with data protection regulations to prevent the misuse or leakage of service users' personal information. Second, the fairness and transparency of algorithms are critical issues. Algorithmic biases can lead to unfair decisions, so mechanisms for algorithm review must be established to ensure that AI systems' decision-making processes align with social ethics and principles of fairness. Additionally, policymakers should accelerate the development of relevant laws and regulations to provide legal safeguards for the application of AI in social work.

4.2. Enhancing the Technical Literacy of Social Workers

Social work education should incorporate training on AI technologies to help social workers acquire basic technical knowledge and skills. For instance, relevant courses or workshops can be introduced to cultivate professionals who possess both technical expertise and humanistic values. Furthermore, as AI technologies continue to evolve rapidly, social workers need to continuously improve their skills in data analysis, AI system usage, and other technical areas to meet the growing demands of the workplace. Enhancing technical literacy not only improves work efficiency but also strengthens social workers' ability to lead in human-machine collaboration.

4.3. Promoting Equitable Access to Technology

Ensuring the equitable distribution of AI technology resources is a crucial direction for future development. Governments and social organizations should collaborate to develop low-cost, user-friendly technological tools, enabling more social work organizations and service users to benefit. Additionally, technical support for vulnerable groups should be strengthened to bridge the digital divide. For example, providing technical training and equipment support can help resource-scarce regions better utilize AI technologies. Such efforts to promote equitable access to technology will not only expand the reach of social work but also foster social fairness and inclusion.

4.4. Exploring New Models of Human-Machine Collaboration

AI should not replace social workers but rather complement their roles. In the future, new models of human-machine collaboration can be explored. For instance, AI can handle data analysis and technical support, while social workers focus on emotional support and value-based decision-making. This collaborative model can enhance both service efficiency and quality while strengthening the emotional connection between social workers and service users. For example, in mental health services, AI can provide initial emotional analysis and intervention recommendations, while social workers offer in-depth emotional support and personalized care.

4.5. Strengthening Interdisciplinary Research and Innovation

Future efforts should encourage collaborative research between social work and fields such as computer science and data science. For example, social workers can partner with technical experts to develop AI-based assessment tools or intervention programs. Such interdisciplinary collaboration not only drives innovative applications of AI in social work but also facilitates

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knowledge exchange and integration across disciplines. Moreover, through interdisciplinary research, ethical and technical challenges faced by AI in social work can be better addressed.

5. Conclusion

Artificial intelligence (AI) has brought significant opportunities to social work, including enhancing service efficiency, improving service precision, expanding service coverage, and promoting interdisciplinary collaboration. These advantages enable social work to more effectively meet the needs of service users and provide new possibilities for innovation in social services. However, the application of AI also comes with a series of risks, such as ethical and privacy concerns, over-reliance on technology leading to a loss of humanistic care, technical barriers and uneven resource distribution, and lagging laws and policies. These challenges not only may undermine the potential benefits of AI but could also negatively impact the professional practice of social work and social equity. Therefore, future development must strike a balance between technological advancement, ethical standards, and policy support to ensure that the application of AI in social work genuinely serves the well-being of society.

6. Looking Ahead

As artificial intelligence (AI) technology continues to advance, its deep integration with social work will drive the intelligent transformation of social service systems. This transformation is not only a technological shift but also an innovation in the philosophy and practice of social services. Social workers must actively adapt to technological changes by acquiring basic knowledge and skills in AI while upholding the professional values and humanistic care central to social work. In a human-machine collaboration model, social workers can focus more on emotional support, value-based decision-making, and solving complex problems, while delegating tasks such as data analysis and automation to AI systems, thereby achieving complementary strengths.

At the same time, policymakers, technology developers, and social workers must work together to promote the healthy development of AI in the field of social work. Policymakers need to accelerate the formulation of relevant laws, regulations, and ethical guidelines, clarifying issues such as data privacy protection, algorithmic fairness, and accountability to provide a solid legal foundation for AI applications. Technology developers should focus on the practical needs of social work, creating AI tools tailored to social work scenarios and ensuring the accessibility and fairness of these technologies. Social workers, in turn, should explore the best ways to apply AI in practice, accumulate experience, and provide feedback to policymakers and developers, fostering a positive feedback loop.

Furthermore, interdisciplinary collaboration will become a key trend in the future development of social work. The deep integration of social work with fields such as computer science, data science, and psychology will provide new approaches and methods for addressing complex social issues. Through interdisciplinary research and practice, social work can better leverage the advantages of AI technology while addressing its limitations, driving the high-quality development of social services.

In conclusion, the integration of AI and social work is an inevitable trend in the future of social services. By seeking a balance between technology, ethics, and policy, social work can better serve society during this intelligent transformation, promoting fairness, inclusivity, and sustainable development.

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References

[1] Hou Mengting, Liu Yang. "SWOT Analysis of the Application of Artificial Intelligence in the Field of Social Work." Industrial & Science Tribune, 2024, 23(16): 38-40.

[2] Wen Jun, Chen Xuejing. "The Theoretical Implications and Practical Challenges of Artificial Intelligence in Social Work." Zhejiang Social Sciences, 2025, (01): 100-111+158-159. DOI:10. 14167/j.zjss.2025.01.011.

[3] Yang Xinzhu. "Big Data Encryption Empowers Social Work Public Opinion Systems: Building a Security Line for Data Analysis." China Broadband, 2024, 20(07): 22-24. DOI:10.20167/ j.cnki. ISSN1673-7911.2024.07.08.

[4] Wang Wenjing, Liu Shilu. "Research on the Application of Artificial Intelligence Technology in the Field of Social Work." Journal of Changchun University of Science and Technology (Social Sciences Edition), 2024, 37(05): 66-73.

[5] Chen Zhirong, Kong Weiming. "Exploration on the Application of Artificial Intelligence in the Field of Social Work." Market Weekly, 2024, 37(35): 22-25.

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Exploring the Path of Empowering Teachers' Professional Development with Deep learning

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Abstract

This paper explores the application of deep Learning of artificial intelligence in the field of education and its impact on teachers' professional development in the digital age. The research has found that this technology brings opportunities for the professional development of teachers, such as integrating resources to provide teaching materials, assisting personalized teaching based on student data, optimizing teaching evaluation and feedback through intelligent assessment, assisting teaching decisions through data analysis, and using online platforms to support teacher training and growth. At the same time, the challenges faced by Chinese teachers in using artificial intelligence in teaching were analyzed in depth, and corresponding solutions were proposed, aiming to provide useful references for promoting teachers' professional growth in the era of artificial intelligence.

Keywords

Artificial intelligence, deep learning, teacher professional development, educational applications.

1. Introduction

In today's digital age, the deep learning of artificial intelligence is changing various fields of society at an unprecedented speed, and education is no exception. Deep learning, with its powerful data processing and intelligent analysis capabilities, has brought innovative teaching methods, abundant teaching resources, and personalized learning experiences to education. The teacher as the core force of education, who's professional development is crucial for improving the quality of education. With the support of deep learning in artificial intelligence, teachers are gradually entering a new era of human-machine collaboration. In the human-machine collaboration mode, teachers and intelligent machines work together to complete teaching tasks, fully leveraging the professional advantages of teachers and the technological advantages of intelligent machines to provide students with more personalized and efficient educational services. The application of deep learning has provided new opportunities and avenues for the professional development of teachers, but at the same time, it has also brought a series of challenges. Thoroughly studying these challenges and exploring effective solutions is great practical significance for promoting the intelligent transformation of education and enhancing teachers' professional competence.

2. Overview of Deep Learning in Artificial Intelligence

2.1. The Development History and Current Status of Artificial Intelligence

The development process of artificial intelligence is full of twists and turns and breakthroughs. Since the term "artificial intelligence" was officially proposed at the Dartmouth Conference in 1956, artificial intelligence has gone through three waves of development. In the first wave, semiotic methods based on abstract symbols and logical reasoning prevailed, and formal methods such as mathematical proofs, knowledge reasoning, and expert systems were applied

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in human-computer interaction processes. However, due to the limited computing speed of electronic computers at that time, the development of artificial intelligence was severely restricted.

In the 1980s, artificial intelligence ushered in a second wave. The traditional semiotic school has developed slowly, and new methods based on probability and statistical models have been boldly attempted. Significant progress has been made in speech recognition and machine translation, and artificial neural networks have begun to emerge in fields such as pattern recognition. However, artificial intelligence during this period was limited by the amount of data and testing environment, and was still in the academic research and laboratory stage, lacking practical value in a universal sense.

The third wave of artificial intelligence originated from the deep learning proposed by Hinton et al. in 2006. In 2015, artificial intelligence algorithms based on deep learning achieved a leap forward in image recognition accuracy, surpassing the human eye for the first time. Subsequently, deep learning has made breakthrough progress in fields such as speech recognition, data mining, and natural language processing. Nowadays, artificial intelligence has been widely applied in various fields such as autonomous driving, intelligent assistants, news recommendation and writing, search engines, robots, etc., and has entered people's social life. At present, the application of artificial intelligence in the field of education is becoming increasingly widespread, bringing new opportunities and challenges to education and teaching. The emergence of intelligent education platforms, intelligent teaching aids, and intelligent learning evaluation systems provides students with more personalized and accurate learning services, and teachers with more intelligent and efficient teaching support.

2.2. Principles and Characteristics of Deep Learning

Deep learning is a machine learning technique based on artificial neural networks, which works by constructing multiple layers of neural networks to enable machines to automatically learn features and patterns from large amounts of data. Deep learning networks typically consist of an input layer, a hidden layer, and an output layer, with the hidden layer having multiple layers. During the training process, data enters the network from the input layer, undergoes processing and transformation in the hidden layer, and finally obtains the predicted results in the output layer. By continuously adjusting the parameters in the network, the error between the predicted results and the actual results is minimized, thereby achieving learning and understanding of the data.

The characteristics of deep learning can be summarized into four points, namely automatic feature extraction, powerful expressive power, data-driven, and end-to-end learning. Firstly, deep learning can automatically extract features from data without the need for manual feature design. This gives deep learning a great advantage in processing complex data, as it can discover hidden patterns and patterns in the data. Secondly, deep learning networks have a multi-layer structure that can perform complex nonlinear transformations on data, thus possessing strong expressive power. It can learn very complex functional relationships and is suitable for various complex tasks. Thirdly, deep learning relies on a large amount of data for training, and the larger the amount of data, the better the performance of the model tends to be. By learning from massive amounts of data, deep learning models can continuously optimize their parameters and improve the accuracy of predictions. Finally, deep learning can achieve end-to-end learning, that is, learning directly from raw data to the final output results without the need for intermediate human intervention and feature engineering. This learning method simplifies the process of model construction and training, improving the efficiency and accuracy of the model.

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2.3. The current application status of deep learning in the field of education

At present, the application of deep learning of artificial intelligence in the field of education is becoming increasingly widespread, covering multiple aspects. Intelligent education platforms, with the help of deep learning, can provide personalized learning plans and guidance for students based on their learning behavior and data, such as the National Smart Education Platform and NetEase Youdao. Intelligent teaching aids can help teachers conduct teaching more efficiently, such as Xiaoyuan Souti, Konwbox, etc. By analyzing students' learning data, accurate teaching suggestions can be provided to teachers.

In terms of intelligent learning assessment, deep learning has achieved more accurate and objective evaluation of students' learning outcomes, such as the intelligent learning assessment systems developed using this technology, such as Alibaba Cloud Tianchi and Tencent Classroom. In addition, the combination of virtual reality (VR) and augmented reality (AR) technology with deep learning creates immersive and experiential learning environments for students, and applications such as VR classrooms and AR textbooks continue to emerge. Intelligent robots and intelligent control technology have also brought new vitality to education. Smart learning partners such as Xiaoai classmate can interact with students and cultivate their language, logic, and social skills.

3. Deep learning empowers teacher development

3.1. The provision of intelligent teaching resources

The deep learning of artificial intelligence can integrate various educational resources and provide teachers with rich and diverse teaching resources. Through the analysis and mining of massive educational data, intelligent education platforms can accurately recommend suitable teaching courseware, videos, test questions and other resources based on teachers' teaching needs and students' learning characteristics. The emergence and improvement of generative artificial intelligence with deep learning models as its core, such as Deepseek ChatGPT、Gauth: AI Study Companion and other artificial intelligence platforms can collect the latest teaching resources for teachers in the shortest possible time, automatically generate teaching outlines, teaching processes, and teaching resource recommendations based on the teaching objectives and content input by teachers, and provide lesson preparation references for teachers. These resources not only cover a wide range of subject knowledge, but also have diverse presentation forms that can meet the needs of different teaching scenarios and student learning styles.

3.2. Personalized teaching assistance

The deep learning of artificial intelligence can collect and analyze students' learning data, including academic performance, learning behavior, learning preferences, etc., in order to gain a deeper understanding of each student's learning status and needs. Intelligent teaching systems can establish personalized learning models for each student. Through these data, teachers can provide personalized teaching support for students, such as developing personalized learning plans, recommending suitable learning resources, and providing targeted tutoring. For example, Seewo Easinote can accurately classify students into different levels based on their learning data, such as test scores, completion of daily assignments, etc., and design assignments that focus on consolidating basic knowledge, increasing difficulty and expansion, and being more challenging and innovative for students with weak, medium, and high-level foundations.

3.3. Optimization of Teaching Evaluation and Feedback

The deep learning of artificial intelligence provides strong support for teachers in teaching evaluation and feedback. Traditional teaching evaluation mainly relies on teachers' subjective judgment and limited exam scores, making it difficult to comprehensively and accurately assess students' learning situation. With the help of intelligent learning assessment systems, teachers can obtain more objective and comprehensive student learning data. These systems can monitor and analyze students' learning process in real time, not only evaluating their knowledge mastery, but also analyzing their learning attitude, effort level, and progress trend. At the same time, the system can provide detailed feedback and suggestions to teachers based on the evaluation results, helping them adjust teaching strategies and improve teaching methods in a timely manner.

3.4. Adjustment of teaching decisions

By utilizing deep learning, teachers can conduct comprehensive and in-depth analysis of students' learning data, understand their learning status, progress, and difficulties, and provide a basis for teaching decisions. By analyzing students' homework completion status, exam scores, classroom performance, and other data, teachers can accurately identify students' learning problems, adjust teaching strategies in a timely manner, and provide personalized tutoring and support for students. Teachers can also use learning analysis techniques to understand students' learning styles and preferences, provide reference for the selection of teaching methods, and improve the pertinence and effectiveness of teaching. Based on students' learning data, teachers can discover that some students have difficulties in mathematical operations, so they adjust the teaching schedule, increase relevant exercises and tutoring, help students overcome difficulties, and improve academic performance.

3.5. Teacher training and professional growth support

The development of deep learning in artificial intelligence has driven changes in the field of education and prompted teachers to constantly update their professional knowledge. Teachers need to understand the principles, applications, and development trends of these new technologies, master relevant teaching tools and methods, in order to better adapt to the new requirements of education and teaching.

Artificial intelligence provides new ways and avenues for teacher training. Online learning platforms and intelligent training systems can customize personalized training courses and learning plans for teachers based on their professional development needs and personal characteristics. These courses are rich and diverse in content, covering various aspects such as educational theory, teaching methods, subject knowledge, etc. Teachers can learn anytime and anywhere. The intelligent training system can also simulate teaching scenarios for teachers to practice and provide real-time feedback and evaluation, helping teachers improve their teaching skills. Teachers can conduct teaching demonstrations in virtual classrooms, and the system will analyze their teaching performance, point out their strengths and weaknesses, and provide improvement suggestions to promote their professional growth. If DingTalk online classroom is used, multiple teaching modes can be selected. Teachers can perform screen sharing, file transfer, online homework grading, and other operations. They can also use its clock in and sign in functions to simulate attendance management in offline classrooms.

Meanwhile, the deep learning of artificial intelligence provides teachers with abundant learning resources and platforms, which they can use for self-directed learning and professional development. For example, teachers can learn about the application cases and practical experience of deep learning of artificial intelligence in the field of education through online courses, academic papers, educational forums, and other channels, and enhance their professional competence.

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4. The realistic dilemma of popularizing artificial intelligence teaching

4.1. Teachers lack the ability to accept and apply new technologies

Although deep learning has shown great potential in the field of education, some Chinese teachers still have shortcomings in their ability to apply the technology. On the one hand, some teachers have limited understanding of artificial intelligence technology, lack basic technical knowledge and operational skills, and do not know how to choose and use AI tools and platforms suitable for teaching. On the other hand, even though some teachers have some understanding of artificial intelligence technology, there are still difficulties in deeply integrating it into teaching, and they cannot fully leverage the advantages of artificial intelligence technology to improve teaching effectiveness. For example, when using intelligent teaching platforms, some teachers simply use them as display tools for teaching resources, without utilizing the platform's data analysis functions to understand students' learning situations and provide personalized teaching.

Some teachers lack understanding of deep learning techniques in artificial intelligence and have a low acceptance of new technologies. They are accustomed to traditional teaching methods and models, believing that the application of new technologies will increase the teaching burden and have doubts about the improvement of teaching effectiveness. In addition, some teachers, although recognizing the importance of new technologies, encounter difficulties in practical application due to a lack of relevant technical knowledge and skills, and are unable to fully leverage the advantages of new technologies.

4.2. The cost of technology application is relatively high

The application of AI deep learning needs certain hardware and software support, such as high-performance computers, intelligent teaching platforms, data analysis software, etc. The purchase, maintenance and update costs of these equipment and software are high, which may be difficult for some schools and educational institutions to bear. In addition, today's AI technology is developing rapidly, the version update iteration speed is extremely fast, and the cost of personnel training is also high. In addition, technical application also needs professional technical personnel to support and maintain. The current information technology maintenance personnel of the school still cannot meet this technical requirement, which increases the human cost of technical application.

4.3. Data privacy and legal issues

The application of deep learning cannot be separated from the support of data, and the data literacy of teachers is crucial for effectively utilizing artificial intelligence technology. However, the data literacy of some teachers currently needs to be improved. Some teachers lack data awareness and do not attach importance to collecting and analyzing students' learning data, making it difficult to obtain valuable information from the data to guide teaching. Some teachers, although able to collect data, lack the ability in data processing and analysis, and do not know how to effectively process and interpret data using data analysis tools, making it difficult to make scientific teaching decisions based on data results.

In addition, with the widespread application of artificial intelligence in the field of education, ethical and legal issues have gradually become prominent, causing difficulties for teachers. In the application process of deep learning in artificial intelligence, a large amount of student learning data and teacher teaching data will be involved. The privacy and security issues of these data are of great concern. Some teachers also have a lack of awareness, which may lead to security risks such as student data leakage. If data is leaked or abused, it may cause harm to the rights and interests of students and teachers. Students' academic performance, learning behavior, and other data may be used for commercial purposes or leaked to third parties,

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affecting their personal privacy and future development. In the process of AI assisted teaching, there may also be algorithmic bias issues, such as the possibility of unfair evaluation of certain student groups by intelligent evaluation systems, which can affect the fairness of education. In addition, when using teaching content generated by artificial intelligence, teachers need to pay attention to copyright issues and avoid infringement.

4.4. The impact on traditional teaching concepts

The application of deep learning in artificial intelligence has brought tremendous impact to traditional teaching concepts. In traditional teaching, teachers are the disseminators of knowledge and occupy a dominant position, while students receive knowledge relatively passively. In the era of artificial intelligence, students can acquire rich knowledge through intelligent learning platforms, and the role of teachers is gradually shifting towards being guides and facilitators. The transformation of this role requires teachers to change their traditional teaching concepts. However, some teachers find it difficult to adapt to this change in their mindset and are still accustomed to traditional teaching models. They have doubts or resistance towards the application of artificial intelligence technology in teaching and are unwilling to try new teaching methods and models, which to some extent hinders the promotion and application of artificial intelligence technology in the field of education

4.5. Educational equity issues

The popularization of deep learning of artificial intelligence involves the issue of educational fairness. In the long run, the popularization of AI technology has the long-term potential to promote education equity. The progress and popularization of AI technology can promote the large-scale coverage of high-quality educational resources, enable excellent educational resources to be shared across regions, and enable students in remote areas to synchronously access the resources of famous urban schools. In addition, in areas where teachers are weak, AI can undertake standardized knowledge teaching tasks, such as experimental video analysis, explanation of basic knowledge points, and release teachers' energy for high-level ability training, such as critical thinking training. This "human-computer cooperation" mode can systematically improve teaching efficiency.

However, in today's technology promotion stage, AI technology may aggravate the imbalance of education. First of all, from the hardware level, the application of technology requires certain equipment and network conditions, and some schools in remote areas or economically underdeveloped areas may not be able to meet these conditions, leading to students being unable to enjoy the educational resources and teaching services brought by new technologies. Secondly, from the perspective of teachers, the application of technology may lead to a further widening of the gap between teachers' teaching levels. Those teachers who can skillfully use technology can provide better teaching for students, while those teachers who lack the ability to apply technology may not be able to keep up with the pace of teaching reform. Finally, from the technical level, the "student portrait" generated by AI system relying on learning data may lead to algorithm bias, such as over optimization of specific learning mode. In the absence of manual intervention, it may solidify the differences in academic performance and form a "data cocoon room", resulting in hidden stratification driven by data. In addition, teachers in remote areas are weak, and it is difficult to provide effective learning guidance, which may exacerbate the urban-rural education gap.

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5. Countermeasures for solving the dilemma of popularizing artificial intelligence teaching

5.1. Strengthen teacher training and promote the deep integration of technology and teaching

5.1.1. Conduct targeted training

Education departments and schools should organize deep learning training for teachers on artificial intelligence. In order to improve teachers' technical application abilities, education departments and schools should strengthen technical training for teachers. The training content should cover the basic concepts of artificial intelligence, common educational application tools and platform usage methods, and strategies for integrating technology and teaching. For example, offering specialized courses to teach teachers how to use artificial intelligence technology for teaching analysis, designing personalized teaching plans, and so on. The training methods can be diversified, including online training courses, offline workshops, expert lectures, etc., to meet the learning needs of different teachers. At the same time, schools can establish technical support teams to provide timely assistance and guidance to teachers in the process of applying artificial intelligence technology. In addition, teachers are encouraged to carry out teaching practices and research based on artificial intelligence technology, continuously improving their technical application ability and teaching level through practice.

5.1.2. Case demonstration and practical guidance

At present, China is actively promoting pilot schools for artificial intelligence, and the results of these schools can serve as excellent cases of the integration of artificial intelligence technology and teaching, providing practical references for teachers. At the same time, professional personnel are arranged to guide teachers' practical applications and help them solve problems encountered during the application process. For example, organizing teachers to observe efficient classroom teaching using artificial intelligence technology, and then allowing teachers to imitate and innovate in actual teaching, with experts providing on-site guidance and feedback.

5.1.3. Establish incentive mechanisms

Schools and education departments can establish incentive mechanisms to commend and reward teachers who actively integrate artificial intelligence technology into teaching and achieve good teaching results, stimulating their enthusiasm and initiative to participate. For example, establishing the "Artificial Intelligence Teaching Innovation Award" to reward teachers who effectively apply artificial intelligence technology in teaching and improve teaching quality.

5.1.4. Layered classification training

Before conducting training, conduct a comprehensive assessment of teachers' technical application abilities to understand their technical foundation and needs. Teachers can be classified into different levels and categories, such as technical novices and skilled individuals, through questionnaire surveys, skill tests, and other methods. Develop personalized training programs based on the different levels and categories of teachers. For technical beginners, focus on training in basic knowledge and skills; For technically proficient individuals, provide more advanced technical application and innovation training. For example, offering basic courses on artificial intelligence for novice technical teachers, including the use of intelligent teaching tools, simple data processing, etc; Provide advanced courses such as the application of artificial intelligence in educational research and the secondary development of artificial intelligence teaching platforms for technically proficient teachers. Establish a mechanism for continuous learning for teachers, provide online learning resources, technology exchange communities, etc., so that teachers can access technical knowledge and exchange application experience at any time. At the same time, the school has established a technical support team to provide timely assistance and support for teachers who encounter problems in the process of technology application.

5.2. Optimize the technology application environment and reduce the cost of technology application

In view of the high cost of technology application, the government and schools should increase the investment in educational technology, optimize the technology application environment, reduce the cost of technology application, and help AI technology popularize in teaching.

5.2.1. At the government level

The government can encourage schools and educational institutions to purchase and apply deep learning related equipment and software for artificial intelligence through financial subsidies, policy support, and other means. At the same time, the government can also guide enterprises to develop low-cost, high-performance technology products suitable for the education sector, reducing the threshold for technology application.

5.2.2. At the school level

Schools can improve the utilization rate of technology equipment and reduce the cost of technology application by integrating resources, sharing devices, and other means. For example, schools can establish a shared intelligent teaching platform for teachers and students to use together, avoiding redundant construction and resource waste.

5.3. Improve data security and privacy protection mechanisms

5.3.1. Strengthen the publicity of laws and regulations

The education department and schools should strengthen the publicity of laws and regulations on data security and privacy protection, enhance teachers' awareness of data security and legal awareness, and make them consciously abide by relevant norms in teaching practice. For example, organizing teachers to study relevant laws and regulations such as the Cybersecurity Law of the People's Republic of China and the Personal Information Protection Law of the People's Republic of China, so that teachers can clarify their legal responsibilities and obligations in the process of data collection, use, and storage.

5.3.2. Standardize the data management process

In response to legal issues arising in artificial intelligence teaching, relevant departments should establish and improve corresponding norms and systems. Develop clear data usage rules to regulate teachers' behavior in data collection, storage, use, and sharing processes, ensuring students' privacy and data security. For example, in the data collection process, explicit consent from students and parents must be obtained, and the purpose and method of using the data must be communicated; In the data storage process, encryption technology is used to ensure the security of data; Strictly limit data access permissions in the data usage process to prevent data abuse. Strengthen the supervision of artificial intelligence algorithms, ensure the fairness and impartiality of algorithms, and avoid adverse effects of algorithm bias on students. At the same time, we will improve intellectual property protection laws and regulations, clarify the copyright ownership of AI generated content, and provide legal protection for teachers to legally use AI teaching resources.

5.3.3. Strengthen technical support

Schools and educational platforms should strengthen technological investment and adopt advanced data security technologies such as firewalls, intrusion detection systems, and data encryption techniques to ensure the security of data during storage and transmission. At the same time, regular security assessments and vulnerability fixes are conducted on data systems to promptly identify and resolve potential data security issues.

5.4. Establishing ethical and moral standards to prevent ethical risks

5.4.1. Develop ethical guidelines

The education department and relevant institutions should establish ethical guidelines for the application of artificial intelligence in the field of education, clarify the ethical standards and behavioral guidelines for the application of technology. For example, it is stipulated that the design of artificial intelligence algorithms should follow the principles of fairness, impartiality, and transparency to avoid algorithmic bias; Emphasize that teachers should maintain humanistic care in education when using artificial intelligence technology and not overly rely on technology.

5.4.2. Carry out ethical education

Conduct ethical and moral education for teachers to enhance their understanding and judgment ability on ethical issues related to artificial intelligence. For example, adding artificial intelligence ethics courses in teacher training, through case analysis, discussions, and other methods, to enable teachers to understand the ethical risks that artificial intelligence technology may bring, and learn how to prevent and respond to these risks in teaching practice.

5.4.3. Establish an ethical review mechanism

Establish an ethical review mechanism for artificial intelligence education applications, conduct ethical reviews on newly developed artificial intelligence education products and applications, and ensure that they comply with ethical and moral standards. At the same time, regular review and evaluation of applied artificial intelligence technologies should be conducted to promptly identify and correct potential ethical issues. For example, establishing a dedicated ethics review committee to review the introduction of intelligent teaching platforms, intelligent evaluation systems, etc. in schools, and only technologies that pass the review can be promoted and applied in schools.

5.5. Promote educational equity and promote balanced technological development

5.5.1. At the government level

In order to promote educational equity and promote the balanced development of deep learning of artificial intelligence in different regions and schools, the government should increase investment in education in remote and economically underdeveloped areas, and improve the educational technology conditions in these areas. For example, the government can provide technical equipment and network support to schools in these areas to help them establish intelligent teaching environments.

5.5.2. At the school level

At the same time, schools should strengthen technical training and support for teachers, improve their technical application abilities, and narrow the technical gap between teachers. In addition, activities such as educational assistance and distance learning can be carried out to promote the flow of resources between schools, so that students in remote areas can also enjoy high-quality educational resources and teaching services.

6. Conclusion

In the wave of digital age, deep learning of artificial intelligence has become a key driving force for the transformation of the education field, and has had a profound and complex impact on the professional development of teachers.

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From a positive perspective, the deep learning of artificial intelligence has opened up vast opportunities for the professional development of teachers. It integrates a massive amount of educational resources, accurately pushes suitable teaching courseware, videos, and test questions for teachers, and also uses generative artificial intelligence to assist teachers in preparing lessons quickly. By deeply mining student learning data, personalized teaching assistance can be achieved, and learning plans and resource recommendations can be customized for students at different levels. The intelligent learning evaluation system makes teaching evaluation more objective and comprehensive, providing real-time feedback to help teachers adjust teaching strategies in a timely manner. Based on data analysis, it provides powerful basis for teaching decisions and enhances the pertinence and effectiveness of teaching. Meanwhile, online learning platforms and intelligent training systems provide new avenues and abundant resources for teacher training and professional growth, helping teachers update their knowledge and enhance their skills.

However, we must also face the numerous challenges faced in the process of popularizing artificial intelligence teaching. Some teachers lack the ability to accept and apply new technologies, making it difficult to deeply integrate them into teaching; The high hardware, software, and maintenance costs required for technological applications limit their promotion and popularization; The frequent occurrence of data privacy and legal issues, such as the risk of data leakage, algorithmic bias, and copyright disputes, has brought many troubles to teachers; Traditional teaching concepts have been strongly impacted, making it difficult for teachers to transform their roles and affecting the application of new technologies; The issue of educational equity has intensified, and the gap in technology application levels between regions and teachers has led to unequal access to educational resources for students.

To effectively address these challenges, promote the intelligent transformation of education, and enhance teachers' professional competence, we have proposed a series of targeted solutions. By conducting targeted training, case demonstrations, practical guidance, establishing incentive mechanisms, and hierarchical training, we aim to comprehensively enhance teachers' technical application abilities and promote the deep integration of technology and teaching. The government and schools will increase investment, optimize the technology application environment, reduce application costs, and provide guarantees for the implementation of technology. Improve data security and privacy protection mechanisms, strengthen the promotion of laws and regulations, standardize data management processes, enhance technical support, and safeguard data security. Constructing ethical and moral standards, formulating ethical guidelines, conducting ethical education, establishing review mechanisms, and preventing ethical risks. In addition, the government has increased investment in education in remote and underdeveloped areas, and schools have strengthened their support for teacher technical training to promote educational equity and promote balanced technological development.

Looking ahead to the future, with the continuous development and improvement of deep learning in artificial intelligence, the education field will usher in more profound changes. Teachers should actively embrace change, continuously improve their professional abilities, fully utilize technological advantages, and provide students with higher quality and personalized educational services. At the same time, education departments, schools, enterprises, and all sectors of society need to collaborate to create a good technology application ecosystem, solve various problems in the process of technology application, ensure the sustainable and healthy development of deep learning of artificial intelligence in the field of education, and lay a solid foundation for cultivating innovative talents that meet the needs of the times.

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References

[1]Yingli Liang, Chen Liu: Analysis of the current situation, typical characteristics and development trend of the application of artificial intelligence education,China Educational Technology, (2018) No.3,p.24-30.

[2]Kai Yu, Lei Jia, Yuqiang Chen, et al. Yesterday, today and tomorrow of deep learning, Computer Research and Development, vol. 50(2013) No.9,p.1799-1804.

[3]Di Wu, Huan Li, Xu Chen: Analysis of the impact of artificial intelligence general large model education application, open education research,vol. 29(2023) No.2,p. 19-25+45.

[4]Mi Wang, Daojie Chen, Jinmei Zhan: Application of deep learning in intelligent learning evaluation, Journal of Hainan Normal University,vol. 37(2024) No.4,p. 522-529.

[5]Ziheng Dong: Research on the application of artificial intelligence technology in education, China Educational Technology Equipment, (2024) No.14,p. 41-43.

[6]Zhen Li, Dongdai Zhou, Yong Wang: The map of educational knowledge from the perspective of "AI+": connotation, technical framework and application research, Journal of Distance Education, vol. 37(2019) No.4,p. 42-53.

[7]Zhiming Yan, Xiaxia Tang, Xuan Qin, et al. The connotation, key technologies and application trends of educational artificial intelligence, Journal of Distance Education, vol. 35(2017) No.1,p. 26-35.

[8]Yanlei Qi, Hongyu Zhou: Technology, system and thought: evolutionary logic of the application of generative artificial intelligence in education, E-education Research, vol. 45(2024) No.8,p. 28-34.

[9]Lei Zhai, Guochun Xing: Research on the application of artificial intelligence technology in education in big data environment, Information Science, vol. 37(2019) No.11,p. 127-132+143.

[10]Bangqi Liu: Development, platform architecture and application design of smart classroom -- from smart classroom 1.0 to smart classroom 3.0, Modern Educational Technology, vol. 29(2019) No.3,p. 18-24.

[11]Yuping Liu, Zhigang Ou, Xiaoqin Wu: Evaluation of the effectiveness of generative AI enabled international Chinese teaching: taking teaching design, HSK simulation question writing and composition scoring as examples, Journal of Research on Education for Ethnic Minorities, (2019), p1-11, https://doi.org/10.15946/j.cnki.1001-7178.20250124.003.

[12]Quanlong Lei, Yulong Huan, Yinlei Bu et al. Visual analysis of personalized education research supported by "artificial Intelligence+deep Learning", China Adult Education, (2021) No.6,p. 30-37.

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The Dilemma and Breakthrough of Medical Insurance Collection for Urban and Rural Residents under Tax Collection

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Abstract

The report of the 20th National Congress of the Communist Party of China (CPC) clearly stated that "improve the basic endowment insurance and basic medical insurance systems", emphasizing "improving the multi-level social security system covering the whole people, coordinating urban and rural areas, fairness, unity, safety and sustainability". After the reform of state institutions in 2018, the responsibility for the collection and payment of social insurance premiums was transferred to the tax department, and the medical insurance collection model for urban and rural residents underwent a fundamental change. As an important part of China's medical security system, medical insurance for urban and rural residents has played an important role in reducing the medical burden of residents and promoting health equity, and is also an important part of the strategy of realizing a healthy China. However, with the rise of medical insurance costs year by year, the grassroots collection work is facing many difficulties, especially after the tax department takes over the collection function, the "last mile" problem of policy implementation is becoming more and more prominent, many residents choose not to pay medical insurance fees or only participate in insurance for the elderly in their families due to economic pressure or insufficient understanding of the policy, resulting in fluctuations in the insurance rate, low collection efficiency, and the sustainability of the medical insurance fund is threatened. The purpose of this paper is to deeply analyze the dilemma of urban and rural medical insurance collection under the tax collection model, and put forward a systematic way to break the situation.

Keywords

Medical insurance for urban and rural residents, Medical insurance financing and collection, Dilemma and breakthrough.

1. Introduction

Basic medical insurance for urban and rural residents is an important part of China's multi-level medical security system, which aims to solve the problem of medical expenses burden on the non-employed population. In 2016, the State Council explicitly required the establishment of a unified medical insurance system for urban and rural residents, expanding the coverage from the registered population to the permanent resident population, and significantly enhancing the inclusiveness of the policy.

In 2018, the coverage of China's basic medical insurance was stable at more than 95%, and the number of insured people exceeded 1.34 billion, and the universal coverage of the medical insurance policy has been basically realized. However, in the process of the steady development of medical insurance reform, China's basic medical insurance system still has a low medical insurance participation rate for some groups due to various reasons, such as the low participation rate of people in the new business form of flexible employment, college students,

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and floating population, and at the same time, there is still a phenomenon of surrender caused by the increase in the financing level of urban and rural residents' medical insurance [1]. As of 2022, 1.04 billion urban and rural residents across the country have participated in medical insurance, with a coverage rate of more than 95%, which has become a key policy tool to protect people's livelihood and promote social equity.

The history of health insurance dates back to the late 19th and early 20th centuries. As an important part of the medical insurance system, medical insurance payment has received extensive attention and research from scholars at home and abroad. After years of reform and construction, China's medical security system has initially established a new type of medical security system and institutional framework. In view of the existing problems such as narrow coverage of social medical insurance, incomplete reform, and insufficient government investment, it is necessary to establish a multi-level medical security system, increase government investment in the field of medical services, accelerate the pace of social medical security legislation, and increase the intensity of medical insurance reform [2]; Financing is an important part of the management of social medical insurance funds, and in order to protect the interests of the insured and promote the sustainable operation of the system, it is necessary to reflect on the financing issue and put forward reasonable suggestions for improving the financing mechanism [3]. In terms of medical insurance collection, the study found that urban residents with poor health conditions were more likely to participate in urban residents' medical insurance [4].

This study provides a new analytical perspective and practical case for the study of social insurance premium collection in the field of public management at the theoretical level. At present, most of the academic research on medical insurance for urban and rural residents focuses on policy design or financial subsidy mechanism, but the systematic discussion on the interaction between departmental coordination, technology adaptation and residents' behavior in the collection process is still insufficient. On the one hand, the standardized design of technical tools is difficult to adapt to the decentralized and differentiated characteristics of medical insurance for urban and rural residents, resulting in digital collection encountering "unadaptability" in grassroots practice. On the other hand, the separation of departmental powers and responsibilities and information barriers have exacerbated the "funnel effect" of policy transmission, which has led to the attenuation of institutional goals in the implementation of the grassroots level.

2. Theoretical Analysis and Research Hypothesis

2.1. Adverse selection effect: a mismatch between health risks and insurance decisions

It is speculated that the willingness of the health risk group to participate in the insurance is lower, and the willingness to participate in the insurance is significantly higher in the group with low self-rated health level, chronic diseases or health risks. Based on the expectation of the economic burden of the disease, this group of people is more inclined to share the risk through medical insurance, forming an adverse selection pattern of "high-risk people take the initiative to participate in insurance, and low-risk people quit". The Lemon Market Theory (Akerlof) suggests that the exit of low-risk groups from the market will upset the balance of the insurance pool, leading to higher premiums and lower participation rates. Due to information asymmetry, groups with higher health risks (such as patients with chronic diseases and people with low self-rated health) are more inclined to participate in insurance to share the risk of medical expenses, while groups with lower health risks may choose not to participate in insurance due to "overconfidence" or cost considerations, resulting in an adverse selection effect.

2.2. Excessive economic burden: an imbalance between financing mechanisms and income growth

There is a negative correlation between income and participation rate, with high-income groups likely to turn to commercial insurance or other forms of protection, while low-income groups are more likely not to participate in insurance due to payment pressure or information barriers. From 2003 to 2025, the standard of individual payment increased by 40 times from 10 yuan to 400 yuan, far exceeding the growth rate of rural residents' income (3.9% per year) in the same period. For a family of five, the annual medical insurance expenditure reaches 2,000 yuan, accounting for 6.7%-15% of the income of low-income families. This rigid payment mechanism poses survival pressure on poor and marginal families, forcing them to choose between "renewing insurance" and "basic living expenses".

2.3. Institutional deficiencies in medical insurance financing and reimbursement mechanisms

Although the reimbursement ratio for hospitalization has been increased to 70%, the matching degree of drug catalogue in primary medical institutions is less than 60%, and the coverage rate of direct settlement for medical treatment in other places is only 85%. The average annual precipitation of medical insurance personal accounts for urban and rural residents has reached 300 billion yuan, but the rate of return is less than 2%, and it has not been possible to establish an accumulation mechanism linked to the payment period. In contrast, the personal account of employee medical insurance can accumulate and enjoy investment income, and this difference in the system raises questions about the fairness, leading some flexible employees to switch to employee medical insurance. When the increase in individual financing standards exceeds the affordability of residents (especially low-income groups), the willingness to participate in insurance decreases significantly, showing a "crowding out effect". Inequitable financing burdens may also exacerbate disparities in participation between urban and rural areas and between regions.

2.4. Institutional cohesion and policy cognitive bias

Grassroots policy publicity mostly stays at the level of reminder payment, and the interpretation of reimbursement rules and chronic disease management is insufficient. Individual insurance decisions are influenced by social networks such as families and communities, and if the surrounding population is generally out of insurance, they may reduce their willingness to participate in insurance through imitation behavior. The lower the residents' satisfaction with the transparency of medical insurance reimbursement and the quality of service quality, the higher the probability of interruption of insurance participation.

3. Analysis of the Current Situation

3.1. Current status of medical insurance coverage for urban and rural residents

(1) The overall coverage rate is high but the structure is unbalanced. The national participation rate has exceeded 95% for five consecutive years, but the regional differentiation is significant. In the east, for example, Zhejiang Province has achieved full participation in the insurance through the "village collective subsidy and financial support", while in a large labor export county in the west, due to the outflow of young and middle-aged people, the actual payment population accounts for only 81% of the registered population.

(2) There are loopholes in the coverage of special groups. floating population: due to the difference between the policies of the place of household registration and the place of work, inter-provincial migrant workers have the coexistence of duplicate insurance and missing

insurance. 43% of a group of construction workers are insured in their hometowns but are unable to enjoy outpatient reimbursement at the construction site. "Sandwich layer" group: marginal families whose income is slightly higher than the poverty line but have no stable income, because they cannot enjoy full subsidy, the risk of insurance loss is four times higher than that of poor families.

(3) Concerns about the sustainability of the system. the growth rate of individual medical insurance payment for urban and rural residents (8.5% per year) far exceeds the growth rate of per capita disposable income of rural residents (6.2% per year)

3.2. Characteristics of the current collection method

The evolution of China's medical insurance policy for urban and rural residents has gone through three stages: system integration (2003-2018), transfer of collection and management rights (2019-2021) and digital transformation (2022-present).

(1) Transformation of the collection subject to the full responsibility of the tax department. According to the unified deployment of the state, the full responsibility collection mode of the tax department has become a clear trend. Under this model, the tax department is fully responsible for the whole process of insurance registration, declaration and verification, collection and recovery, etc., and forms a division of labor pattern of "tax revenue and medical insurance expenditure" with the medical insurance department. Compared with the collection model, the full responsibility collection solves the problem of multi-head management, and through the advantages of the enterprise salary data of the tax system, the payment base can be accurately verified, the phenomenon of underpayment and underpayment can be reduced, and the safety of the fund can be guaranteed.

(2) Diversification of payment channels and precision of subsidy policies. The current collection methods provide online and offline options: online channels include WeChat, Alipay, official social security/tax platforms and bank apps, which support independent payment and payment functions, which are convenient to operate and break through the limitations of time and space. Differentiated funding for special groups: full subsidy for people living in extreme poverty (including orphans and de facto unsupported children); Fixed-rate subsidy for subsistence allowance recipients (340 yuan/person), people who have returned to poverty (300 yuan/person) and monitoring targets (200 yuan/person); Newborns, floating populations and other groups enjoy the flexibility of insurance time, such as the Spring Festival returnees can be extended to the end of February of the following year.

(3) Dynamic adjustment mechanism of financing standards. In 2025, the financing standard of residents' medical insurance will be increased to 1,070 yuan per person (400 yuan for individual payment and 670 yuan for financial subsidies), and a dynamic adjustment mechanism linked to economic development will be established. In some areas, a gradient design of financial subsidies has been implemented for groups in need.

4. Questionnaire Analysis

4.1. Data source

We visited some villages in Bengbu City, Anhui Province, conducted multi-subject interviews with grassroots staff and villagers, and distributed questionnaire interviews in the research area, and collected a total of 609 valid questionnaires.

4.2. Analysis of the basic situation of the survey respondents

The descriptive statistics of the survey sample show that the respondents are mainly female (56.25%), and the proportion of male is slightly lower (43.75%), and the gender distribution is relatively balanced; In terms of hukou types, agricultural hukou accounted for the highest

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proportion (45.72%), non-agricultural hukou (16.78%), and unified hukou accounted for 37.5%, indicating that rural and urban-rural residents accounted for a relatively large proportion of the sample. The education level is polarized: the population with a bachelor's degree or above accounts for the absolute majority (59.87%), followed by a college degree (15.46%), while the proportion of people who have not gone to school, primary school and junior high school is less than 5%, and the proportion of high school/technical secondary school/vocational high school group (17.11%), the overall education level is relatively high. The distribution of income levels is relatively scattered, with a very low proportion of income groups below 500 yuan, but there may be a high concentration in the range of 5,000-999 yuan and above 10,000 yuan, and the middle-income 1,000-4,999 yuan population covers multiple sub-segments, suggesting that there is a certain stratification phenomenon in the sample economic conditions. It is worth noting that the highly educated population (bachelor's degree or above) and the agricultural hukou population form significant structural characteristics in the sample, which may have a differentiated impact on the willingness and ability to pay for medical insurance, for example, the highly educated group may be more inclined to choose a higher level of medical insurance to match their health security needs, while the agricultural hukou group may be limited by the income level or the scope of policy subsidies to choose the basic payment level. On the whole, the sample structure has the characteristics of urban-rural diversity, educational advantages and income stratification, which provides a multi-level reference dimension for the subsequent analysis of the influencing factors of medical insurance payment.

4.3. Descriptive statistical analysis

(1) Statistics on family income and payment burden. Most families feel the burden of medical insurance costs. According to the analysis of the questionnaire data, the majority of families feel that the burden of medical insurance payment is moderate, which indicates that the pressure of medical insurance payment is not very heavy among the respondents, but it is not easy either. Further analysis shows that there is a correlation between households' perception of the burden of medical insurance contributions and household income level. Specifically, households with higher incomes are more likely to perceive the burden of health insurance contributions as lighter, while households with lower incomes are more likely to feel the burden of contributions. Among the families who paid for medical insurance, 52.70% thought that the burden was average, and only 13.51% thought that the burden was very light, indicating that paying medical insurance could help reduce the financial burden of families. For example, among those with an annual household income of more than 10,000 yuan, a higher proportion of respondents said that the burden of medical insurance contributions was "very light" or "relatively light". Conversely, among households with lower or no fixed incomes, more respondents said the burden of health care contributions was "average" or "heavier". This correlation reveals the important role of income level in the family's ability to pay for medical insurance, and also suggests that policymakers should fully consider the affordability of families with different income levels when considering adjusting the medical insurance payment standard, so as to ensure that the medical insurance system can cover a wide range of people without causing excessive economic pressure on low-income families.

(2) Respondents' satisfaction with the medical insurance collection index. The descriptive statistical results of the medical service satisfaction survey show that the satisfaction of the respondents with the eight indicators shows the distribution characteristics of "high in the middle and low in the middle", and the satisfaction structure of each dimension tends to be the same but there are slight differences. Specifically, the two intermediate levels of "general" and "satisfied" generally accounted for more than 60%, among which the total medium satisfaction of medical transportation convenience and doctor's attitude was the highest, reaching

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66.44%and 64.48%, respectively, while the intermediate satisfaction with the medical insurance payment policy accounted for the lowest proportion (58.53%), suggesting that there is room for improvement in this field. In the extreme evaluation, the proportion of "very dissatisfied" is concentrated in the range of 6.64%-8.64%, and the medical insurance policy item is the most prominent (8.64%). The overall data shows that basic service facilities (such as transportation and equipment) have been highly recognized, but there are still obvious evaluation differentiation in the fields involving policy implementation (payment and reimbursement) and humanistic care (service attitude), and this structural difference provides a quantitative basis for optimizing the quality of medical services.

4.4. Cross-analysis

4.4.1. Correlation between income level and medical insurance payment status

There are significant differences in medical insurance payment behavior among different income groups, and the following structural characteristics are presented: the overall trend clearly reflects the decisive impact of income stratification on medical insurance coverage.

(1) Positive correlation between income level and payment rate. With the increase of income level, the proportion of medical insurance payment shows a significant upward trend. Among the "no income" group, the contribution rate is only 20%, while the non-payment rate is as high as 53.13%, reflecting the direct impact of economic ability on insurance participation. In the highest income range of "more than 5,000 yuan", the payment rate jumped to 87.23%, and the non-payment rate plummeted to 6.98%. This suggests that income level is a core factor driving the decision to enrol – with higher income groups being more able to afford and having a higher need for health care.

(2) Income distribution characteristics of the "not applicable" group. The proportion of the "not applicable (paid employee medical insurance)" group reached a peak of 46.88% in the middle-income range (such as "2000-2999 yuan"), while the proportion of the extreme income group (such as "no income" and "more than 5000 yuan") decreased significantly (0% and 7.69%, respectively). This phenomenon may reflect two demographics: Middle-income group: more people join the employee medical insurance through formal employment channels, forming a "substitution effect" with the resident medical insurance. High-income groups: Despite their higher incomes, due to non-fixed labor relationships such as flexible employment and self-employment, employees' medical insurance coverage is insufficient, so they choose to supplement with resident medical insurance.

(3) Abrupt changes in key income thresholds and insurance behaviors. Income less than 500 yuan: the payment rate is only 20%-40%, and the non-payment rate is generally more than 50%, highlighting the practical dilemma of low-income groups being forced to give up insurance due to economic pressure. After the income crosses 1,000 yuan: the payment rate jumps from 59.26% (500-999 yuan) to 72.09% (1,000-1,999 yuan), and the non-payment rate decreases by 17 percentage points (from 37.04% to 20.93%), indicating that 1,000 yuan may be the "economic threshold" of the willingness to participate in insurance, and the ability to participate in insurance is significantly enhanced after the income exceeds this threshold. ncome over 3,000 yuan: The payment rate continued to climb to 87.23%, while the proportion of "not applicable" decreased to 7.69%, indicating that high-income groups are more inclined to actively choose resident medical insurance rather than relying on employee medical insurance.

(4) Structural contradiction of the unpaid group: the non-payment rate is the highest among the "less than 500 yuan" group (53.13%), while the "1000-1999 yuan" group still has a 20.93% unpaid ratio. Combined with the change in the "not applicable" ratio, two types of non-payment motives can be inferred: Low-income groups: forced to give up insurance due to lack of financial ability (rigid constraints). Middle-income group: There may be subjective obstacles (elastic

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constraints) such as insufficient awareness of medical insurance policies and complex payment processes.

4.4.2. Education level affects income and medical insurance payment

The higher the education level, the higher the medical insurance payment rate. Among the respondents, 55.86% of those with a bachelor's degree or above have paid for the 2025 medical insurance for urban and rural residents, while only 1.35% and 2.25% of the respondents who have not gone to school or have a primary school education have paid the medical insurance. This indicates that there is a positive correlation between education level and medical insurance payment, and the higher the education level, the stronger the willingness and ability to participate in medical insurance.

4.4.3. Correlation between residents' perception of the impact of the increase in medical insurance contributions and their income level

Most residents believe that the increase in payment will affect the payment in the next year. In the questionnaire, 55.26% of the respondents said that the annual increase in the amount of individual medical insurance contributions will affect their contributions in the next year, which indicates that most residents are concerned about the changes in medical insurance contributions. According to the cross-analysis results of the questionnaire data, residents' perception of the impact of the increase in medical insurance contributions is especially obvious among the low-income and unpaid groups.

5. Dilemmas and Challenges

5.1. System and implementation level

(1) The lack of cross-departmental coordination mechanism and the lack of data sharing between tax. Medical insurance, community and other departments lead to untimely and inaccurate information transmission, which affects the efficiency and accuracy of medical insurance collection. For example, it is difficult for the tax department to obtain information such as the medical insurance payment base and payment period of the insured in a timely manner, and the medical insurance department cannot timely understand the payment status of the payer, which brings difficulties to the collection work. This kind of information asymmetry not only increases the workload of the tax department, but also may lead to the damage to the rights and interests of the insured.

(2) The fragmentation of policy publicity. The deviation of urban and rural residents' cognition of payment standards and reimbursement policies, is mainly caused by the fragmentation of policy publicity. On the one hand, the publicity channels are scattered, and the tax, medical insurance and other departments work independently, lacking a unified publicity platform and coordination mechanism; On the other hand, the publicity content is not systematic and comprehensive, which leads to the inaccurate understanding of the medical insurance policy by urban and rural residents, which affects the enthusiasm of participating in the insurance. This kind of fragmentation of publicity not only increases the difficulty of policy promotion, but also may lead to the misunderstanding of the medical insurance policy by the insured, which in turn affects the participation rate.

5.2. Technical and service level

5.2.1. The compatibility of the payment system is low

The current payment system has certain limitations in design and function, and it is difficult to operate for special groups such as the elderly and residents in remote areas. For example, some payment systems lack a simple and easy-to-use operation interface and voice prompt function, and the elderly are prone to operational errors when using them; The unstable network signal

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in remote areas will also affect the normal use of the payment system. This technical deficiency not only increases the difficulty of the payer's operation, but also may lead to the failure of the payment, affecting the smooth progress of medical insurance collection. In addition, with the development of digital technology, tax authorities need to constantly update and improve the payment system to adapt to the new payment needs.

5.2.2. Insufficient grassroots service capacity

Community workers assume important responsibilities in the collection of medical insurance, but due to the lack of grassroots service capacity, it has brought many difficulties to the work. On the one hand, community workers have a heavy workload, not only to be responsible for the collection of medical insurance, but also to undertake other community affairs, resulting in distraction of work. On the other hand, the lack of training of community workers, the lack of proficiency in medical insurance policies and payment systems, and the inability to provide timely and accurate consulting services to payers, affecting the experience of the insured. This lack of grassroots service capacity not only affects the efficiency of medical insurance collection, but also may lead to a decline in the satisfaction of the insured with medical insurance services. For example, in some communities, staff need to deal with multiple tasks such as medical insurance collection, social security, and community services at the same time, and the work pressure is greater.

5.3. Obstacles to special groups participating in insurance

5.3.1. Floating population

The floating population's employment is unstable and their place of residence changes frequently, resulting in difficulties in their insurance registration and payment. It is difficult for the tax authorities to accurately grasp the insurance information of the floating population, which brings challenges to the collection and payment work. This information asymmetry not only increases the difficulty of the tax department's work, but also may lead to the inability to protect the insurance rights and interests of the floating population. For example, some migrants are unable to participate in insurance in time due to their lack of understanding of local medical insurance policies when they are employed in other places.

5.3.2. Low-income groups

Low-income groups have greater economic pressure and limited ability to bear medical insurance contributions. Although the government has introduced some subsidy policies, due to insufficient publicity and complicated application procedures, some low-income groups still fail to enjoy the corresponding subsidies, which affects their enthusiasm to participate in insurance. This economic pressure not only makes it more difficult for low-income groups to enroll in insurance, but also may lead to their lack of access to the health care they deserve. For example, some low-income groups are unable to apply for health insurance subsidies in a timely manner due to a lack of necessary information and guidance.

5.3.3. Persons with disabilities

Persons with disabilities face many inconveniences in the process of enrolling in insurance, such as mobility difficulties and communication barriers. Tax authorities and community workers do not pay enough attention to the special needs of people with disabilities, and lack of targeted service measures, resulting in a low participation rate of people with disabilities. This lack of service not only affects the insurance experience of people with disabilities, but can also lead to them not being able to enjoy the health care they deserve. For example, some people with disabilities have difficulty accessing a community service center due to their limited mobility.

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6. Suggestions

6.1. Layered policies and precise guarantees

Based on the correlation between the income level collected in the questionnaire data and the status of medical insurance contributions, the following recommendations can be given:

(1) Targeted subsidies for low-income groups. Implement tiered subsidies for low-income groups (such as reducing premiums in proportion to income) to lower the economic threshold.

(2) Strengthen policy publicity for middle-income groups. Simplify the insurance process for middle-income groups, and simplify the insurance process for 1 this group (such as one-click payment on mobile phones); Promote the benefits of medical insurance reimbursement (such as hospitalization cost sharing) through typical cases to enhance the motivation to participate in insurance.

(3) Optimize system convergence. For "inapplicable" groups (such as flexible employees), explore the mechanism for the interconnection of medical insurance accounts between employees and residents to reduce insurance leakage; Strengthen cross-departmental data sharing to identify people who are repeatedly enrolled or who have missed insurance. For middle-income "not applicable" groups (such as those with flexible employment), explore the mechanism of medical insurance account sharing to reduce institutional insurance omissions.

(4) Data calibration and policy support. Verify whether the high contribution rate of "non-income" groups is real, and improve the accurate identification of medical assistance recipients; Implement full payment on behalf of extremely poor families to avoid breaking the insurance due to financial difficulties.

Income level is the core factor affecting the willingness of urban and rural residents to pay for medical insurance, and there is a significant positive correlation between economic ability and insurance participation behavior. Policies need to be implemented at different levels: "supporting" low-income groups, "improving efficiency" for middle-income groups, and "stabilizing demand" for high-income groups, and at the same time reducing blind spots through system optimization, so as to achieve the goal of universal medical insurance coverage.

6.2. Behavioral decision-making model construction - structural equation model analysis of the influencing factors of insurance demand

Based on the dual perspectives of household willingness to pay and behavioral decision-making, this study constructs a structural equation model with four latent variables: personal economic status, policy awareness level, service satisfaction and family support strength. The software uses maximum likelihood estimation to verify the following hypothetical paths: Household economic status has a positive impact on willingness to pay. The level of policy awareness indirectly affects the willingness to pay through satisfaction. Service satisfaction has a direct positive effect on willingness to pay. Household support moderates the relationship between economic status and willingness to pay. The results of the path analysis are as follows:

6.2.1. The dominant role of economic conditions: the binary effect of income growth and contribution burden

Income-Willingness to Pay Elasticity Mechanism: Empirical data show that for every 1 unit increase in household monthly income, the willingness to pay increases by 0.312 units ($P<0.001$), which confirms the "income effect" in classical economic theory. According to research by the Lancet Public Health Division, when household disposable income exceeds the basic subsistence line, health care spending shows a significant marginal increase. This shows that the improvement of economic conditions not only directly enhances the ability to participate in insurance, but also indirectly enhances the willingness to pay through the "strengthening of risk aversion preference".

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6.2.2. The mediating effect of policy cognition: the transmission path from information acquisition to satisfaction

(1) The nonlinear relationship between policy awareness and satisfaction: the satisfaction increased by 0.435 units ($P<0.001$) for each increase in the number of policy understanding channels, but the marginal benefit showed a decreasing trend (quadratic coefficient $\beta=-0.021$, $P=0.033$). This is in line with the AIDMA information dissemination model, where the marginal utility of new channels decreases significantly when the basic information coverage reaches 60%. A typical case shows that a county increased satisfaction by 32% through a combination of "village-level radio and short video", but when the publicity coverage rate exceeded 85%, the growth rate dropped to 9%.

(2) The key impact of cognitive quality: The study further found that only 38.7% of the respondents could accurately understand the mechanism of "pay more and get more" ($\chi^2=15.23$, $P=0.000$). In-depth interviews show that there is a "technical jargon barrier" in policy interpretation - 26.4% of farmers misunderstand the "minimum payment line" as the "cap line". This confirms Kahneman's prospect theory, which states that a complex framework for calculating returns can lead to distorted decision weights.

6.3. Service shortcomings: the paradox between the convenience of payment and the efficiency of the reimbursement process

(1) Technical dividends of payment convenience. For every 1 point (1-5 point scale) increase in payment convenience score, the willingness to pay increases by 0.182 units ($P<0.01$). After the Alipay medical insurance payment function was launched, the insurance participation rate of a city increased by 22% within 3 months, verifying the "digital divide bridging effect". However, it is necessary to be wary of "technology dependence" - 41.3% of the elderly over 65 years old still rely on offline window payment (MIIT, 2023).

(2) Institutional obstruction of the reimbursement process. Although satisfaction with the reimbursement process had no significant impact on willingness to pay ($\beta=0.072$, $P=0.124$), the qualitative study found that 43.6% of the respondents needed to prepare 10-15 documents, with an average reimbursement period of 28.7 days, and 32.1% had encountered the cyclic dilemma of "incomplete materials-supplementary submission-re-review", which was in line with the assumption of "institutional transaction costs" in the new public service theory, that the hidden costs caused by the complexity of the procedures may offset the explicit economic burden.

6.4. Establish a real-time sharing platform for tax-medical insurance-community data

(1) Policy and mechanism guarantee. Refer to the memorandum of cooperation signed between the State Administration of Taxation and the National Healthcare Security Administration to clarify the legal basis and policy framework for tax, medical insurance and community data sharing. Establish cross-departmental working groups and coordination mechanisms, establish a joint meeting system and a daily contact mechanism, and promote data sharing step by step. Combined with local conditions, explore new models of data sharing, such as the "tax and medical joint construction" model in Hunan Province, and improve the efficiency of data sharing through joint policies and services.

(2) Technical architecture design. Rely on existing information systems, such as the electronic tax bureau, the national medical insurance service platform, etc., to build a data sharing platform. Integrate basic data of taxation, medical insurance, and communities, such as resident insurance information, medical expense reimbursement data, and community population information. Cloud computing, big data, and blockchain technology are used to ensure real-time updates and secure sharing of data.

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(3) Data security management. Data sharing is carried out under the condition of personal authorization of the user to ensure the legitimacy of data use. Establish a data quality management mechanism to monitor and evaluate the whole process of data collection, aggregation, sharing, and application in real time. Strengthen data encryption, access control, and security audits to prevent data leakage. Regularly evaluate the operation effect of the data sharing platform and optimize the functions of the platform. Based on user feedback and actual operation, the data sharing model will be continuously improved.

(4) Service and application. Through the data sharing platform, optimize services such as the collection and payment of basic medical insurance premiums, individual income tax and special additional deductions for serious illness medical treatment. Use shared data to provide accurate services for community residents, such as family doctor contracting, health service push, etc. Through data analysis, accurate policy push can be realized.

6.5. Implement a "one-stop" payment service to simplify the process of supplementary payment and inquiry

(1) Optimize the payment service model, promote departmental collaboration and data sharing. Realize the seamless connection between online and offline payment services. Provide a variety of payment channels, such as WeChat, Alipay, APP, etc., to facilitate users to complete payment anytime and anywhere. Strengthen the cooperation of taxation, medical insurance, human resources and social security departments and other departments to achieve joint business operations. Jointly develop data interaction interfaces to realize data "collected by one party and shared by both parties", reducing repeated entry and information lag.

(2) Simplify the supplementary payment and inquiry process. Provide online supplementary payment and inquiry channels, enterprises and individuals can directly apply for supplementary payment through the official website of the Social Security Bureau or relevant platforms, and inquire about the amount and process of supplementary payment. The system automatically generates bills and pushes payment reminders to prevent users from incurring late fees due to forgetting to pay bills. At the same time, it provides clear fee details and payment record query functions to enhance transparency.

6.6. Strengthen policy publicity and public participation

6.6.1. Hierarchical publicity strategy: targeting young people (new media) and the elderly

(1) For young adults (18-50 years old): highlight the attributes of risk prevention and mutual aid. For young and middle-aged people, the disease risk prevention function of medical insurance is emphasized, indicating that even if the physical condition is good, insurance can reduce the financial burden in the event of sudden illness. At the same time, the social mutual aid nature of medical insurance should be publicized and encouraged to provide protection for families and society. Use new media such as WeChat official account and short video platform to produce a small video of the medical insurance participation process, and show the necessity of insurance through case analysis. At the same time, it will remind the insurance payment through SMS, MMS and other means. Publicize the incentive policy for continuous insurance, such as after 4 consecutive years of insurance, the payment limit of serious illness insurance can be increased by 3,000 yuan for each additional year.

(2) For middle-aged and elderly people (over 50 years old): For middle-aged and elderly people, especially those with reduced mobility, provide door-to-door services to help them complete the medical insurance payment process. At the same time, consultation service points are set up through communities and village committees to explain medical insurance policies face-to-face. Emphasizing the role of medical insurance in protecting chronic diseases and serious diseases, as well as the convenience of seeking medical treatment, such as promoting the

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inclusion of village clinics in medical insurance designation and direct settlement. In addition to offline publicity, traditional media such as television and radio are used to produce easy-to-understand promotional content to help middle-aged and elderly people better understand medical insurance policies.

6.6.2. Develop age-appropriate and dialect payment applets Interface design optimization

font and contrast: use large, non-serif fonts, font size greater than 16 pixels, and the contrast between text and background is at least 4.5:1 to ensure that the information is clear and easy to read. Interaction design optimization: Add voice prompts and assistance, learn from the WeChat elderly medical treatment mode, and provide voice prompts throughout the process to help the elderly complete the payment operation. According to the usage habits of the elderly, common functions such as registration, payment, and inquiry reports are placed on the home page. Allow children to bind family accounts to help seniors complete payment payments or view medical records. Staff who can speak the local dialect are assigned to help the elderly better understand the health insurance policy and the payment process. For the elderly and disabled with reduced mobility, door-to-door payment and payment services are provided.

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References

[1] Xie Mingming. Challenges and countermeasures of full coverage of basic medical insurance in China[J]. China Medical Insurance, 2020 (1):13-17.

[2] Qiu Yulin. The Current Status and Improvement of China's Medical Security System[J]. Journal of Beijing Vocational College of Labor and Social Security, 2004, (03): 11-16.

[3] He Wenjiong, Yang Yixin. Analysis of Several Issues Regarding Financing of Social Medical Insurance[J]. China Medical Insurance, 2011, (03): 34-37.

[4] Zang Wenbin, Zhao Shaoyang, Liu Guoen. The Test of Adverse Selection in Urban Basic Medical Insurance[J]. China Economic Quarterly, 2013 (1): 47-70

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Why does India still face challenges in addressing national development issues despite nearly seven decades of democratization?

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Abstract

India's seven-decade-long democratic journey has sustained political stability yet struggled to resolve persistent governance challenges, including economic disparities and gender inequality. This study employs a postcolonial framework and mixed-methods analysis to interrogate why democracy—despite enabling post-1991 market reforms and economic growth—fails to address systemic issues. Findings reveal that pre-reform stagnation stemmed from protectionist policies and bureaucratic inefficiencies, not democracy itself, while post-liberalization progress highlights the system's adaptability. However, entrenched gender discrimination, rooted in patriarchal norms and low female political representation, exposes democracy's inability to counter horizontal social oppression. Colonial legacies, socio-cultural fragmentation, and institutional inertia further constrain governance efficacy. The research concludes that India's democratic system operates within bounded limitations, requiring complementary reforms in economic inclusivity, social justice, and participatory governance to bridge the gap between procedural democracy and equitable development.

Keywords

Indian democracy, governance challenges, economic liberalization, gender inequality, postcolonialism, institutional reform.

1. Introduction

In political science, a political system is defined as the institutional framework governing the exercise of political authority within a state. It includes government structures, decision-making processes, legal frameworks, and mechanisms for civic participation [1]. Among these, the democratic system is widely regarded as a cornerstone of modern governance, embodying principles such as political equality, individual liberty, and popular sovereignty (Ibid, 2014).

India's adoption of a representative democracy in 1947 marked a deliberate effort to safeguard individual freedoms and social justice. While many postcolonial nations embraced democracy after WWII, the 1960s and 1970s witnessed a second wave of democratic regression globally, leading to the collapse of nascent democracies in countries such as Pakistan, Brazil, and Greece. Notably, India's democracy has persisted with remarkable resilience, interrupted only by a 21-month emergency period (1975–1977).

Scholarly debates on the conditions for democratic sustenance highlight factors such as societal cohesion [2], Political neutrality and checks on power [3], and fiscal transparency [4]. However, India's historical context challenges these theoretical frameworks. At independence, India had a literacy rate of only 18.3% [5,6], a small middle class (10% of the population), and a deeply fragmented society marked by linguistic, religious, and caste diversity [7]. Despite these

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obstacles, India's democracy has endured, underscoring its capacity to preserve democratic principles in adverse conditions.

Yet, democratic resilience does not equate to effective governance. India continues to face significant governance challenges despite decades of democratic institutions. Economically, India lags behind China, with its 2018 per capita GDP at $2010 compared to China's $9771 [8]. Infrastructure deficiencies, such as overcrowded transportation systems and delayed sanitation improvements, highlight governance inefficiencies. Public service quality also remains a critical concern, with India's 2019 infant mortality rate at 30 per 1000 births compared to China's 7, and a life expectancy gap of 8 years [9]. Additionally, political challenges persist, including the prevalence of criminal charges among parliamentarians—233 out of 539 winning members in the 2019 elections faced such charges, marking a 44% increase since 2009 [10].

These issues raise a critical question: Why has India's seven-decade-old democracy failed to overcome persistent governance challenges? Does its democratic framework inherently limit its capacity to address these dilemmas? This paper examines India's governance challenges, focusing on economic progress and gender equality as key metrics. It explores the limitations of India's democratic system in addressing these challenges and evaluates the broader implications for democratic governance, see Figure 1.

Figure 1: Electoral democracy (Devasahayam,2022)

2. Organization of the Text

The relationship between democracy and national development has long been a central topic in political science and economics. While India's democratic system is often criticized for its perceived negative impact on national development, the literature review reveals that democracy is not the sole determinant of a nation's progress. Instead, national development is shaped by a complex interplay of factors, including economic policies and gender dynamics. Overemphasizing the role of India's democratic system in its developmental challenges risks oversimplification.

Scholars offer diverse perspectives on democracy. Rawls (2020) defines it as an institutional framework ensuring individual liberties, fair cooperation, and improving conditions for the disadvantaged [11]. Stout (2003), however, emphasizes its cultural dimensions, particularly the role of public reason [12]. For this study, democracy is conceptualized as a political system.

National development is equally multifaceted. Smith (2010) underscores the significance of economic development in achieving national prosperity and strength [13], while Peet and

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Hartwick (2015) argue for a broader view encompassing socio-economic transformations such as gender equality and political systems [14]. Sen (2001) further expands this framework by introducing goals like political freedom, economic opportunity, social security, and rights protection, which have gained significant traction in contemporary discourse [15].

Given these theoretical divergences, this paper adopts economic development and gender equality as key metrics for evaluating India's national development. It examines whether deficiencies within India's democratic system contribute to its developmental challenges, thereby exploring the limitations of democratic governance in addressing these issues.

2.1. Does democracy necessarily lead to national development?

Does democracy necessarily lead to national development? India, the world's most populous democracy with over 1.3 billion people, serves as a critical case study [16]. Since independence in 1947, India has maintained a Western-style democratic system rooted in British traditions, despite periods of authoritarian rule (e.g., the 1975–1977 Emergency). Scholars remain divided on whether this democratic framework has advanced national development.

Proponents of democracy highlight its positive correlation with development. Hadenius (1992) argues that democratic systems foster social modernization, legitimacy, and governmental accountability, creating favorable conditions for national progress [17]. Sen (1999) further emphasizes that democracy enhances human development by expanding individual freedoms and capabilities, thereby elevating societal well-being [15].

Critics, however, identify significant limitations. Przeworski et al. (2000) contend that democratic systems alone may not suffice to drive economic progress, often leading to political fragmentation, policy inconsistency, and governance inefficiencies [2]. Additionally, democratic processes can intensify political competition, increase discord, and raise fiscal pressures [18]. Furthermore, the universal application of democratic models sometimes overlooks contextual specificities, overly emphasizing Western values at the expense of local circumstances [19]. Thus, democracy may not inherently guarantee prosperity and can exacerbate social divisions.

While a robust political system is essential for stability and prosperity, overemphasizing its role can obscure the contributions of diverse political actors within governance structures. This paper examines whether India's democratic framework has hindered national development, focusing on economic progress and gender equality as key metrics.

2.2. The role of political systems is not limitless

The role of political systems is not limitless. A nation's political authority is structured according to its objectives and functions, ultimately shaping its political system [20]. Huntington (1993) describes a political system as the framework for organizing and operating power within a nation [21], while Easton (1957) breaks it down into inputs, outputs, environment, feedback, and conversion processes. Based on these perspectives, a political system should not be seen as the sole determinant of governance efficiency, as its outcomes are influenced by multiple factors [22].

Fukuyama (2014) introduces the concept of the "limited state," emphasizing that all political systems, democratic or otherwise, have inherent limitations [1]. Liu (2022) further explores this idea, noting that democratic systems rely on the active participation of political actors [7]. When these actors are disengaged, democracy does not automatically ensure better governance. Thus, the influence of political systems is bounded, and democratic systems merely serve as mechanisms to facilitate diverse political activities.

The impact of political systems on national development is therefore subject to limitations and uncertainty. It results from the interaction of various factors, including policy choices, continuity, public expenditure, education, human rights, trade, and foreign direct investment [23]. This paper focuses on India's post-independence economic policies and gender inequality

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issues. Historical economic policies reveal the trajectory of national development, highlighting factors that drive or hinder growth. Gender equality, being a human rights concern, is also crucial for democratic systems. Examining these two aspects enhances our understanding of how India's democratic system influences national development and the challenges it faces.

2.3. The Role of Economic Policies in Democratic Performance

When India faces economic challenges, its democratic political system often comes under scrutiny. Bhagwati (1993) criticizes India's democratic system for its complexity, which hinders efficient economic reforms and impedes progress [24]. Conversely, Dreze and Sen (2002) argue that India's democracy has provided the necessary institutional framework for economic development and reform [25]. However, these perspectives may overstate the political system's role while neglecting historical and economic structures. In reality, misguided economic policies have been the primary obstacle to India's economic development [26]. Drawing from Easton's (1957) theory, ill-suited economic policies introduced into India's democratic system have failed to yield favorable outputs. Thus, the political system is not the sole determinant of economic development; the discord between India's democratic system and inappropriate policies has caused economic stagnation.

Since 1947, India's economic policies have evolved from a planned economy to a mixed strategy. Often misaligned with socio-economic conditions and the political system, these policies resulted in slow growth until the 1991 Rao reforms, which shifted India toward market-oriented policies and spurred growth [7]. Specifically, India's economic growth rate increased from 5.6% (1980–1990) to 6.6% (1990–2010), making it one of the world's fastest-growing economies [27]. Notably, India has experienced consistent growth since 1947, with no prolonged periods of negative growth, and significant progress has been achieved when rational policies were implemented.

Inclusive political systems like democracy can promote inclusive economic systems, such as free markets, thereby driving growth [28]. The Rao reforms, enacted within a democratic framework, included industrial and trade liberalization, partial privatization, and increased globalization [29]. These measures, characterized by market economy features, suggest that India's democratic system provided the political foundation and social support necessary for economic reforms. Through electoral mechanisms, the Rao government gained popular support and political legitimacy [30]. In conclusion, characterizing India's democratic system as an impediment to economic development is inaccurate; instead, democratic politics may have facilitated economic progress to a certain extent.

2.4. Gender discrimination and democratic dysfunction

In addition to economic development, gender equality is a critical measure of national progress. Examining the interplay between India's gender discrimination issues and its democratic system reveals insights into democratic governance's impact on national development. Gender equality is not only central to democratic politics but also intertwined with human rights and social equity, which underpin democratic ideals. India's democratic framework, established at independence, enshrines equal rights for all individuals, irrespective of background [31]. Women's political participation is vital for advancing gender equality. It focuses on both individual women's rights and systemic gender equity [32]. While democratic systems and gender equality generally exhibit a positive relationship, this link is mediated by historical and political contexts [33]. India's democracy has blended social equity movements with liberal democracy and indigenous norms [34].

Despite these efforts, gender inequality remains severe in India. The 2022 Global Gender Gap Report ranked India 135th among 146 countries, with a Gender Inequality Index of 0.629 [35]. Deep-rooted socio-cultural traditions and patriarchal systems perpetuate gender inequality by

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reinforcing male superiority and female subordination [36]. These norms, enforced through non-political means, represent a pervasive form of social oppression [37], contradicting democratic ideals and undermining India's democratic politics.

In summary, scholarly work on democracy and national development highlights both the potential benefits and limitations of democratic systems. India's democratic governance faces challenges and opportunities, particularly in addressing gender discrimination, which poses significant obstacles to democratic implementation. A comprehensive understanding of India's democratic governance requires examining these multifaceted interactions.

2.5. Research Gap

Existing research on Indian democracy often examines governance challenges—such as economic stagnation, gender inequality, and institutional flaws—in isolation, overlooking the systematic integration of colonial socio-historical legacies. Few studies explore how colonial structures, such as bureaucratic centralization and caste hierarchies, continue to shape governance, or how horizontal social oppression, like patriarchal norms, interacts with democratic processes.

This study addresses these gaps by applying a postcolonial lens to India's democracy, linking economic policies and gender inequality to colonial continuities. Methodologically, it combines qualitative critiques with quantitative data, offering a holistic perspective absent in prior works. By contextualizing governance challenges within colonial legacies and demonstrating how social oppression undermines democratic ideals, this study advances a novel understanding of democracy's bounded agency in postcolonial settings. Furthermore, comparative analysis with Pakistan challenges deterministic views on authoritarianism and development, enriching debates on democratic governance and intersectional inequality. These insights provide policymakers with a nuanced roadmap for reform.

3. Methodology

This study employs a mixed research design grounded in postcolonial theory to examine the influence of India's democratic political system on national development. Postcolonialism, as a critical theoretical framework, interrogates the enduring legacy of colonialism and its impact on power dynamics, identity politics, and cultural elements in formerly colonized nations [38]. Given that India's democratic system emerged post-1947 following British colonial rule, this perspective offers a particularly salient analytical lens for understanding how colonial legacies continue to shape India's democratic institutions, governance structures, and developmental trajectory.

The postcolonial framework further illuminates power imbalances inherited from colonial rule and their persistence in contemporary governance, economic policymaking, and development outcomes. Additionally, it underscores the interplay between cultural diversity, identity construction, and democratic processes, particularly in a nation characterized by multiple identities and cultural pluralism. This methodology provides a robust theoretical foundation for analyzing the complexities of India's democratic development and its ongoing challenges, revealing how colonial legacies and cultural dynamics intersect to influence India's trajectory toward gender equality and democratic consolidation.

3.1. Data collection

Given time constraints and the challenges of obtaining primary data, this study adopts a secondary data collection methodology. This approach leverages existing literature, reports, and statistical data to examine the challenges and opportunities of India's democratic system in practice. The method is selected for its ability to provide comprehensive historical and

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contemporary insights into the evolution of India's democratic system, its influencing factors, and its role in national development.

To achieve the research objectives, this study will collect diverse forms of secondary data, including academic articles, reports, and statistics. A keyword search strategy will be employed to retrieve relevant literature from databases such as JSTOR, Google Scholar, and Scopus. Keywords will include terms like "political system," "India," "national development," "democracy," and "governance," ensuring alignment with the research theme.

For an in-depth analysis of India's economic policies within its democratic framework, this study will gather historical economic policy data and development statistics. Particular emphasis will be placed on data linking economic policies to India's democratic system. Additionally, to examine gender inequality and its relationship with democracy, the study will utilize data on female political participation, employment rates, and gender disparities. Key sources include international organizations such as the United Nations, the World Economic Forum, and the World Bank.

This extensive data collection approach ensures comprehensive coverage of governance-related themes in India, enhancing the depth and scope of the study. By integrating these datasets, the research substantiates its analyses and provides a holistic understanding of the subject matter.

3.2. Data analysis

This study adopts a mixed methods approach, integrating qualitative and quantitative techniques to address the research objectives. Qualitative methods excel in providing nuanced insights into social phenomena, capturing their complexity [39], while quantitative methods offer precision in analyzing structured research questions, particularly in evaluating policy effectiveness [40]. By combining these approaches, this study maximizes the strengths of both methodologies, enhancing the reliability and scientific validity of the findings while enabling deeper exploration of the research questions.

Data analysis involves thematic categorization, systematic integration, and critical evaluation of information to identify patterns, contradictions, and gaps in existing knowledge. This methodological framework supports theory-building by uncovering correlations and trends, thereby providing a robust foundation for subsequent inquiry.

To examine the impact of democratic political systems on national development, this study employs qualitative methods, relying on literature reviews and theoretical analyses of political systems. Easton's (1957) framework on political system analysis and Fukuyama's (2014) critique of institutional limitations serve as foundational theoretical references [1,22].

In exploring India's democratic system and its influence on economic policies, this research focuses on historical analyses of India's development trajectory, supported by statistical data from authoritative sources such as the World Bank and United Nations. A case study of India's economic reforms pre- and post-1991 Rao reforms is conducted to illustrate the interplay between democratic governance and economic policy.

Additionally, this study investigates gender inequality and its implications for India's democratic system. Data from the World Economic Forum's *Global Gender Gap Report 2020* and the United Nations' *Country Fact Sheet: UN Women Data Hub (2023) are analyzed to assess gender discrimination and its impact on governance [41]. The research draws on academic articles, reports, and empirical findings to evaluate how gender bias intersects with democratic processes in India.

3.3. Limitation

While secondary data offer advantages such as diverse sources and cost-effectiveness, their use in analyzing complex social and political issues—such as the impact of India's democratic

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system on national development—presents notable limitations. First, the quality and reliability of secondary data may be compromised due to potential incompleteness or interpretative errors introduced by external researchers or institutions, which could affect research accuracy. Second, existing secondary data may fail to meet specific research requirements, often lacking the depth or specificity needed for nuanced analysis. Additionally, for intricate subjects, secondary data may lack sufficient contextual or background information, limiting the comprehensiveness and depth of findings.

To address these limitations, this study supplements secondary data with complementary data collection and fieldwork. This approach mitigates the constraints of relying solely on secondary sources and enhances the credibility and persuasiveness of the findings. By integrating these methods, the research achieves a more comprehensive and in-depth understanding of the research questions, thereby providing a robust foundation for analysis.

4. Discussion and Analysis

4.1. The Impact of Colonialism on India's Democratic System

The enduring legacy of British colonial rule has profoundly influenced India's democratic system, shaping its political, social, and cultural dimensions. This study adopts a postcolonial perspective to examine how colonial legacies continue to impact India's democratic framework.

India's diversity, marked by over 22 official languages, six major religions, and 2,000 communities [7], necessitated a centralized administrative system during British rule. Post-independence, India retained this structure while introducing federalism to accommodate its pluralistic reality. Colonial institutions, such as legal frameworks, courts, and police systems [42], provided a foundation for democratic governance, ensuring justice and order. Additionally, colonial rule introduced modern political organizations and party systems [43], exemplified by the Indian National Congress, which influenced post-independence political participation and institutional development.

Colonialism also fostered political consciousness in India. The recognition of free speech and media freedom during British rule was codified in India's post-independence constitution, enabling public discourse and information dissemination. Furthermore, the establishment of a modern education system cultivated an intellectual elite instrumental in shaping democratic institutions and driving socio-political change. These experiences contributed to India's political awakening, fueling the independence movement and eventual sovereignty in 1947.

However, colonialism's negative impacts persist. The reinforcement of the caste system and economic exploitation during colonial rule created enduring challenges for democratic governance. Resource extraction and disruption of traditional economic structures further complicated India's post-independence development trajectory. Thus, colonialism's legacy is multifaceted, offering both opportunities and obstacles for India's democratic system.

In conclusion, British colonialism left a complex imprint on India's democracy. While it provided institutional frameworks and political consciousness, it also entrenched social and economic challenges. Despite these hurdles, India has established a diverse, secular democracy grounded in the rule of law and fundamental rights, influenced by Western democratic ideals and nonviolent resistance. Yet, India's democracy continues to grapple with developmental and gender equality issues, underscoring the need for ongoing reform and adaptation.

4.2. Has India's economy truly failed to bring economic development?

4.2.1. India's historical economic policies and their efficacy

India's post-independence economic trajectory reflects its adoption of a Soviet-style planned economy, characterized by centralized control and extensive state intervention. From its constitution's inception, India pursued a socialist secular state model, implementing five-year plans until 2014 [44]. This approach, akin to China's pre-reform model, centralized economic power, leading to monopolies and bureaucratic inefficiencies. Government intervention, often through licensing and regulatory approvals [7], diverted business focus from market competition to securing state favor, fostering corruption. Transparency International's 1995 Corruption Perceptions Index ranked India 35th out of 41 nations [45], highlighting the democratic system's challenges in ensuring accountability.

India's initial economic policies prioritized self-reliance and protectionism, with high tariffs averaging 113% on industrial goods in 1990–1991 [46]. This inward-looking strategy stifled growth, resulting in an average annual GDP growth rate of 3.5% from the 1950s to the 1990s [47], far below the Asian Tigers. Poverty rates remained around 60% during this period (ibid), underscoring the democratic system's limitations in addressing economic challenges.

The 1991 economic reforms marked a shift toward liberalization, privatization, and globalization, mirroring China's reform trajectory. Tariffs were reduced from 150% to approximately 10% [7], and GDP growth surged to an average of 5.5% post-reform, compared to 1.1% pre-reform [47]. Trade volumes increased significantly, with merchandise trade rising from USD 41.549 billion in 1990 to USD 839.242 billion in 2018 [48], and exports growing at an average annual rate of 10.9% (ibid). Poverty rates declined sharply, with 270 million people lifted out of poverty between 2006 and 2016 [47]. Under Modi's leadership since 2014, India's economic growth outpaced China's, averaging 7.5% from 2014 to 2018 (ibid).

These developments raise questions about the democratic system's role in India's economic turnaround. While the reforms were driven by democratic decision-making, their success underscores the system's adaptability. However, whether this reflects inherent strengths of India's democracy or its capacity to respond to crises remains open to interpretation. Thus, whether India's post-1991 economic success reflects the strengths of its democratic system remains a subject of debate, see Figure 2.

India's economic data across different periods reveal that prior to the 1990s reforms, its economic development was constrained by protectionist policies and bureaucratic inefficiencies. However, the 1990s marked a turning point with the introduction of market-oriented reforms and economic liberalization, which opened India to foreign investment and trade. During this decade, India achieved significant economic growth, even outpacing China at certain points.

Notably, India has maintained its democratic system consistently since independence, demonstrating its compatibility with economic development. The pre-reform stagnation and post-reform surge highlight that India's democratic framework is not inherently an obstacle to progress but can, under appropriate policies, serve as a catalyst for economic advancement.

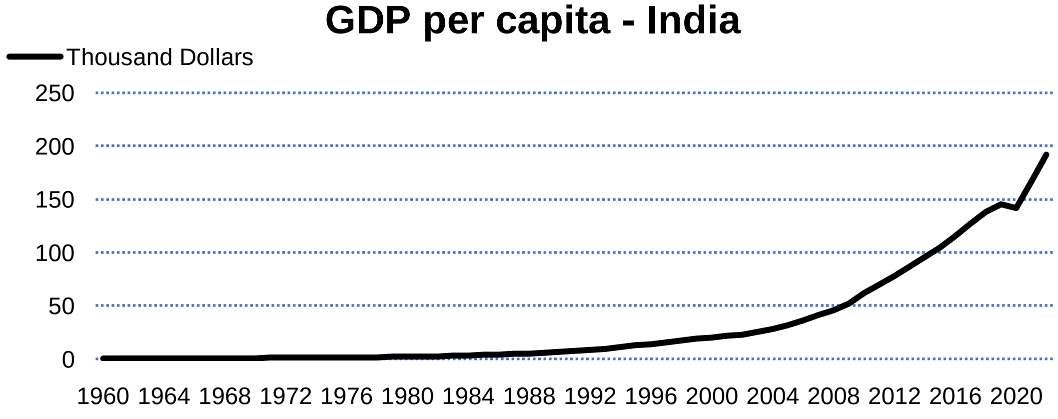

Figure 2: GDP per capita (World Bank, 2022)

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4.2.2. Analysis of India's Democratic System and Economic Policies

India's constitutional preamble explicitly outlines its commitment to building a socialist secular state, a goal deeply embedded in its democratic framework. This system provides the institutional mechanism for formulating and implementing economic policies, including decisions on economic models. India's adoption of a socialist-style planned economy reflects the distinctive role of its political system, where government intervention in economic and societal affairs is extensive. Whether through pre-liberalization five-year plans or post-reform policies, India's economic trajectory has been shaped within its democratic framework, underscoring the interplay between democratic governance and economic development.

India has maintained its democratic system consistently since independence, challenging claims that pre-1990s economic stagnation stemmed from democratic failures. The significant economic growth following 1990s reforms demonstrates that India's democratic system does not inherently hinder development. While comparisons with China, another populous developing nation, highlight divergent political and cultural trajectories, both countries have achieved poverty reduction through distinct liberalization strategies. Such comparisons, however, may lack comprehensiveness due to differences in historical and social contexts. A more appropriate comparison could involve Pakistan, which shares India's colonial history and geographic proximity but has experienced prolonged authoritarian rule.

Pakistan's economy has undergone four political transitions over seven decades, with much of this period marked by authoritarian governance. World Bank data (2023) shows that in 2018, India's GDP per capita ($2,016) surpassed Pakistan's ($1,472). Similarly, WHO data (2023) indicates that India's life expectancy (70.8 years in 2019) exceeded Pakistan's (65.6 years). These disparities suggest that authoritarianism has not translated into superior economic outcomes in Pakistan.

In conclusion, India's economic challenges stem primarily from policy missteps rather than democratic governance. While infrastructure gaps, public service deficiencies, and interest group conflicts persist, India's democratic system facilitates diverse inputs in policymaking, yielding multifaceted outcomes. Such pluralism underscores the resilience of democratic frameworks in addressing developmental complexities.

4.3. Has India Addressed Gender Discrimination in its Economy?

4.3.1. Gender Discrimination and Its Impact on Democratic Development

India's democratic system, while effective in certain domains, has demonstrated limitations in addressing gender discrimination, a challenge that persists despite constitutional guarantees and legal reforms. Despite enshrining gender equality in its democratic framework, India's mechanisms for achieving this goal remain constrained by entrenched social, cultural, and institutional barriers.

Legally, India has criminalized gender discrimination, including sexual violence and rape, and has enacted policies such as the Women's Reservation Bill, which reserves approximately one-third of political seats for women [49]. According to the United Nations Women's Division (2023), India has implemented legal frameworks addressing gender equality at an 83.3% rate, with 72.8% of women in the reproductive age group (15–49 years) meeting their family planning needs through modern methods (ibid.) [41]. These measures reflect India's commitment to advancing gender equality.

However, progress in political representation remains uneven. While India ranks 18th globally in women's political empowerment, largely due to historical female leadership [35], only 14.4% of parliamentary seats were held by women as of February 2021 [35]. This disparity underscores the persistence of gender inequality and highlights systemic limitations in India's democratic system, often characterized as "male dominated." Research by Evans et al. (2022),

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surveying nearly 30,000 Indian adults, identifies social, cultural, and religious norms as significant barriers to women's political participation [50].

Beyond political representation, ensuring women's basic rights and personal security remains a critical challenge. Despite legal protections, women in India face pervasive violence, including domestic abuse, caste-based discrimination, dowry-related deaths, honor killings, and sexual violence. As of 2018, 18.4% of women aged 15–49 reported experiencing physical or sexual violence from an intimate partner in the preceding year [35]. Additionally, India's maternal mortality rate stands at 145 deaths per 100,000 live births, with only 41.6% of mothers receiving postnatal financial support (ibid.). These statistics reveal systemic gaps in safeguarding women's dignity and rights, despite legal and policy frameworks aimed at addressing these issues.

In conclusion, while India has made strides in legal and policy reforms to combat gender discrimination, persistent social and cultural barriers, coupled with inadequate implementation, continue to hinder progress. The democratic system's capacity to address these challenges remains constrained, underscoring the need for deeper institutional and societal reforms, see Figure 3.

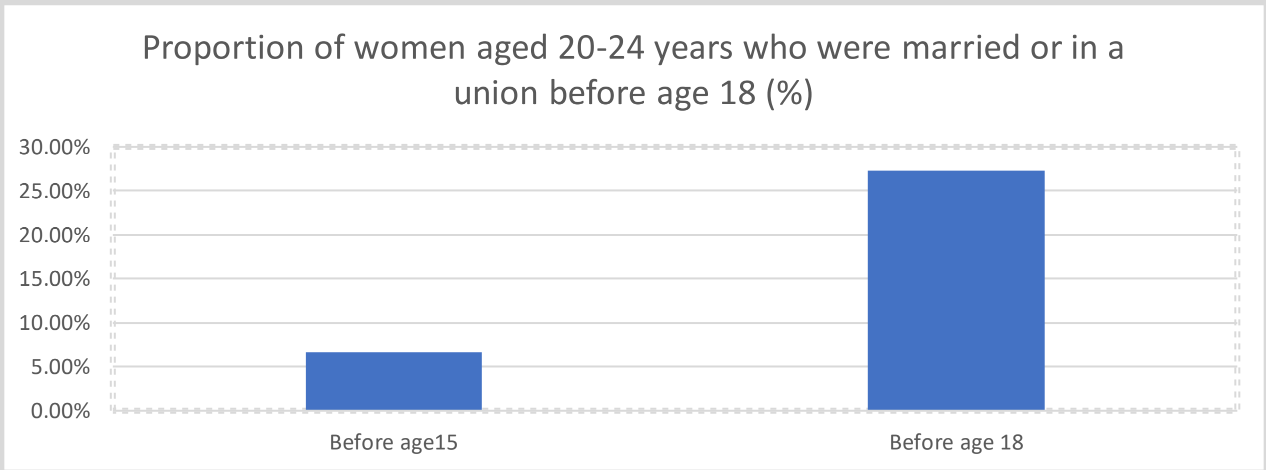

Figure 3: Proportion of women aged 20-24 years who were married or in a union before age 19 (UN women, 2023)

Therefore, although the Indian government has proactively engaged in various areas to protect women's rights and achieve gender equality, making some progress, complex factors such as societal and religious beliefs continue to negatively impact Indian women's rights to some extent, further underscoring the complexity of gender equality issues. These difficulties give rise to feelings of insecurity and a dearth of respect for women within society, serving as a clear manifestation of India's gender inequality issues. It is worth noting that the stability of democratic systems often hinges on social harmony and inclusivity. If women's basic rights are not effectively safeguarded, society may experience tension and instability, potentially exerting adverse effects on the overall development and governance of the nation. Therefore, securing gender equality and safeguarding the rights of women is not just a moral duty; it also stands as a pivotal component in upholding the stability of the democratic system and fostering sustainable national progress.

4.3.2. Analysis of India's Democratic System and Gender Discrimination

In India, the democratic system has struggled to effectively address gender discrimination, which has emerged as a significant factor influencing democratic governance. Unlike economic development issues, which are often addressed at the national government level, gender inequality in democratic societies like India is deeply rooted in societal norms and cultural traditions, constituting a pervasive form of social oppression [52]. While government

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oppression typically relies on state coercion, gender inequality stems from horizontal social structures that shape norms and values, often proving more resistant to change. Addressing government oppression can be approached through protests, demonstrations, and legislative reforms, but tackling oppression rooted in dispersed societal practices is far more challenging due to the vast number of individuals involved.

Acemoglu and Robinson (2019) describe gender inequality as a "cage of norms," a self-sustaining social structure where norms are enforced through social sanctions, limiting individual freedoms and innovation [28]. In India, this normative cage profoundly affects women's career choices, personal safety, and social status, thereby undermining democratic governance. Traditional beliefs, often based on religion and destiny, have historically perpetuated male dominance and female subordination. Despite constitutional guarantees of gender equality, legal protections for women have eroded pre-existing male privileges, fueling resentment and gender tensions. Male-dominated power structures further hinder women's political participation, resulting in underrepresentation in policymaking and biased decision-making. As of February 2021, only 14.4% of parliamentary seats were held by women [35], reflecting systemic gender bias and undermining the representativeness of India's democratic system.

Gender inequality also distorts India's electoral system by prioritizing identity logic over rational logic [53]. Men's historical advantage in political participation perpetuates identity-based decision-making, weakening the democratic competitive system. When identity logic overrides rational logic, democratic processes lose their effectiveness, exacerbating gender disparities.

In conclusion, India's democratic system faces significant challenges in addressing gender inequality, which manifests in low political participation, biased decision-making, and constrained social development. To strengthen democratic governance, India must prioritize measures to eliminate gender discrimination, ensuring equal opportunities and status for women across political, social, and economic spheres. This is not only a moral imperative but also critical for democratic stability and sustainable national progress.

5. Conclusion

Up to this point, this study has primarily focused on delving into whether India's democratic political system, established after its independence, has positively impacted the nation's overall development. This chapter integrates the discussions and analyses of the interactions between India's economic policies, gender discrimination issues, and the democratic system, as presented in the previous chapters, with the aim of providing a comprehensive and structured overview of this subject. Finally, a comprehensive summary and assessment of these analyses and viewpoints will be presented.

5.1. Economic Policy in Relation to Indian Democracy

India's economic development cannot be simplistically attributed to its democratic political system. Although India adopted a series of protectionist economic policies in its early years of independence, leading to economic stagnation, significant economic growth was achieved after the initiation of economic liberalization policies in 1991. This suggests that the democratic system did not impede India's economic development. However, India's economic issues primarily stem from long-term accumulations of economic policy errors, including excessive government intervention, complex approval processes, and issues related to corruption. These problems have, to some extent, undermined economic efficiency and development. In comparison with other countries such as China, India experienced relatively slower economic

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growth for a period, but this is closely linked to its unique colonial history, culture, and social structure, factors that cannot be overlooked.

Lastly, it's worth noting that India's democratic political system provides a platform for a diversified policy formulation process, resulting in diverse policy outcomes. Despite facing various challenges, the existence of a democratic system allows for extensive debates and reflections on different policies and reform directions, contributing to the gradual resolution of economic issues. Therefore, India's economic development issues are more associated with specific economic policies and their implementation rather than the democratic political system itself. India has made significant progress following the implementation of economic liberalization policies, but relentless efforts are still required to address internal issues in order to achieve more sustainable and comprehensive economic growth.

5.2. Gender Equality in the Context of Indian Democracy

India's democratic political system faces complex and severe challenges in addressing gender discrimination. Despite numerous legal and policy measures adopted by the Indian government aimed at improving the social status of women and protecting women's rights, gender inequality issues persist widely, exerting adverse effects on the democratic system. Firstly, India's political system exhibits apparent shortcomings concerning gender equality. Although female leaders have emerged, the representation of women in parliament remains relatively low, reflecting deeply rooted gender inequality issues in the political arena, sometimes even described as a "male-dominated" democratic system. Social and cultural traditions, as well as religious beliefs, have also been identified as major impediments to women's political participation, revealing profound societal and cultural root problems that pose serious barriers to gender equality.

Secondly, gender discrimination, as a widely prevalent form of social oppression, poses a threat to the fundamental social rights and personal safety of women. In comparison to government oppression, this social oppression is more challenging to change, as it involves millions, tens of millions, or even hundreds of millions of dispersed individuals. Meanwhile, long-standing gender inequality maintains the advantageous position of men in political participation, potentially weakening India's democratic competitive system. Securing gender equality and safeguarding the rights of women is not just a matter of moral duty; it also constitutes a vital factor in preserving the stability of the democratic system and advancing sustainable national development. If the basic rights of women are not effectively safeguarded, society may experience tension and instability, which could have adverse effects on the overall development and governance of the democratic society.

5.3. The role of democracy is limited

In assessing a nation's success or failure, there often exists a bias that overemphasizes the impact of its political system on its functioning while overlooking the roles played by other political actors. There seems to be a prevailing notion that a nation's democratization inevitably leads to economic prosperity, clean politics, and improvements in public services, steering everything towards a better direction. However, reality often deviates from this ideal. A nation's genuine development is typically influenced by the collaborative efforts of various political actors, including the capabilities of government leaders and the level of support from the populace, among other factors. Therefore, the role of a democratic system should be viewed as a mechanism to address issues of governance and abuse of power, effectively returning power to the people by granting them institutionalized speech rights. Nevertheless, this does not guarantee that all issues will be fully resolved. Hence, India does not automatically achieve development simply by opting for a democratic system.

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India's democratic system appears to exhibit limited effectiveness in terms of national governance, which can be largely attributed to problematic elements introduced into the democratic framework since its inception and the influence of historical issues inherent to the nation, including but not limited to the economic policy and gender discrimination issues discussed in this paper. In summary, India's political system is just one among several factors affecting the performance of national governance, often playing a secondary role in many instances. In fact, some nations, regardless of whether they adopt democratic or non-democratic political systems, seem to face challenges in effectively pursuing nation-building. Iraq serves as a typical example, as these countries have undergone continuous political system changes over the past few decades, experimenting with various forms of political systems but failing to achieve substantive accomplishments.

Nonetheless, it's crucial to emphasize that having a constrained viewpoint regarding the effectiveness of political systems doesn't mean believing they are ineffective. In other words, it does not imply that democracy cannot enhance governance performance, but rather that the impact of democracy on governance performance is subject to various conditions. In essence, democracy is viewed as a decision-making process rather than the decisions themselves. While this process inherently holds value by respecting the values of the people, its outcomes depend entirely on the content input into the process. Therefore, as a procedural framework, democracy carries the potential to reflect respect for the will of the people. However, the quality of a democratic political system is primarily influenced by the judgment and collaborative abilities of political participants. Once these capabilities are lacking or constrained, there is no reason to believe that democracy will inevitably lead to better governance performance.

5.4. Democratization as an Ongoing Trial-and-Error Process

Democratization is a continuous experimental process and not a one-size-fits-all solution, with its establishment not guaranteeing the attainment of all positive outcomes. Realizing the potential benefits of a democratic system requires sound economic policies, active participation of citizen groups, and a range of other conditions, some of which have not been extensively discussed in this paper. Although some political systems and structures may appear better suited to embody human-centric characteristics, in reality, no political system can ensure the permanent resolution of all problems.

Market economies have liberating social consequences, and as India's market economy develops, its economic policies and gender inequality issues are gradually improving. However, this process requires time and patience because democratic systems typically achieve progress through trial and error, which takes time. Although the pace of India's transformation in this process may be frustrating, it also reflects the characteristics of a democratic system, which prioritizes gradual improvement over mandatory change. Therefore, while India's democratic system provides citizens with a certain degree of participation and rights, addressing the limitations of the political system itself and the challenges faced by the nation is crucial to advancing the country's progress and development.

References

[1] Fukuyama, F. Political order and political decay: From the industrial revolution to the globalization of democracy. Macmillan. (2014)

[2] Przeworski, A., Alvarez, M., Cheibub, J. A., & Limongi, F. What makes democracies endure? J. Democracy, (1996) ,7, 39.

[3] Fukuyama, F. The origins of political order: From prehuman times to the French Revolution. Farrar, Straus and Giroux. (2011)

[4] Sharp, G. From dictatorship to democracy: A conceptual framework for liberation. The New Press. (2012).

ISSN: 2710-0170

[5] Department of School Education and Literacy. Performance grading index (PGI) 2018-2019.
[6] Singh, H.V. Working Paper: Trade Policy Reform in India since 1991, Brookings. (2022)
[7] Liu, Y. India: Why doesn't democracy work? in Politics is the art of the possible. Guangxi, China: Guangxi Normal University Press, (2022),pp. 120–121.
[8] Word Bank (2023) World Bank Databank, Databank.
[9] World Health Organization (2023) Countries overview, World Health Organization.
[10] Patel, A. Nearly 50 per cent mps in New Lok Sabha have criminal records, India Today. (2019).
[11] Rawls, J. A theory of justice: Revised edition. Harvard university press. (2020).
[12] Stout, J. Democracy and tradition. Princeton University Press. (2003).
[13] Smith, A. The Wealth of Nations: An inquiry into the nature and causes of the Wealth of Nations. Harriman House Limited. (2010).
[14] Peet, R., & Hartwick, E. Theories of development: Contentions, arguments, alternatives. Guilford Publications. (2015)
[15] Sen, A. Development as freedom. Oxford Paperbacks. (2001).
[16] World Bank (2023) GDP growth (annual %) - India, World Bank Open Data.
[17] Hadenius, A. Democracy and development. Cambridge University Press. (1992)
[18] De Mesquita, B. B., & Smith, A. The dictator's handbook: why bad behavior is almost always good politics. Hachette UK. (2011).
[19] Fuller, G.E. The democracy trap: The perils of the post-Cold War World. New York, N.Y, U.S.A.: Dutton. (1991)
[20] Kraut, R. Aristotle: political philosophy. Oxford University Press on Demand. (2002)
[21] Huntington, S. P. The third wave: Democratization in the late twentieth century (Vol. 4). University of Oklahoma press. (1993).
[22] Easton, D. An approach to the analysis of political systems. World politics, 9(1957), 383-400.
[23] Ghardallou, Wafa, and Dorsaf Sridi. "Democracy and economic growth: A literature review." Journal of the knowledge economy 11, no. 3 (2020): 982-1002.
[24] Bhagwati, J. India in Transition: Freeing the Economy. Oxford University Press. (1993).
[25] Dreze, J., & Sen, A. India: Development and participation. Oxford University Press on Demand. (2002)
[26] Anderson, Perry. The Indian Ideology. Verso Books, 2021.
[27] The Economic Times (2011) India's annual average GDP growth at 6.6% in 1990-2010: Govt, The Economic Times.
[28] Acemoglu, Daron, and James A. Robinson. "Weak, despotic, or inclusive? How state type emerges from state versus civil society competition." American Political Science Review 117, no. 2 (2023): 407-420.
[29] Ning, S. An analysis of Modi's economic reforms, China Institute of International Studies. (2021)
[30] Biswas, P.K. and Das, P. Indian economy: Reforms and development. Singapore: Springer Singapore. (2019).
[31] Parihar, S. Right to equality under the Indian Constitution, WritingLaw. (2022)
[32] Edwards, L. P. Gender, politics, and democracy: Women's suffrage in China. Stanford University Press. (2008).
[33] Beer, C. Democracy and gender equality. Studies in Comparative International Development, 44, (2009),212-227.
[34] Tan, R. and Wang, Z. On the exploration of India's political development path. Comparative Political Studies, 1(2018): 115-131.
[35] World Economic Forum (2020) Global Gender Gap Report 2020. [online]
[36] Batra, R., & Reio, T. G. Gender Inequality Issues in India. Advances in Developing Human Resources, 18(2006), 88–101.

ISSN: 2710-0170

[37] Bourdieu, P. Distinction: A social critique of the judgement of taste. Harvard university press. (1987).

[38] Loomba, A. Colonialism/postcolonialism. Routledge. (2002).

[39] Denzin, N. K. and Lincoln, Y. S. The Sage handbook of qualitative research Sage (2011).

[40] Johnson, R. B., & Onwuegbuzie, A. J. Mixed methods research: A research paradigm whose time has come. Educational researcher, vol. 33(2004), 14-26.

[41] UN Women (2023) Country fact sheet: UN Women Data Hub, Country Fact Sheet | UN Women Data Hub.

[42] Parekh, B. C. Colonialism, Tradition, and Reform: An Analysis of Gandhi's Political Discourse. Sage. (1999).

[43] Bose, S. C. (2012) The Indian Struggle. NSS Maniam.

[44] Joseph, M. An experiment with socialism finally ends, The New York Times. (2014).

[45] Transparency International (2023) 2022 corruption perceptions index: Explore the results, Transparency.org.

[46] Singh, S. Early middle class in India - quest journals. (2022).

[47] World Bank (2023) Population, total - India, World Bank Open Data.

[48] World Trade Organization (2023) India and the WTO.

[49] Anuja. India: 25 Years on, women's reservation bill still not a reality, Women News | Al Jazeera. (2021)

[50] Evans, J., Sahgal, N., Salazar, A. M., Starr, K. J., & Corichi, M. How Indians view gender roles in families and society. Pew Research Center's Religion & Public Life Project. Pew Research Center, Accessed April 14, 2022.

[51] Fanon, F. Les damnés de la terre. A verba futuroruM. (2016).

[52] World Economic Forum (2022) Global Gender Gap Report 2022, World Economic Forum.

[53] Moshman, D. Adolescent psychological development: Rationality, morality, and identity. Psychology Press. (2005).

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Research on the Application of Chinese Traditional Etiquette Culture in the Interaction of Network Broadcast from the Perspective of Cyber Anthropology

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Abstract

The Tiktok live, Kwai live, Taobao live and YY live are the main online live broadcasting platforms that have sprung up in recent years, including both entertainment live broadcasting based on reward mode and e-commerce live broadcasting based on delivery mode. No matter which live broadcasting mode is adopted, the social interaction of the virtual community on the live broadcasting platform is an important issue, which directly affects the operation effect of the reward mode and the goods delivery mode, and is the key factor to realize the business mode of the virtual community. From the perspective of cyber anthropology, this paper selects Tiktok live, Taobao live and YY live as the survey points. The research period lasted from December 2022 to April 2024, for a total of 16 months. With the participation observation method as the core field work method, Collins' interactive ritual chain theory as the research foundation, and combining online and offline research, this paper mainly analyzes the application and embodiment of Chinese traditional culture in the live broadcast interaction on the Internet. In the study, the author found that emotional energy and group solidarity are two important issues in the social interaction of the online live virtual community. The "Five Virtues" thought and the "Five Constant Virtues " thought in Chinese traditional culture are reflected in different degrees in the interaction of live webcast. The gentleness, courtesy and concession in the thought of "Five Virtues" can make the interaction process more harmonious and orderly, and the benevolence, righteousness and faith in the thought of "five constant" can make the community business model more smoothly realized. We should further apply and extend Chinese traditional culture at the level of virtual community and meta universe based on the principle of sublating in criticism and developing in inheritance.

Keywords

Cyber anthropology, chinese traditional etiquette, and network broadcast interaction.

1. Introduction

The live streaming industry in China originated in 2003 and can be traced back to the pioneer of the voice industry - Chat Voice. Its main function is to meet the voice communication needs of gaming platforms. In 2012, the three giants of live streaming shows (9158, Six Rooms, and YY Live) were officially formed. The year 2016 is recognized as the first year of China's webcast. Tiktok Live, Kwai Live, Taobao Live, YY Live and other platforms have developed rapidly. Tianyou, A Zhe, Li Jiaqi and Weiya once became phenomenal webcasts. When online live streaming first emerged, entertainment live streaming was the main focus. In 2019, live streaming sales began to rise, and e-commerce live streaming gradually developed from a tipping mechanism to a sales mechanism. Affected by the COVID-19 in 2020, the live broadcast e-commerce industry has developed rapidly. 2020, also known as the year of nationwide live streaming, is based on 5G technology, which makes live streaming possible with zero latency,

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while the pandemic is the direct catalyst. According to the 2022 China Internet Development Report, as of December 2022, the number of live broadcast users in China has reached 751 million, accounting for 70.3% of the total Internet users. It is expected that by 2025, the scale of China's live streaming e-commerce industry will reach 2137.3 billion yuan. [1]

2. Organization of the Text

2.1. The Research on Live Streaming Platforms from the Perspective of Network Anthropology

With the continuous emergence of various new types of virtual communities, network anthropology has gained more and more research fields. Steve Mizrach pointed out that network anthropology is a discipline that studies people in virtual communities and online environments. [2] The difference between communities in a community and isolated ordinary people is that communities have channels for communication. From this, we can see that people in virtual communities also have connections and channels for communication, which is a significant difference from isolated and isolated netizens. In online live streaming platforms, hosts and viewers can communicate through public screens and private messages, and viewers can also communicate through public screen speeches and other means. Some anchors will establish fan WeChat groups and QQ groups, which can establish strong relationships with fans and facilitate communication even without live streaming. Therefore, the hosts and viewers of online live streaming platforms have the characteristics of virtual community people in the research object of network anthropology, and it is appropriate to use network anthropology methods to study the interactive behavior of online live streaming platforms.

The research scope of network anthropology includes three aspects: firstly, the holistic study of computer and network technology. The second is research on online virtual communities. The third is the study of other issues related to internet social culture. [3] The operation and application of technology are particularly evident in online live streaming platforms. The rapid development of information and communication technology has solved the problem of signal transmission for online live streaming. The interactive platforms in the forum era belong to delayed asynchronous virtual communities, while the interactive platforms in the live streaming era belong to real-time synchronous virtual communities. In the study of virtual communities, behavioral patterns and social relationships are important components. In online live streaming platforms, the anchor holds a dominant position in the live broadcast room. Being in a dominant and guiding position in the social relationships of virtual communities, live streaming platforms have also granted broadcasters more authority to manage live streaming rooms. But in the interactive behavior of online live streaming, the behavior of the anchor is also subject to certain special types of viewers. The more viewers pay for live content through various forms such as gift giving, the more they have a say. Viewers who pay less or no for live content are at a disadvantage in interactive behavior. These are significant features in the interactive relationships of online live streaming platforms. The main content of this study is the traditional Chinese etiquette culture, which falls within the research scope of the subculture of online live streaming. The etiquette issues in real physical space are fully reflected in the virtual community of online live streaming platforms.

The participatory observation method is the core of anthropological fieldwork. [4] Online fieldwork can be defined as the process of describing ethnic groups and their cultural phenomena in a virtual community through continuous online participatory observation during a specific period of time. [5] Regarding the duration of field investigations, classic scientific ethnography suggests that the study of traditional agricultural societies typically takes one year. Because one year can cover the entire production cycle of an agricultural society: from spring sowing to autumn harvest and then to winter storage. There is no fixed length of

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time required for online fieldwork, but it is necessary to examine a complete network production cycle. For example, at the micro level, it can be the time from an anchor entering the platform to leaving the platform and stopping broadcasting. At the macro level, it can also be the entire process of a live streaming platform from app launch to development and growth, and then to decline. In the process of participatory observation, it is important to avoid the "localization trap" as much as possible. Because researchers often immerse themselves in the interactive behavior of online live streaming platforms, and they themselves are also research subjects. This places high demands on research behavior, requiring constant adherence to an objective research attitude and a clear research stance. The combination of online and offline fieldwork is very important in online fieldwork. [6] Offline fieldwork is the foundation for explaining online phenomena. If many behaviors rely solely on online fieldwork, they often only observe superficial behavioral phenomena and cannot understand the causes, impacts, and underlying social motivations behind certain behaviors.

The survey points selected for this network anthropology study are Tiktok Live, Taobao Live and YY Live. The research period will last from December 2022 to October 2023, totaling 11 months. The research method is mainly based on participatory observation, combined with in-depth interviews and casual conversations, and a combination of online and offline fieldwork. More than 40 anchors and over 80 viewers were selected for observation and interview. The selection of research subjects meets the research requirements of online anthropology and virtual ethnography. Network anthropology belongs to qualitative research, and it is appropriate to control the number of research objects within a few dozen. It does not require hundreds or thousands of research subjects like quantitative research. It focuses on obtaining first-hand experience materials through observation and participation, and gaining in-depth understanding of the interaction in virtual communities through interviews. The anchors studied in this study include sales anchors, talent anchors, chat anchors, and game anchors. There are both big internet celebrities and big anchors with over one million followers, as well as small anchors with hundreds or thousands of followers. The audience studied includes various age groups, professions, and identity types. In the study, it was found that traditional Chinese etiquette culture has been fully applied and reflected in social interaction in online live streaming virtual communities.

2.2. The connotation of traditional Chinese etiquette culture

The explanation of the two characters "li" and "yi" in the "Shuowen Jiezi" is as follows: "li" is the way to perform the ritual, so it brings blessings to the gods, from demonstration to abundance. "[7] " yi "is the way to measure." yi "is the way to follow the principles of righteousness and sound. [8] Therefore, etiquette can be interpreted as offering sacrifices to the gods and goddesses of heaven and earth according to certain rules and standards, in order to obtain blessings. [9] The original purpose of etiquette was to worship the gods of heaven and earth, but later it gradually developed into behavioral norms such as rules and standards for treating other members of society. According to the different roles and positions of social members in their social relationships, corresponding rules and standards are adopted to handle their relationships. These behavioral norms have historically promoted social harmony and stability, regulated social interactions among members, alleviated conflicts among members, and consolidated relationships among members. Marx pointed out that the essence of human beings is the sum of all social relations in its reality. The essential attribute of human beings lies in their social attributes, not in their natural attributes. For example, the human eating process is not just about satisfying hunger, but also includes a lot of dietary culture, table social etiquette, and so on. The seating arrangement and toasting order in table manners are determined by the social relationships in which people are situated. Social etiquette is a direct reflection of these social relationships and a necessary means of maintaining and coordinating them.

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Chinese traditional etiquette culture generally refers to various etiquette rules, etiquette systems, etiquette norms followed by people before the May Fourth Movement, as well as various material and spiritual cultures related to etiquette. There are both the Five Constants of benevolence, righteousness, propriety, wisdom, and trustworthiness, as well as the Five Virtue Standards of gentleness, kindness, respect, frugality, and concession. There are both traditional beliefs of "loyalty, filial piety, integrity, shame, and courage" and self-improvement ideas of "self-cultivation, family harmony, governance, and world peace". [10] Chinese traditional etiquette culture has a dual nature, with both positive, optimistic, and upward aspects, as well as negative, outdated, and outdated aspects. We need to both reject and criticize, as well as inherit and protect. We should continue to promote and develop the excellent traditional Chinese etiquette culture in contemporary society. Abandon the authoritarian hierarchical ideology and ethical norms that imprison human nature, streamline the overly performative and formulaic formalities, and create a Chinese etiquette system with local characteristics. [11] Modern civilized society advocates equality for all, eliminates gender and racial discrimination, and resists privileged classes. Advocate for the liberation of human nature and the comprehensive development of human freedom, and encourage the realization of everyone's life value. The pragmatic values are also values that many people believe in, and the superficial and cumbersome etiquette forms are criticized by people. In the fast-paced modern life, what should be preserved is the core etiquette connotation after removing the surface form.

The traditional etiquette of our country was pioneered by Confucianism. The most important classic of Confucianism, the Thirteen Classics, includes three parts that discuss etiquette, namely the "Zhou Li", "Yi Li", and "Li Ji". [12] There are also many other classics in the Thirteen Classics that involve etiquette. In the Analects of Confucius, there is a statement that goes, "Without knowledge of etiquette, there is no way to establish oneself." [13] This places the issue of etiquette at a fundamental level, indicating Confucius' emphasis on etiquette. In the Analects of Confucius, there is a saying that goes, "A gentleman has nothing to contend with, he must also shoot! He rises with surrender and drinks from below, and his contention is also a gentleman." [14] A gentleman should bow before a archery competition, and after the competition, they should drink together and have fun. Even in the face of competition, he should have the demeanor of a gentleman, compete with dignity, and maintain harmonious relationships between people. In the Analects of Confucius, there is also the phrase 'If a person is not benevolent, what is ritual?' [15] which refers to the fact that without benevolence, ritual becomes an empty shell with only performative meaning. [16] This is consistent with the previous mention of simplifying the form of etiquette and preserving the core of etiquette. The Chinese nation has had a traditional etiquette culture of respecting the elderly since ancient times. It is not only necessary to show respect for the elderly on the surface, but also to have a sincere and benevolent attitude. The ultimate goal of etiquette is to regulate social behavior and coordinate social relationship services. The etiquette and customs of respecting the elderly in China are determined by the elderly care mechanism of traditional Chinese society. Due to the lack of a socialized pension security mechanism, the family has become the basic unit for elderly care. Advocating a social etiquette culture of respecting and loving the elderly can help coordinate social conflicts related to elderly care and promote harmonious social development. Respect for the elderly should not be superficial, but should be deeply understood in terms of its core connotations and sociological implications.

There is a saying about the "Four Hearts" in "Mencius' Confession to Confucius": "The heart of concealment, the heart of shame and evil, the heart of respect, and the heart of right and wrong. [17] The spirit of respect is closely related to etiquette culture. 'Respect' refers to the external behavior exhibited, while 'reverence' refers to the sincere attitude within. People are always in a certain social relationship, and interacting with other members of society is an inevitable

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problem when participating in social activities. How to examine one's own position and that of other members of society, and how to express one's thoughts and consciousness appropriately in language, all require a reference code of conduct. Respect and courtesy are important means of regulating social behavior and coordinating social relationships. In Xunzi's "Self Cultivation", it is pointed out that "if a person lacks etiquette, they will not be born; if things are impolite, they will not succeed; if a country is impolite, they will not be peaceful." [18] From small individuals to large countries, and from being a person to doing things, etiquette norms are indispensable. The "etiquette" of a country refers to a set of behavioral norms for social operation, which involves various aspects such as politics, economy, culture, society, ecology, etc. The 'ritual' of the state is a macro manifestation of the 'ritual' of individuals, and the 'ritual' of individuals is the foundation for the good operation of the 'ritual' of the state.

From the above discussion, we can summarize that traditional Chinese etiquette culture includes not only attitudes towards heaven, earth, gods, and ancestors, but also norms of behavior towards monarchs, elders, peers, and juniors. It is not only a requirement for individual moral cultivation, but also a behavioral standard for regulating relationships among members of society. It fully reflects the social attributes of human beings and constrains their natural attributes. On the one hand, it is expressed through specific forms of etiquette, and on the other hand, it is not limited to specific forms, emphasizing the etiquette ideas contained in the form.

2.3. The embodiment of traditional etiquette culture in online live streaming interaction

Renowned American sociologist Randall Collins proposed the influential theory of interactive ritual chains, which has been widely applied, developed, and extended in many social science studies. The core of this theory is mutual subjectivity, as emotional connections bring a sense of identity associated with cognitive symbols, while also bringing emotional energy to encourage members to engage in activities that conform to group unity. [19] Identity, emotional energy, and group unity are three important issues. In online live streaming interactions, viewers in the same live room have a strong sense of identity. They share the same interests, hobbies, and viewpoints, and tend to recognize and support the same anchor. The same sense of identity can bring strong emotional energy, a sense of closeness between viewers, and a sense of dependence on the anchor, which can promote the emergence of group solidarity behavior. When conducting live streaming and gift brushing competitions in two rooms, viewers often pay a certain economic cost to give high value gifts to express their support for their hosts due to emotional factors towards them. The implementation of live streaming tipping behavior is not only about viewers paying for program content, but also a manifestation of group unity and emotional energy. Max Weber, one of the three founders of sociology, pointed out that social action has four orientations, one of which is instrumental rationality to achieve specific goals. The second is the conscious belief in value rationality. The third is emotional, especially emotional. The fourth is deeply rooted traditional habits. [20] In online live streaming interactions, emotions, emotional factors, and a conscious belief in value rationality play an important role. In the social actions of virtual communities, it plays an important driving force.

Collins believes that there are two main types of exchanges in the interactive ritual market: emotional energy exchange and symbolic capital exchange. Emotional energy is not a concrete emotion in the ordinary sense, it is a long-term and stable accumulation of emotions. People's memories of past conversations, language styles, knowledge or expertise, decision-making privileges, and the right to receive honor are resources that make up cultural capital. [21] In online live streaming interaction, each member of the live streaming room has different powers, with the anchor having the dominant power and the venue controller having certain specific

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management rights. Viewers who brush gifts on lists one, two, and three have a greater say, with their say decreasing according to the amount of the gift. Ordinary viewers have the right to participate and withdraw. These are all capital that can be exchanged between members. In the context of relationship oriented online live streaming, the anchor's strategy of showing weakness in interaction is more likely to trigger the audience's willingness to give rewards. In task oriented online live streaming scenarios, the anchor adopts a strong interactive strategy, which is more likely to trigger the audience's willingness to give rewards. [22] Language communication and talent display in a single live streaming room belong to typical relationship oriented live streaming scenarios. Anchors can also gain more fans and live streaming tipping income by adopting a strategy of showing weakness and interaction. The strategy of showing weakness and interaction is the foundation of task oriented online live streaming scenarios. The gift competition between two live streaming rooms and the host completing the monthly tasks arranged by the official are typical task oriented online live streaming scenarios. Both sides of the audience support their live streaming hosts by swiping gifts. The anchor promotes the implementation of community business models by showcasing competitive relationships and completing target tasks, which is a typical demonstration scenario.

The social relationships in virtual communities are a reflection of the physical space in the metaverse, and the excellent traditional Chinese culture has been fully applied in the social interaction of online live streaming virtual communities. The Five Virtues of "Wen Liang Gong Jian Rang" is the foundation and starting point of Confucius' [23] "ren" learning philosophy. In the Analects of Confucius, there is a sentence that goes, "Zigong said: Confucius is gentle, virtuous, respectful, frugal, and yielding to obtain it." [24] In the entire Analects of Confucius, "Wen Liang Gong Jian Rang" appears as a whole only once. The Five Virtues ideology is clearly reflected and applied in online live streaming interactions. Wen "can be expressed as" harmony "in the code of conduct, while" gentleness "means" appropriateness, propriety, and moderation ". [25] In online live streaming interaction, the behavior of the anchor is often gentle. When two live streaming rooms are connected via microphone, the language communication between hosts is generally more appropriate and restrained. After becoming friends with each other, the fans in the other's live broadcast room can often become their own fans, achieving a win-win effect. The attitude of the anchor towards their live broadcast room administrator is also milder, because the essential identity of the live broadcast room administrator appearing as a field controller is also fans and viewers. Out of their support for the anchor, some of them play the role of field controller administrator for free. Some of the venue controllers may have some economic income, but the host's gentle attitude towards the venue controllers is an important factor in the smooth progress of live room management work. The host's gentle attitude towards the audience, loyal fans, and ordinary viewers who brush gifts on the list is even more evident. Because only in this way can we expand our fan base, increase our popularity and traffic.

'Gong' appears 13 times in the Analects, meaning both dignified appearance and humility towards others, as well as being respectful and responsible in their work. [26] Online live streaming platforms have strict dress codes for broadcasters, which are important standards for reviewing live streaming content. Dressing appropriately is one of the many behavioral requirements for live streaming platforms. Anchors with a large fan base often work hard, conscientiously, rigorously, and responsibly, which is an important factor in their success. The competition in the online live streaming industry is fierce. Based on the investigation conducted by the author, although the educational level of the hosts is relatively low and the proportion of those who have received higher education is not high, many of them have high school, vocational school, or even junior high school degrees. However, their attitude towards live streaming is not perfunctory. Becoming a major anchor often requires intense competition. In dealing with people, they have strict requirements for themselves. Although they may appear

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relaxed and casual during live broadcasts, sometimes their language may be slightly frivolous, and sometimes they may lack cultural cultivation. However, to become a big anchor, they often have strict self requirements and a positive and enterprising career spirit.

'Rang' appears seven times in the Analects, expressing ideas such as humility, courtesy, and tolerance. [27] The composition of hosts and viewers on online live streaming platforms is quite complex, with each member having different ideological concepts and interests, making it easy for conflicts and contradictions to occur between members. When faced with this situation, 'letting go' has become an effective way to alleviate the problem. Firstly, it is the host's courtesy towards the audience. As online broadcasting platforms adopt a direct payment method for program content, the audience becomes the investor of the program and has the right to choose content. Therefore, the host's courtesy towards the audience has become a basic principle. There is often a situation of courtesy in the interaction between viewers, and ordinary viewers tend to choose courtesy when facing paid and more influential viewers in the live broadcast room. Because the entire live streaming content is primarily aimed at serving paid viewers. Ordinary viewers can only fully integrate into the social relationships of the entire virtual community of the live streaming platform by fully respecting, yielding, and sometimes even tolerating paid viewers, thereby obtaining a better viewing experience and interactive feeling. The order of courtesy in live streaming rooms may include emotional and self-discipline factors in some cases, but fundamentally it is determined by the order of consumption rankings, which is determined by the characteristics of the live streaming tipping model.

In online live streaming interactions, not only is the traditional Five Virtues ideology reflected, but some important elements of the Five Constants ideology are also reflected. The Five Constants of "benevolence, righteousness, propriety, wisdom, and trustworthiness" are the core of Confucian ethics. Mencius summarized them as the "four ends" of "benevolence, righteousness, propriety, wisdom, and trustworthiness," while Dong Zhongshu summarized them as the "Five Constants. [28] The "Five Constants" ideology is a moral code of conduct in traditional Chinese society and a representative symbol of the Confucian moral system. [29] In "Mencius' Admonitions to Confucius," Mencius first proposed the concept of "benevolence, righteousness, propriety, and wisdom" as a whole: "The heart of compassion is benevolence; the heart of shame and evil is righteousness; the heart of respect is propriety; and the heart of right and wrong is wisdom. Benevolence, righteousness, propriety, and wisdom are not external to me, they are inherent to me, and I am grateful. [30]

The core idea of "ren" is to "love others". Confucius said, "Those who are benevolent love others." The connotation of human beings also includes the "way of loyalty and forgiveness", which requires "self-restraint and restoration of propriety", restraint of personal thoughts, and pursuit of a perfect personality. [31] Do not do to others what you do not want done to yourself. Mainly discussing the principles of how to be a good person and how to treat others. [32]In online live streaming interaction, the ultimate goal of the anchor is to obtain tipping income and sales income, and the pursuit of economic benefits is reasonable and encouraged by the platform. But obtaining economic benefits must be done through legitimate, reasonable, and moderate means. Some anchors may increase their tipping income by competing on rankings, stimulating viewers' competitive mentality, and impulsive consumption. However, most anchors advise their fans to consume rationally, restrain their pursuit of economic interests, and establish an image of considering their fans. This approach is also beneficial for increasing one's fan base and attention, ultimately leading to an increase in one's income. In live streaming sales, some anchors deceive fans into placing orders and purchasing through false advertising or unfair means such as raising prices first and then discounting. However, most anchors can promote products with integrity, truthfully introduce the characteristics of the products, and inform consumers to make rational purchases. This approach can actually win the favor of fans. In the interaction between viewers, due to significant differences in their real social identity,

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occupation, age, gender, education level, etc., their understanding of the same issue also varies greatly, which often leads to conflicts and frictions in live streaming interactions. The key to alleviating this problem is to adhere to the principle of considering others and putting oneself in others' shoes, and to "do not do to others what you do not want done to yourself" and "love others with kindness". Viewers with higher levels of education and comprehensive qualities often have good interpersonal relationships in live streaming rooms. A portion of the audience with lower education levels and lower overall qualities often judge problems based on their own personal opinions and impose their own standards of right and wrong on others. Such viewers will experience constant friction, conflict, and contradictions in online live streaming interactions. Not only is their own viewing experience relatively poor, but the ratings from live streaming hosts and other viewers are also relatively low, making it difficult for them to integrate into specific live streaming virtual communities.

Righteousness "refers to just and appropriate principles or actions. The explanation of" righteousness "in" The Doctrine of the Mean "in the Book of Rites is:" Righteousness is appropriate. "Liu Xi's" Shi Ming "states:" Righteousness is appropriate, and punishing things is appropriate. [33] "In" Ren Li "of the Analects of Confucius, there is a discourse that" a gentleman is likened to righteousness, and a petty person is likened to profit, "which sparked the debate between righteousness and profit later on. Confucius believed that profit should obey righteousness and prioritize righteousness over profit. In online live streaming interactions, hosts often use "righteous" behavior to achieve the goal of "profit". When facing audiences who have a high consumption of live streaming tips in the past, even if this audience does not brush gifts or give tips during a certain live stream, the anchor will arrange targeted live streaming content to meet the audience's viewing demands. Sometimes, the anchor will perform talents for this audience for free, although such performances usually require paid on-demand in the live broadcast room. Because the audience who give more rewards have a foundation of interactive emotional relationships in the past, this behavior of the anchor is actually a form of reward behavior. Even if the audience did not make any tipping or consumption during the live broadcast, if the audience directly requests content playback, the anchor will definitely meet such requirements, because this is a fair and appropriate behavior based on previous interactions. As long as the anchor and the audience maintain such an interactive relationship, in the future live streaming process, the audience will also give back to the anchor, continue to give gifts and consume in the live streaming room, which is closely related to the characteristics of China's traditional human society. In the profit model of entertainment anchors, content live streaming and receiving rewards are a long-term accumulation process, and should not be rushed to achieve success or monetize. Seemingly emphasizing "righteousness" over "profit", in fact, both "righteousness" and "profit" are accepted.

The concept of "faith" is referred to by Confucianism as the "foundation of moral cultivation," the "way of establishing people," and the "foundation of establishing government." Confucius put forward ideas such as "if a person lacks faith, they do not know what they can do." and "if the people lack faith, they cannot establish themselves. [34] To achieve the principle of "making friends and keeping promises" is the main content of Confucian integrity thinking. In online live streaming interactions, anchors often keep their promises to the audience and fulfill their performance content truthfully. The audience with the highest tipping consumption is revered as the "Top Brother" in the live broadcast room, and they enjoy a particularly high status in live interaction, but the "Top Brother" also needs to bear corresponding responsibilities. For example, when competing for gifts in two live streaming rooms, if the "Top ranked Brother" has made relevant promises to support the anchor in advance, they will fulfill their promises truthfully, so as to consolidate their position in the live streaming room and obtain a better viewing experience.

3. Conclusion

From the above discussion, we can see that traditional Chinese etiquette culture is fully reflected and applied in the social interaction of online live streaming virtual communities. Community residents should actively follow the basic principles of etiquette culture, take its essence, discard its dross, sublate in criticism, and develop in inheritance. Actively preserve the beneficial and positive aspects of traditional Chinese etiquette culture, resolutely abandon the negative and negative feudal customs, and further develop and extend the excellent traditional Chinese etiquette culture at the metaverse level.

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References

[1] IMedia Consulting Report on the Development Status and Market Research Analysis of China's Live Streaming Industry in 2022 , https://www.iimedia.cn/c400/84858.html
[2] Liu Huaqin:Network Anthropology: The Interaction between Cyberspace and Anthropology. Journal of Guangxi University for Nationalities (Philosophy and Social Sciences Edition), (2004) No.2, p.65.
[3] Bu Yumei:Theoretical Essentials of Network Anthropology, Journal of Yunnan University for Nationalities (Philosophy and Social Sciences Edition), (2015) No.5, p.41.
[4] Bu Yumei :Theoretical Essentials of Network Anthropology, Journal of Yunnan University for Nationalities (Philosophy and Social Sciences Edition), (2015) No.5, p.43.
[5] Zhu Jie:Field research in network anthropology, Ideological Front, (2008) No.2, p.127.
[6] Wang Qingqi, Meng Ting: Exploration of Virtual Ethnography Methods,Journal of Shandong University of Technology (Philosophy and Social Sciences Edition), (2018) No.2, p.52.
[7] Xu Shen: Shuowen Jiezi (Zhonghua Book Company, China 1963). p. 7.
[8] Xu Shen: Shuowen Jiezi (Zhonghua Book Company, China 1963). p. 165.
[9] Liu Zhihong:Exploring the Origins of Traditional Chinese Etiquette, Journal of Anyang Institute of Technology, (2017) No.5, p.65.
[10] Zhang Anqiang:A Brief Discussion on the Ideological Connotation and Contemporary Value of Traditional Chinese Etiquette Culture , Cultural and Educational Materials, (2018) No.1, p.64.
[11] Li Mei:The Evolution and Modern Transformation of Traditional Chinese Etiquette,Shandong Social Sciences, (2020) No.5, p.172.
[12] Yang Dan:Analysis of the Relationship between Traditional Chinese Etiquette and the Construction of a Harmonious Society, Journal of Wuhan University (Philosophy and Social Sciences Edition), (2013) No.3, p.105.
[13] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p. 134.
[14] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p. 134.
[15] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p. 134.
[16] Liu Zhihong:Exploring the Origins of Traditional Chinese Etiquette, Journal of Anyang Institute of Technology, (2017) No.5, p.66.
[17] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p. 332.
[18] Xu Jialu:Zhuzi Integration (Guangxi Education Press, China 2006). p.221.
[19] Randall Collins:.Interactive Ceremony Chain (Commercial Press, China 2009). p. 83-88.
[20] Max Weber:Economy and Society (Shanghai Century Publishing Group, China 2010). p.114.

ISSN: 2710-0170

[21] Huang Ying: Wang Maolin Symbolic Capital and Emotional Energy, An Analysis of Network Live Streaming Interaction from the Perspective of Interactive Ritual Chain ,(2017) No.8, p.66.

[22] Fan Jun, Chen Tingting, Zhang Qing:The impact of anchor interaction strategies on audience tipping willingness in different types of live streaming scenarios,Nankai Management Review,(2021) No.6, p.200.

[23] Xu Xingbao:Re examination of the Essence of the Spirit of "Wenliang Gongjian Rang" ,Journal of Northwest Second Nationalities University (Philosophy and Social Sciences Edition),(1999) No.4, p.65.

[24] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p. 4.

[25] Xu Xingbao:Re examination of the Essence of the Spirit of "Wenliang Gongjian Rang" ,Journal of Northwest Second Nationalities University (Philosophy and Social Sciences Edition),(1999) No.4, p.65.

[26] Xu Xingbao:Re examination of the Essence of the Spirit of "Wenliang Gongjian Rang" ,Journal of Northwest Second Nationalities University (Philosophy and Social Sciences Edition),(1999) No.4, p.68.

[27] Xu Xingbao:Re examination of the Essence of the Spirit of "Wenliang Gongjian Rang" ,Journal of Northwest Second Nationalities University (Philosophy and Social Sciences Edition),(1999) No.4, p.70.

[28] Sun Junheng: A review of the current value of the "Five Constants" of Confucian gentlemen, Journal of Hengshui University, (2018) No.12, p.49.

[29] Li Honglei :Ren Yi Li Zhi Xin : The Modern Value of Confucian Moral Education Thought,Qilu Journal, (2015) No.5, p.5.

[30] Wang Guoxuan:Four Books(Zhonghua Book Company, China 2011). p.332.

[31] Liu Yuli:Thirty years of research on "benevolence, righteousness, propriety, wisdom, and trustworthiness", Henan Social Sciences, (2010) No.1, p.187.

[32] Li Honglei :Ren Yi Li Zhi Xin : The Modern Value of Confucian Moral Education Thought,Qilu Journal, (2015) No.5, p.5.

[33] Li Honglei :Ren Yi Li Zhi Xin : The Modern Value of Confucian Moral Education Thought,Qilu Journal, (2015) No.5, p.7.

[34] Liu Yuli:Thirty years of research on "benevolence, righteousness, propriety, wisdom, and trustworthiness", Henan Social Sciences, (2010) No.1, p.188.

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A Backlash, Rebellion or Revolution? A Survey Study on the Gender Perceptions of Generation Z Females at the Methodist Ladies' College in Australia

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Abstract

With the rapid development of society and the acceleration of the globalization process, the post-2000 generation of women, namely Generation Z women, are experiencing unprecedented social changes. The gender concepts of this generation are undergoing profound transformations. This study selects an all-girls high school in Australia as a typical field site and investigates on the marriage views, family concepts, future career choices, and attitudes towards current feminism of Generation Z women. This research aims to explore how Generation Z women shape and express their gender concepts when confronted with the conflict between traditional gender roles and modern feminist ideas. Through in-depth research on this specific group, this study will reveal the diversity and complexity of gender concepts in contemporary society and provide new perspectives and data support for future gender research.

Keywords

Generation Z, feminism, gender perception, Australia.

1. Introduction

In recent decades, the topic of gender equality has attracted significant attention. Over the centuries, countless women have laid a solid foundation for the social status women enjoy today, despite facing challenging circumstances. With the advancement of technology, globalization, and the advent of the internet era, Generation Z has gained greater access to multicultural and global issues. They quickly acquire information, actively participate in discussions, and develop a deeper understanding of social issues such as gender equality, recognizing its importance. However, this has also brought about a series of radical statements and actions, as well as deep-seated skepticism and opposition from patriarchal societies. As a result, in many cases—particularly during online discussions involving gender-related controversies—feminism has gradually become a sensitive and even pejorative term, leading to misunderstanding and resentment. This perception has, to some extent, distorted the original intentions and impact of feminists.

Generation Z refers to the generation born roughly between 1995 and 2010. Growing up in a world of pervasive digital technology, they are often referred to as "digital natives". It is a generation that has been exposed to the Internet, smartphones, and social media from birth (Francis & Hoefel, 2018). This upbringing has enabled them to demonstrate exceptional efficiency and diversity in acquiring and transmitting information. At the same time, this generation embraces more diverse cultures and is more sensitive and engaged in global issues. Moreover, Gen Z groups value pursuing personal interests and individual identity over simply following conventional norms, which is why they are sometimes called "identity nomads" (Francis & Hoefel, 2018). (Fig.1)

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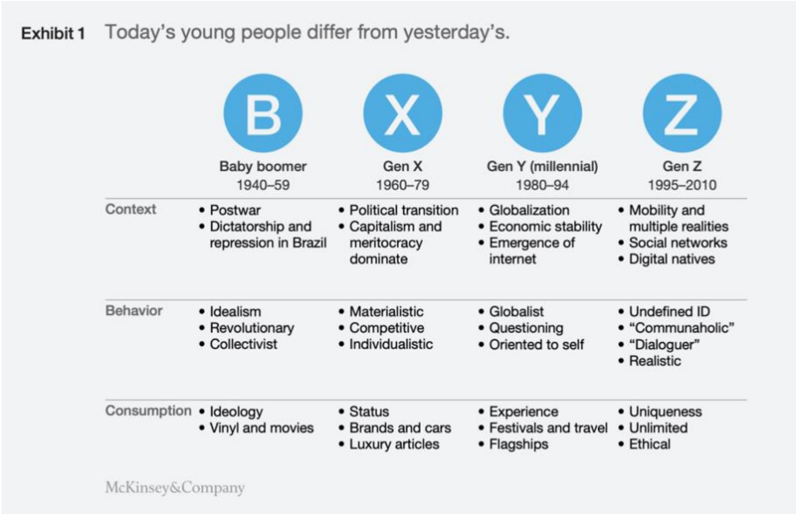

Figure 1. (Francis & Hoefel, 2018)

Currently, young women in Gen Z are at a critical stage in forming their understanding of gender roles and identity. Their perspectives not only reflect the psychological characteristics of their personal growth stage, but also reveal their generation's expectations regarding social gender. At the same time, they are deeply influenced by contemporary social trends, such as gender equality, feminism and diverse values, etc., which makes their gender concepts more representative of the times.

Nowadays, there is growing interest regarding Generation Z's attitudes toward gender equality and gender role formation in western academic circles. Studies have found that Gen Z college students are generally more enthusiastic about gender equality than previous generations, and they are more active in advocating for gender equality in the workplace, education, and politics (Lin et al., 2021). However, issues surrounding gender equality still affect Gen Z. For example, the idea that "men should be breadwinners" and "women should take care of others" continue to shape Gen Z college students' perceptions of gender roles (Fang et al., 2023). Meanwhile, other studies highlight more progressive gender role models, such as the notion that men and women should share family responsibilities equally (Bucchetti & Casnati, 2022). Nevertheless, as criticized by the third wave of feminism, much of this research focuses primarily on Western societies, lacking cross-cultural attention and comparative analysis of Asian and other ethnic groups.

On the contrary, the research on female gender concept in Chinese academic circles mainly focuses on adult female college students, without recognizing underage girls as valuable research subjects. For instance, Wang Qin and Liang Li's study, *Transformation of Female College Students' Values Since the Reform and Opening-Up*, divided the evolution of female college students' values into two stages, and revealed the track of their value changes from five aspects— gender perceptions, female subjectivity, views on marriage and relationships, employment view and life value. Similarly, Qian Xiaoyun's master's thesis, *The Development of Gender* Perceptions *Among Contemporary Female College Students*, employs a combination of questionnaire surveys and interviews to investigate the gender perceptions of 1,250 students from five universities in Fuzhou. However, most of these studies were conducted before 2010, lacking follow-up and feedback on the significant social changes in recent years.

Therefore, this study will take the gender perceptions of "Generation Z women" as the starting point to explore how social characteristics shape individual beliefs and to provide new perspectives and practical significance for contemporary gender studies. I will pay particular attention to introducing a comparative perspective, focusing on immigrant countries to investigate how the intersection of diverse cultures in contact zones influences and shapes the gender perceptions of Generation Z women.

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The focus of the study turns to Australia. In line with global trends, Australia has made important progress on gender equality, with women's status advancing across many fields. As an immigrant nation, women living in Australia come from all over the world, bringing with them a rich cultural diversity. This diversity offers new perspectives and opportunities for women's empowerment, but it also means that women face different challenges depending on their cultural backgrounds. During the Covid-19, Asian women suffered severe inequality in Australia under the dual pressures of racial discrimination and gender inequality. Studies have shown that Asian women are more likely than Asian men to experience the brunt of racial discrimination during the pandemic (Ang et al., 2023). It can be seen that the problem of gender inequality still exists, and issues such as gender discrimination, sexual harassment, and misogyny cannot be overlooked. In Australia, the education model of some single-sex schools has promoted the cultivation of gender advantages to a certain extent, but it has also potentially led to antagonistic attitudes or stereotypes between the genders, resulting in a lack of comprehensive understanding of gender equality.

This study ultimately selects a local girls' high school in Melbourne as the field site. Girls' high school has an exclusive and homogenous environment, which provides a relatively pure observation object and research conditions for the study, and facilitates a deeper understanding of students' gender perceptions in the single-sex education environment. On the other hand, this school is situated within Australia's education system and multicultural societal context, effectively reflecting how local education and culture shape gender perceptions. Therefore, the college holds high representativeness and can provide valuable references for the study. Although existing research has explored topics such as gender perspectives, educational environments, and multicultural backgrounds, systematic analyses on their consequences and reflections remain insufficient, thus leading to the motivation of this study. By exploring GenZ's gender perceptions, social responses and influencing factors, this study aims to deepen the understanding of the spread and evolution of feminism across generations. Furthermore, by focusing on the girls' school environment in Australia's multicultural context, the study can discover the interaction of education, culture and gender perspectives.

This study will focus on the following questions:

Do Gen Z women's views on marriage and family responsibilities conflict with traditional gender role expectations?

How do they perceive gender equality in future career choices or workplace sexism?

What is their level of acceptance, questioning point or identification method of contemporary feminism (especially fourth wave feminism and online feminism)?

What influence do educational environment and multicultural society have on their gender perceptions?

2. Method

2.1. Fieldwork

Fieldwork refers to a social science research method in which researchers collect first-hand information through direct observation, interview, participation and recording (Guo, 2023). This method emphasizes the close interaction between the researcher's spirit of seeking the truth and the research object (Li, 2015). In this study, fieldwork was conducted in Methodist Ladies' College, a girls' school in Melbourne.

Methodist Ladies' College (MLC), located in Melbourne, was Australia's first girls' school to be founded by the Wesleyan Methodists. MLC opened on 14 February 1882 after the founding Principal, Rev. Dr. William Henry Fitchett, and a committee convinced the Australian Methodist

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Church that having established schools for boys, it should also open a school for girls. MLC is one of the few schools in Victoria offering a choice between Victorian Certificate of Education (VCE), International Baccalaureate (IB) Diploma Programme, and Vocational Education and Training (VET) pathways, ensuring that students can tailor their education to suit their aspirations (MLC, 2019).(Fig 2-Fig 3)

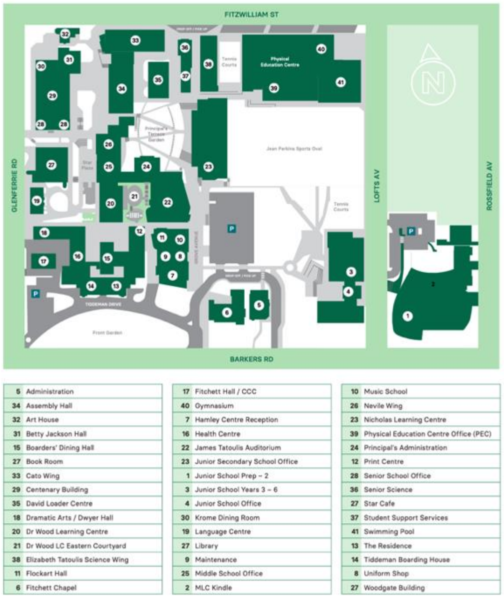

Figure 2. Map of MLC campus

Figure 3. Life in MLC

2.2. In-depth interview

In-depth interview is a qualitative research method in which researchers engage in one-on-one, in-depth conversations with participants to explore their true feelings, attitudes, behaviours, motivations and experiences on a specific topic. This method emphasizes openness and flexibility, allowing interviewees to express opinions and emotions in their own words. At the same time, interviews are purpose-driven with most of the information provided by the interviewees is within the defined scope of the interview's objectives (Yang, 2001).

In this study, seven students will be randomly selected (information recorded in table 1 below) from the high school cohort for one-to-one interviews. The information obtained will be directly used as primary data for this research. The interviews will take place in November-December 2024, and the average length of an interview will be 1 hour. The purpose of the interviews is to understand the views and thoughts of Gen Z women on marriage, family responsibilities, career planning, and contemporary feminism. The interviews will be conducted online.

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Table 1 – Interviewees information

Interviewee	age
I1	18
I2	17
I3	18
I4	17
I5	16
I6	17
I7	17

3. Results

3.1. Redefinition of gender roles

The results of this study show that Gen Z women have developed a new understanding and attitude towards the meaning of marriage and family. They tend to examine the value of marriage and family with equality, freedom and mutual respect as core principles. Getting married or having children is no longer seen as a "necessary path" in a woman's life but rather as a personal choice. Compared with the traditional concept of marriage and family as "mandatory options" in life, Gen Z women pay more attention to personal growth and self-fulfilment. In relationships, they exhibit a rational and independent approach, which is significantly different from the intense emotions depicted in melodrama or fairy tale romance people loved in the past. They prefer to stay sober in their feelings and pursue mutual growth with their partners, rather than blindly sacrificing themselves.

According to the survey data collected from the interviews, the ideal marriage age for Gen Z women averages around 30 years old. Most interviewees believe that by this age, both they and their partners would be more mature in their careers, lives and emotions, enabling them to approach marriage and relationships with a more rational and thoughtful attitude. This shift reflects the new generation of women's pursuit of equality, independence and high-quality emotional connections. Specifically, some interviewees shared their views:

Interviewee 3 believe that between the ages of 30 and 35 is the stage when women gradually mature and are between equipped to handle relationships: "We become more mature between the ages of 30 and 35 and are more capable of undertaking relationships…when we encounter conflicts, we will not choose a cold war but solve problems in a more effective way." This view reflects an emphasis on emotional maturity and the expectation of constructive communication in marriage.

Interviewee 4 emphasised the importance of personal growth and financial stability in marriage: "I want to get married after 30 because I want to have enough space to find my own pursuits first…When I start a family, I want to be able to focus more on my family, so that it is responsible. So I choose to work hard to earn money first, build a solid financial base, and make sure that I can pay more attention to my family."

These views represent a significant change in Gen Z women's views on marriage. This new concept of marriage not only reflects their self-identification of modern independent women but also highlights their pursuit of a higher standard of living and emotional dynamics.

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3.2. Criticism and reflection on prevailing feminist trends

Interviews reveal that most Generation Z women, whether self-identified feminists or non-feminists, expressed concern that some forms of feminism today appear too extreme in some cases and fail to have a positive social impact. They pointed out that extreme statements and behaviours not only deviate from the original intention of promoting gender equality but may also lead people to mistake feminism for opposing and fighting against men, ignoring its essence of fostering gender equality and harmonious coexistence in the whole society. At the same time, they also mentioned that in some cases, some people seem to use the concept of feminism as a rationalization to satisfy personal needs and interests, rather than truly promoting social change or improving gender relations. For instance, on social media, some people may selectively amplify certain events, simplifying them into gender conflicts to stimulate emotional discussions and antagonisms, which in turn obscure the real issues that the feminist movement is concerned with.

In addition, such behaviour may lead to the public misunderstanding of feminism, reducing it to opposition, blame, and even conflict, while overlooking its original intention of advocating fairness, respect and cooperation. Some interviewees believe that although extreme actions attract widespread attention, they may not truly advance the practice of gender equality. Instead, they may alienate some people who originally supported gender equality and even become sceptical of the movement. Therefore, they call on modern feminism to focus more on rational, inclusive and constructive expression, eliminating prejudice and misunderstanding through practical actions and communication, rather than resorting emotions or antagonistic ways to pursue short-term public results.

Interviewee 5 said that contemporary feminist expressions and social perceptions have become disconnected from the original intention of traditional feminism: "I think I am a feminist, but I don’t support modern feminism, especially those who are active on the Internet…And I don't support female sex work... They're just defending all the bad things people do. I'm more on the side of traditional feminists who fight for the rights of women in third world countries who can't go to school... Not the ones advocating that we don't need men, promoting cheating and sex work."

Interviewee 6 said that people's ideas do not align with the current social situation, and their actions are not appropriate: "A lot of people say that women are better than men because they think that men and women are equal, but the truth is that people are still more tolerant of men," she called this "Edinburgh thinking."(comes from the Chinese pronunciation) She added: "The original goal of feminism should be equality between men and women, not women over men… I wouldn’t consider myself a feminist because I haven't taken any actions for feminism yet... I am still at the level of thought"

The interviewees all expressed reflections on certain developments in contemporary feminism, as well as rethinking its original intentions. They called on feminism to return to reason and focus on promoting real equality and progress, while warning against the negative impact of the radicalization of expression and lack of actionable efforts.

3.3. Diverse views on Women’s Education

Students have very different views about the feminist education they receive at all-girls schools. Some believe that certain feminist actions in single-sex schools may unintentionally reinforce gender antagonism, leading some students to develop a sense of wariness or even hostility toward men. These individuals argue that placing too much emphasis on the differences between women and men, or oversimplifying gender issues into adversarial terms, not only fails to solve the underlying problem, but may make it harder for women to integrate into a gender-diverse society after leaving campus. They advocate for feminist education to focus more on cooperation and mutual understanding, fostering true gender equality.

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Nevertheless, some students said that the environment of a single-sex school creates a relatively safe space for women, allowing them to avoid the interference of gender bias. In this environment, they are able to focus more on self-growth and empowerment without the fear of unequal treatment or gender discrimination from the outside world. This supportive atmosphere boosts their confidence, encourages them to pursue their dreams, and deepens their understanding of gender equality. Additionally, they pointed out that education in girls' schools is not intended to incite gender antagonism, but to help women recognize the rights and opportunities they deserve. It aims to equip them with the confidence to firmly defend their rights when entering the workforce or broader society.

Interviewee 1 mentioned that when she first came to a girls' school, she was shocked by the feminist atmosphere there: "Gender equality is not yet perfect, but feminism is so intense that it may indirectly cause men to resist gender equality. My English teacher would casually say in class that ' Of course women are more valuable than men', although it was in a joking tone... I don't think I would have known that feminism was so exaggerated if I hadn't been at a girls' school."

Interviewee 7 stated she felt protected at an all-girls school: "If I had not been at an all-girls school, I might have experienced gender discrimination... but at least at MLC, there is no such situation, and everyone is more united."

This diversity of views also indicates that the approach and content of gender education still need to find a balance among different backgrounds and objectives to better promote the realization of gender equality.

4. Discussion

4.1. Conclusion

Research reveals that Gen Z women have redefined the meaning of marriage and family. Compared with traditional concepts, they pay more attention to self-growth, and no longer regard marriage as a necessary path of life, nor willing to blindly sacrifice themselves for emotional commitments. At the same time, Gen Z women are sceptical of certain radical demands of contemporary feminism. They believe that these demands may fail to fully take into account the diverse perceptions of gender equality in the current society, and even deviate from the original intention of the feminist movement to some extent, bringing new constraints to the movement that was originally designed to promote equality.

Moreover, high school students from girls' schools expressed mixed views on education aimed at promoting gender equality. Some respondents noted that too much emphasis on the difference between women and men, or the oversimplification of gender issues into antagonistic relationships, not only fails to address the root causes of underlying inequality, but may also make women face greater challenges when they leave campus and enter a broader and gender diverse society.

4.2. Innovation and value

This study is an in-depth discussion on the changes of Generation Z women's ideas about marriage, family and contemporary feminism, as well as the multiple attitudes of girls' high school students towards gender education, which has the following innovative and valuable values:

Firstly, this study combines data from diverse social, cultural and educational backgrounds of Generation Z women to show a multidimensional view of the evolution of gender perceptions, which helps to address the limitations of previous research that often relied on single perspectives or fixed scenarios.

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Secondly, this study expands the boundaries of feminist discourse by questioning and reflecting on contemporary feminism. Through the lens of Generation Z women, it introduces a new research dimension that helps the academic community reexamine the relationship between radical feminism and gender equality. This provides fresh insights for the further enrichment and refinement of feminist theory.

Finally, this study highlights the correlation between education and social adaptation, paying special attention to the conflicts and challenges faced by high school students in girls' schools when they enter a broader society after receiving gender equality education, which can provide reference for future studies on social integration and self-identity and provide empirical evidence for relevant education reform.

Based on the research results of this topic, the following suggestions are proposed:

In the field of education, audiences should be subdivided, and teaching approaches need to be stratified. Gender education content should be tailored to students' age, psychological maturity, and cultural and social environments, reducing "one-way indoctrination" or overly confrontational methods, so that students can gradually form diversified and inclusive perspectives in the learning process. At the same time, it is crucial to enhance teachers' gender awareness by implementing targeted training programs for educators. These programs should help teachers understand the mindset and values of Generation Z, equipping them to effectively guide discussions in the classroom. This ensures that gender-related topics are explored in greater depth and with more inclusivity within the school environment. In addition, it is necessary to foster students' critical thinking and reflective abilities. Encouraging students to question and reflect on concepts such as gender, marriage, and family helps them critically assess diverse perspectives. This approach enables students to navigate complex gender dynamics in society with greater resilience and independent thought.

In terms of policymaking, it is essential to improve youth rights and social security system. Considering the needs and concerns of Generation Z women regarding employment, marriage, childbirth, and independent living, governments and social organizations can formulate or enhance relevant protection policies. This includes offering flexible public services as well as more comprehensive social support in areas such as childbirth, childcare, and healthcare, ensuring that young women have greater autonomy when making decisions about marriage and family. Furthermore, we can establish a platform for multi-gender dialogue, actively promote cooperation from all sectors of society—government departments, enterprises, universities and social organizations—building a more inclusive public discussion, so that people of different positions and different age groups can communicate on an equal basis, reduce excessive confrontation or labelling, and create conditions for reaching a broader social consensus.

4.3. Limitations

At present, Global gender inequality remains an ongoing issue. This study focuses on the gender perceptions of Generation Z women and the potential overreactions of some feminist behaviours. However, there are still some limitations in this research. Firstly, the sample size and field sites are limited. The primary data obtained in this study were all from students at Methodist Ladies' College senior school, so the sample size is not large enough. Secondly, because the interviewees are aged between 16 and 18, some of the interview content is too distant from their actual life experiences, so they cannot answer from a practical perspective. If there is a further investigation on gender cognition of Gen Z women in the future, the sample size can be expanded, and cross-cultural comparative analysis can be considered.

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References

[1] Francis, T., & Hoefel, F. (2018). "True Gen": Generation Z and Its Implications for Companies (pp. 1–10).

[2] Lin, H.-H., Ling, Y., Lin, J.-C., & Liang, Z.-F. (2021). Research on the Development of Religious Tourism and the Sustainable Development of Rural Environment and Health. International Journal of Environmental Research and Public Health, 18(5), 2731.

[3] Fang, H., Velan Kunjuraman, & Ling, K. (2023). Systematic Literature Review on Gender Equality Attitude of the Gen Z College Students from a Gender Role Perspective. Educational Administration Theory and Practice Journal, 30(1), 51–67.

[4] Bucchetti, V., & Casnati, F. (2022). Communication design to foster gender equality. Routledge EBooks, 115–126.

[5] Ang, S., Song, J., & Pan, Q. (2023). Pandemic racism and sexism in Australia: Responses and reflections among Asian women. Current Sociology, 001139212311594. https://doi.org/ 10.1177/ 00113921231159432

[6] Wang, Q., & Liang, L. (2011). Transformation of female college students' values since the reform and Opening-Up. China Youth Study, 11, 32–36. https://doi.org/10.19633/j.cnki.11-2579/ d.2011. 11.008.

[7] Qian, X. (2010). The Development of Gender Perceptions Among Contemporary Female College Students. Fuzhou University.

[8] Guo, X. (2023). Research on the practical application of fieldwork in the documentary "My Mother" about the elderly. Changchun Normal University. https:// link.cnki.net /doi/10.27709 /d.cnki.gccsf.2023.000341doi:10.27709/d.cnki.gccsf.2023.000341.

[9] History | Methodist Ladies' College Melbourne. (2019). Methodist Ladies' College. https:// www. mlc. vic.edu.au/about-us/history/

[10] Yang, W. (2001). Analysis of interview method. Journal of Qiqihar University (Philosophy & Social Science Edition), 04, 114–117. https://doi.org/10.13971/j.cnki.cn23-1435/c.2001.04.046.

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An Overview of the Service-Oriented Transformation of China's Manufacturing Industry

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Abstract

The servitization of manufacturing is the development direction of the manufacturing industry. The new round of technological revolution and industrial transformation in recent years has further driven the process of servitization in manufacturing. In response to the current confusion regarding the concept of service-oriented manufacturing, based on existing research, it is proposed that the essence of service-oriented manufacturing lies in manufacturing enterprises providing value-added services based on their own products to users. Service-oriented manufacturing is characterized by universality and diverse models. The main drivers of the development of service-oriented manufacturing include increasing product complexity, consumption upgrades, the development of new-generation information technology, and the pursuit of growth in the manufacturing industry. At the same time, service-oriented manufacturing shows significant differences across industries. It plays an important role in reshaping competitive advantages, promoting the green development of industries, improving total factor productivity, and addressing trade frictions.

Keywords

Servitization of manufacturing; service-oriented manufacturing; servitization.

1. Introduction

Currently, the new round of technological revolution and industrial transformation is advancing in depth. Industrial integration, particularly the deep integration of advanced manufacturing and modern services, has become an important feature of global economic growth and industrial evolution. At the same time, China's manufacturing industry is accelerating its transformation and upgrading towards intelligence, greening, and servitization. New technologies and elements are being organically integrated with manufacturing, and the fusion of manufacturing and services is accelerating. The industrial scope of manufacturing is constantly expanding, its connotation is becoming richer, and the boundaries between advanced manufacturing and modern services are increasingly blurred. The degree of integration between manufacturing and services is continuously increasing, with service-oriented manufacturing becoming an emerging form and trend in the development of the manufacturing industry. Promoting service-oriented manufacturing helps manufacturing enterprises innovate their business models, restructure industrial chains and value chains; it also promotes the development of the manufacturing industry towards high-end production, assists manufacturing enterprises in enhancing competitiveness and industry control; and it contributes to the formation of a new development pattern that centers on domestic circulation and promotes mutual reinforcement between domestic and international circulations.

The concept of service-oriented manufacturing or servitization has been around for 30 years. While international corporate practices can be traced back to earlier periods, it remains a relatively new concept in China. Although academic research and government documents, both

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domestically and internationally, have provided definitions or descriptions of service-oriented manufacturing and related concepts, there are still unclear aspects. There are different interpretations among government authorities, academic circles, and enterprises, leading to misinterpretations and misapplications of service-oriented manufacturing in policy formulation, implementation, and business practices, particularly when there is a tendency to overly broaden the scope of service-oriented manufacturing. To correctly understand service-oriented manufacturing, it is essential to clarify the relationship and boundaries between services and manufacturing. While the implementation subject of service-oriented manufacturing is relatively easy to reach a consensus on—manufacturing enterprises or manufacturing enterprise groups—the definition of the scope of services varies widely. For example, one view suggests that any service activity conducted by a manufacturing enterprise can be considered service-oriented manufacturing; another view holds that only service activities related to manufacturing or physical products qualify as service-oriented manufacturing. Both of these interpretations have certain one-sidedness.

2. Service-Dominant Logic

2.1. The connotation and essence of Service-Dominant Logic

(1) Service as the Core of Economic Exchange

Service-Dominant Logic challenges the traditional logic of product exchange by shifting the focus from products (goods) to services. Traditional logic holds that value is primarily determined by the characteristics and attributes of goods, while Service-Dominant Logic emphasizes the value creation process in service exchanges.

(2) Value Co-Creation

Service-Dominant Logic focuses on value, not the inherent characteristics of products or services themselves, and highlights co-creation of value through the interaction between service providers and service recipients. This co-creation means that value formation depends on the roles of participants and their modes of interaction, emphasizing the dynamic and complex nature of the exchange process.

(3) Resource Integration and Sharing

Service-Dominant Logic posits that economic exchanges are based on the integration and sharing of resources, which include not only tangible products but also intangible resources such as knowledge, skills, and experience. Thus, Service-Dominant Logic emphasizes the importance of cross-organizational and cross-boundary resource integration capabilities in creating and exchanging value.

(4) Focus on Relationships and Interaction

Unlike traditional transaction views, Service-Dominant Logic stresses the relationship and interaction between service providers and recipients. This relationship does not occur only at the point of transaction but continues to develop and evolve throughout the service process, emphasizing the importance of customer participation and feedback.

(5) User Experience and Participation

Service-Dominant Logic underscores the importance of user experience, placing the user at the center of the value creation process. The design and delivery of services need to be approached from the user's perspective, focusing on their needs, expectations, and satisfaction to enhance the value of the service.

(6) Dynamics and Adaptability

Service-Dominant Logic views the service economy as dynamic and adaptable, requiring adjustments and improvements based on market changes, technological advancements, and

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evolving customer needs. This flexibility and adaptability enable businesses to better respond to market shifts and competitive challenges.

In summary, Service-Dominant Logic offers a new market logic and theoretical framework, emphasizing the importance of services, interactions, and value co-creation, contrasting sharply with traditional product-centered economic logic. Through Service-Dominant Logic, researchers and practitioners can better understand and explain the processes of value creation and exchange in modern economic activities.

3. The Connotation and Characteristics of Servitization in Manufacturing

3.1. The Conceptual Connotation of Servitization in Manufacturing

Servitization in manufacturing refers to the increasing integration of service elements into the production process of manufacturing industries. The output of manufacturing shifts from simply providing goods or goods-related items to offering comprehensive solutions that include both products and services. Manufacturing enterprises achieve the extension of the industrial chain and the enhancement of the value chain through deep customer involvement in design and the input and provision of service elements.

Servitization in manufacturing can be further divided into input servitization and output servitization. Input servitization refers to the increasing proportion of service elements in all input factors of manufacturing enterprises' production and operations. Output servitization refers to the growing share of service-related outputs and revenues in the production and income of manufacturing enterprises.

Related concepts to manufacturing servitization include productive services, service-oriented manufacturing, and the integration of manufacturing and services. These concepts are interconnected yet distinct. Productive services emphasize services as intermediate input elements in manufacturing rather than final consumer goods; service-oriented manufacturing highlights the new manufacturing model in which services are an indispensable and crucial factor in both the input and output processes of production; the integration of manufacturing and services refers to the new industrial development form in which advanced manufacturing and modern services are increasingly intertwined, co-evolving, and exhibiting deepening integration.

3.2. The Characteristics of Servitization in Manufacturing

Compared to traditional product-based manufacturing, servitization in manufacturing is a new industrial form of integrated development between manufacturing and services. It has characteristics in aspects such as the form of final products, frequency of supply and demand transactions, composition of input factors, industrial organizational models, and changes in input and output, as detailed in Table 1.

Table 1 Comparison between Product-Based Manufacturing and Service-Oriented Manufacturing.

Comparison Dimension	Product-Based Manufacturing	Service-Oriented Manufacturing
Final Product Form	Tangible physical products	Tangible products + Intangible services
Supply and Demand Transaction Frequency	One-time transaction with minimal after-sales service	Multiple transactions, full lifecycle solutions

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Input Factor Composition	Land, factory equipment, capital-intensive	Labor, knowledge, technology, data-intensive

From the perspective of input factors, the core elements invested in product-based manufacturing enterprises are traditional factors such as land, factory equipment, and capital. In contrast, the core elements invested in service-oriented manufacturing enterprises have shifted to new production factors such as labor, knowledge, technology, and data.

In terms of industry organizational models, traditional product-based manufacturing enterprises mainly enhance their control over the industrial chain through vertical integration or expand production scale and consolidate market position through horizontal integration. In comparison, service-oriented manufacturing enterprises gather numerous companies to build tightly coupled industrial chains, forming a service-manufacturing network system characterized by division of labor, collaboration, and complementary advantages.

Regarding the form of final output, the output of traditional product-based manufacturing is tangible physical products. As servitization in manufacturing develops further, the proportion of tangible physical products gradually decreases, while the proportion of intangible services in the output gradually increases, transforming into service-oriented manufacturing.

From the perspective of supply and demand transaction frequency, traditional product-based manufacturing sells physical products through one-time transactions and ownership transfers. Under the service-oriented manufacturing model, manufacturing enterprises provide integrated, full-lifecycle solutions to customers through multiple transactions, combining "products + services."

In terms of input-output changes, traditional manufacturing enterprises mainly reduce production costs by expanding production scale to gain economies of scale, while service-oriented manufacturing enterprises primarily improve business performance by achieving economies of scope.

4. The Driving Forces Behind the Development of Service-Oriented Manufacturing

The emergence and development of service-oriented manufacturing are driven not only by the increased complexity of products, the growth of personalized customer demands, and the development of new-generation information technologies, but also by the strategic choice of enterprises seeking differentiated competitive advantages, exploring new market spaces, and finding new sources of profit.

4.1. The increase in product complexity expands the demand for service-oriented manufacturing

The process of economic development is one of deepening social division of labor, increasing the degree of indirect production, and expanding product complexity. Modern industrial products, ranging from dozens of components to millions of components, require specialized knowledge and skills for the design and manufacturing of each intermediate and final product. Although manufacturing enterprises strive to make products user-friendly from the design stage, the increasing complexity of products makes it more difficult for users to operate them, and even harder to understand the internal structure and parameters of the products, thus hindering tasks such as the installation, debugging, and maintenance of precision equipment. Compared to manufacturing enterprises, users, who lack the knowledge of "how the product is designed and manufactured," also face challenges in maintaining the product’s efficient operation. Furthermore, for some product users who purchase in small quantities, maintaining a complete team for product operation and maintenance is not cost-effective. As a result, many

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industrial product users, in order to focus on their core competencies, reduce costs, or optimize product performance, are increasingly willing to outsource these service-related tasks. They expect that, in addition to providing products, the production materials and processing equipment should offer more high-value-added services.

4.2. The upgrade of consumption drives the continuous growth of demand for personalized services

In conditions of low economic development and limited household income, the pursuit of low prices and cost-effectiveness is the mainstream of social consumption, which is aligned with large-scale production methods. Manufacturing enterprises produce standardized products on a large scale to minimize product processing and manufacturing costs. As economic development progresses and disposable income increases rapidly, consumers are no longer satisfied with basic living needs but instead desire differentiated goods. As a result, the market has been segmented into smaller niche markets, driving companies to shift from "mass production" to "mass customization."

However, in the era of "mass customization," consumers demand products that are low-cost, high-quality, and capable of meeting personalized needs. Enterprises primarily achieve this goal by enhancing the flexibility and adaptability of the manufacturing process. As economic development and living standards further improve, consumer demands gradually shift toward the personalized stage. Consumers are no longer content with products that only provide basic utility; instead, they seek more personalized value from products, such as better alignment with individual physical conditions and usage habits, as well as psychological satisfaction. Driven by personalized demands, manufacturing enterprises are compelled to shift from simple processing, manufacturing, and product delivery to providing a combination of "products + services," thus moving toward "servitization."

4.3. The development of new-generation information technology has expanded the space for services

Driven by "Moore's Law," the rapid development of technologies such as computers, software, the internet, and communications has led to a continuous decline in IT hardware costs and enhanced performance, with increasingly widespread applications in the industrial sector. Currently, IT systems widely adopted by leading manufacturing enterprises include Computer-Aided Design and Manufacturing (CAD/CAM), Enterprise Resource Planning (ERP), Manufacturing Execution Systems (MES), Product Lifecycle Management (PLM), Supply Chain Management (SCM), Customer Relationship Management (CRM), and Office Automation (OA) systems. In the product development field, there are also numerous highly specialized industrial software solutions.

Especially with the advancements in new-generation information technologies such as the Internet of Things (IoT), mobile internet, big data, cloud computing, and artificial intelligence, the manufacturing industry is evolving towards digitalization, networking, and intelligence, forming an information-physical system (CPS) that tightly integrates resources, information, materials, and people.

In the future, manufacturing enterprises will be able to generate, transmit, and analyze industrial big data, including materials, equipment, and products, in real-time. They will have the ability to sense status, perform real-time analysis, make autonomous decisions, execute precisely, and continuously learn and improve. Under these conditions, manufacturing enterprises can integrate and utilize their own, their suppliers', and customers' resources, information, and data to innovate service models. For example, by obtaining real-time product condition information sent back by built-in sensors, they can instantly issue warnings about potential failures and provide remote technical support; by analyzing the massive data

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generated during the user's use of the product, they can offer personalized usage recommendations; leveraging highly flexible product development design systems and reconfigurable production systems, they can customize personalized products for users at a low cost and deliver them promptly.

4.4. The need for manufacturing enterprises to pursue growth and improve profit margins

The modularization of products, specialization of enterprises, and the intensification of market competition have led to increasingly smaller differences in the quality, functionality, and appearance of final products. The issue of homogenization has become more prominent, resulting in lower customer switching costs and increasing costs for manufacturing enterprises to acquire and retain customers. This has also caused product prices to continuously decline, thereby eroding the profit margins of manufacturing enterprises.

In this context, the differentiated demand for services from customers not only provides new growth opportunities for manufacturing enterprises but also allows them to increase customer loyalty and improve profit margins through the provision of value-added services. The increase in customer demand for services and the shift of added value to service components have driven more and more manufacturing enterprises to undergo servitization. They are transitioning from being product-centered to customer-centered, shifting from focusing on processing and assembly to "manufacturing + services," moving from one-time product transactions to offering long-term services, and changing from deriving value solely from products to a combination of "products + services" as the source of value. Service business has become an important direction for enterprises to enhance their competitiveness and profitability. According to the World Trade Organization, the value-added share of services in manufacturing exports accounts for 32% of exports from developed countries and 26% from developing countries. Among the Fortune Global 500 companies, 56% are engaged in the service industry. In the U.S., which has the highest level of servitization, manufacturing-service integrated companies now account for 58% of the total number of manufacturing enterprises.

4.5. The industry differences in service-oriented manufacturing

Overall, the increase in product complexity, economic development level (income level), and advancements in information technology are key factors driving the servitization transformation of manufacturing enterprises. However, due to the different characteristics of each industry and the varying advantages of different enterprises, the level of servitization varies significantly across industries and companies.

The level of servitization increases with product complexity (specialized knowledge). Industries such as machinery and equipment involve high product complexity, with installation, debugging, operation, maintenance, and servicing requiring a large amount of specialized knowledge. In contrast, industries such as basic raw materials and light industrial products have relatively low product complexity. Data shows that in the Netherlands, the service output ratio of the broadcasting, television, and communication equipment industry is as high as 59.68%, while the service output ratio in industries like basic metal products and pulp and paper products averages only 1.61% and 2.82%, respectively.

The level of servitization increases with the degree of digitization. Data is a core driving force for service-oriented manufacturing. Service-oriented manufacturing models, such as online monitoring, information value-added services, and full lifecycle management, rely on data from equipment operation and user interaction. Service-oriented models such as personalized customization require manufacturing enterprises to have highly flexible production lines and supply chains, which are based on the digitalization, networking, and intelligence of the

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manufacturing industry. Therefore, industries with a high level of digitalization in manufacturing processes and product digitization usually generate more value-added services.

The level of servitization increases as the material effect intensity of the product decreases. As mentioned earlier, users do not purchase or use products to obtain the products themselves, but to gain the utility those products provide. The material effects that products provide vary. Some products have a high material effect intensity, where utility is derived directly from the consumption of the product itself, such as food and drink to solve hunger or fertilizers to improve soil fertility. In these cases, the potential for extending services is smaller. On the other hand, products with lower material effect intensity provide utility not through direct consumption, but through the result of using the product, such as a car providing mobility or a drill creating a hole according to standards. This allows for greater space to extend services.

5. The current situation of the servitization transformation of China's manufacturing industry

5.1. Technology-driven and digital transformation

Many Chinese manufacturing enterprises are adopting new-generation information technologies such as the Internet of Things (IoT), big data analytics, and artificial intelligence to achieve intelligent management and optimization of the production process. Through real-time data monitoring and analysis, companies can predict equipment failures in advance and optimize production schedules, thereby improving production efficiency and product quality.

Both the government and enterprises are jointly promoting the construction of industrial internet platforms, facilitating information sharing and collaboration across various stages of the manufacturing industry. These platforms not only support internal production management within enterprises but also connect upstream and downstream of the supply chain, enabling global operations and intelligent service delivery.

5.2. Innovation in servitization business models

Many manufacturing companies are gradually shifting from traditional product sales models to expanding their business into value-added services. This transformation is not just about offering the products themselves, but providing comprehensive services such as customized design, after-sales technical support, remote monitoring, and maintenance, to help customers enhance production efficiency and equipment utilization. For example, companies can customize product designs based on specific customer needs and operating environments, while also offering necessary technical training and on-site support to ensure excellent performance during operation. With remote monitoring technology, companies can track equipment status in real-time and provide early warnings for potential issues, addressing them promptly through remote maintenance measures, thus minimizing production downtime.

Customized services not only increase the added value of products but also deepen the collaboration between companies and customers, enhancing customer satisfaction and overall market competitiveness. With the diversification of market demands and the increase in personalized consumer needs, the role of manufacturing companies in the servitization transformation has become increasingly crucial. Companies must continuously innovate their service models to adapt to the rapid changes in the market and the ever-evolving highly customized demands of customers. This comprehensive service transformation is not only a response to market trends but also provides an important strategic advantage for companies to maintain a leading position in a highly competitive market.

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5.3. Talent cultivation and management capability enhancement

In response to the growing trend of China's manufacturing industry transitioning to a service-oriented model, many companies are actively increasing their efforts in training and recruiting technical talent. This initiative aims to enhance employees' expertise in key areas such as service design, technical support, and customer relationship management. As the manufacturing industry undergoes deeper intelligent and digital transformations, Chinese companies are ensuring that their employees stay up-to-date with the latest industry technologies and trends through ongoing skill enhancement programs. Training content covers a comprehensive range of skills, from industrial internet applications and data analysis to intelligent manufacturing and service optimization, in order to meet the challenges of rapidly changing markets and diverse customer demands. By recruiting highly experienced and specialized professionals, Chinese companies are addressing technical gaps within their internal teams in specific fields. These technical experts not only bring fresh ideas and solutions but also contribute to the overall improvement of team skill levels and innovation capabilities through collaboration and knowledge sharing with local teams.

Alongside talent development, Chinese manufacturing companies also place a strong emphasis on improving employees' soft skills, such as cross-departmental collaboration, customer communication, and problem-solving abilities. Enhancing these skills not only helps improve service quality and customer satisfaction but also drives the company's ability to maintain a leading position in global competition and steady market share growth.

Through a dual approach of skill updates and talent reserves, China's manufacturing industry is actively addressing the challenges and opportunities of service-oriented manufacturing, continually pushing enterprises towards higher value chains, and striving for sustainable development and enhanced international competitiveness.

At the same time, many companies are establishing comprehensive service management systems, including after-sales service networks, customer feedback mechanisms, and service quality assessment systems, to ensure the timeliness and reliability of service delivery.

5.4. Policy support and market opportunities.

The Chinese government encourages enterprises to invest in the development of service-oriented manufacturing through fiscal and tax incentive policies. For example, companies engaged in high-value-added services such as technical services and after-sales services can benefit from tax breaks, reducing their burdens and encouraging them to invest more in services and improve service quality.

The government supports manufacturing companies in technological and service innovation through innovation incentive policies. For instance, the establishment of technology innovation funds provides financial support to companies for the research and development of new technologies, products, and service models. The introduction of these funds not only helps companies reduce innovation costs but also promotes their exploration and practice in the service field.

The government also supports enterprises in enhancing their service levels and efficiency through measures such as establishing technical service platforms and promoting demonstration projects. For example, the construction of smart manufacturing demonstration bases and outsourcing service demonstration cities provides enterprises with technical training, market expansion, and international service support, accelerating the development and application of service-oriented transformation.

These policies provide strong support for the service-oriented manufacturing transformation, motivating companies to enhance their service and innovation capabilities, advancing manufacturing industries towards the high end of the value chain, and promoting economic

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structural optimization and sustainable development. With the continuous improvement and implementation of policies, service-oriented manufacturing is expected to play an increasingly important role in China's manufacturing sector.

With the upgrading of consumer demand and the growing trend for personalization, the development of service-oriented manufacturing is driven by market demand. Companies are gradually shifting their business strategies, no longer focusing solely on the production and sales of products, but instead turning their attention to the comprehensive enhancement of services. This shift is reflected in the provision of customized and value-added services, effectively responding to the segmentation and personalization of market needs.

In terms of market segmentation, companies gain a deep understanding of the demand characteristics and preferences of different consumer groups, precisely targeting market segments, and developing customized solutions for each. For example, some high-end manufacturing companies focus on providing customized high-end equipment and solutions for specific industries to meet customers' high demands for product quality, functionality, and service.

Regarding personalized demand, as consumers increasingly emphasize product personalization and user experience, manufacturing enterprises continue to optimize product design and service models to offer solutions that better align with customer-specific needs. For instance, certain companies collaborate closely with clients to create tailored product designs, provide technical training, on-site support, and customized after-sales services to ensure that customers receive the best possible product experience and performance during use.

Additionally, with the intensifying market competition and the growing pursuit of quality and service by consumers, manufacturing companies are continuously innovating and improving service levels. Through value-added services such as remote monitoring and intelligent maintenance, they effectively enhance product production efficiency and equipment utilization. The introduction of these services not only increases the added value of products but also strengthens the close cooperation between businesses and their customers, enhancing the company’s market competitiveness and customer satisfaction.

Overall, market demand-driven forces are driving the transformation of manufacturing toward service-oriented models. Through continuous innovation and improvement in service capabilities, companies are effectively seizing the opportunities presented by market segmentation and personalization, opening up new avenues for sustainable growth.

References

[1] Liu, Jichao. "Research on the Mechanisms and Transformation Models of Service-Oriented Manufacturing Development in China." Price Theory and Practice, 2022, (05): 57-60+176. DOI: 10.19851/j.cnki.cn11-1010/f.2022.05.192.

[2] Liu, Bin, Wei, Qian, Lv, Yue, and Zhu, Kunfu. "Service-Oriented Manufacturing and Value Chain Upgrading." Economic Research, 2016, 51(03): 151-162.

[3] Liu, Jichao. "Practical Exploration of the Cultivation of China's Data Elements Market: Achievements, Problems, and Responses." Price Theory and Practice, 2021 (12): 18-22.

[4] Li, Xiaohua, Liu, Shangwen. "Analysis of the Connotation and Development Drivers of Service-Oriented Manufacturing." Development Research, 2019, (02): 94-101. DOI: 10.13483/j.cnki.kfyj.2019.02.015.

[5] B. Joseph Pine. Mass Customization: The New Frontier of Business Competition. Translated by Cao, Yunfu, et al. Beijing: Renmin University Press, 2000.

[6] World Trade Organization. World Trade Report 2014: Trade and Development Recent Trends and the Role of the WTO. 2014: 90.

ISSN: 2710-0170

[7] Zhao, Jianbo. "Service-Oriented Manufacturing Gradually Becomes a New Industrial Form." People's Daily, May 24, 2016, (22).

[8] Tian, Feng. "Service-Oriented Manufacturing: The Main Driver of China’s Industrial Structural Transformation." Service Outsourcing, 2018 (8).

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An Analysis of the Hybrid Course Teaching Model for "Logistics System Simulation"

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Abstract

Owing to the rapid advancement of information technology, the proportion of hybrid teaching models combining online and offline elements in higher education has been increasing annually. This paper investigates the application of blended learning in the curriculum, providing solutions grounded in an analysis of the characteristics of the "Logistics System Simulation" course. Additionally, it offers novel recommendations for enhancing instructional quality.

Keywords

Blended learning; Practical plan; school reform; system simulation.

1. Introduction

In addition to providing a new dimension for the current pedagogy of logistics engineering and management, internet-plus education has introduced innovative teaching modalities such as the flipped classroom and online micro-classes. The seamless integration of online and traditional classroom instruction into an "online"+"offline" format is referred to as blended learning. Relevant studies have demonstrated the following: based on the "MOOC+Rain Classroom" blended learning model, it has been found that this approach significantly enhances students' academic performance in selected courses [1]; The blended learning model can flexibly facilitate both offline and online teaching, making it suitable for smart logistics courses [2]; By promoting communication and interaction between instructors and students, class participation can be substantially increased[3]; Blended learning also positively influences students' interest and initiative in learning [4]. One of the primary research questions is how to optimally leverage the advantages of both offline and online teaching methods to transform traditional teaching models.

Commencing with the three phases of pre-class, in-class, and post-class, the "Logistics System Simulation" course integrates micro-course modules, specialized instruction, and intensive education models to establish an innovative teaching paradigm. This approach is facilitated by the institution's online teaching platform.

2. Construction of innovative system for blended learning mode

To establish a new educational ecosystem for "Logistics System Simulation" that integrates online and offline self-directed learning, it is essential to fully implement a student-centered teaching approach. This will facilitate the advancement of the teaching process and enable college students to transition from passive recipients to active participants in their learning and critical thinking processes.

The rapid advancement of new information technologies, such as the Internet, has significantly impacted multiple areas including higher education, teaching philosophy, the educational system, and teaching models. At the core of online instruction is the concept of "teacher-guided independent student learning." The teaching approach based on "Internet Plus Education" integrates extensive use of Internet technologies and services into the course learning process.

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Firstly, it is essential to ensure the quality of both "offline" and "online" course development. Optimizing course materials is a critical component of curriculum building for online instruction, requiring continuous, dynamic oversight and enhancement to maintain high standards in online education. Teachers should focus on curriculum design, prepare thoroughly for pre-class assignments, and develop detailed and meticulous online lesson plans. Additionally, they should enhance interaction and communication between students and teachers during online classes, emphasize students' learning outcomes after class, and provide ample opportunities for independent learning. Secondly, consider the effectiveness of students' learning of course material. Elevate students' learning needs by assigning experimental tasks and activities for each chapter based on the course content available on the learning platform. Instructors can master the course material and effectively improve students' self-directed learning capacity by analyzing student learning records on the online platform to identify areas where students' self-learning processes may be lacking.

3. The Application of Blended Teaching Mode in the Course of "Logistics System Simulation"

The learning objectives of the "Logistics System Simulation" course encompass modeling and simulating manufacturing and logistics systems, introducing widely-used computer simulation software, and exploring issues related to modeling, simulation, and application in these systems. The hybrid classroom for "Logistics System Simulation" is structured around three core components: technical aspects, process design, and environmental factors. The teaching methodology of this course is built upon three process stages: pre-class preparation, in-class instruction, and post-class evaluation. The specific concepts are as follows:

3.1. Advance your fundamental understanding before class

The online learning environment serves as the platform for developing the "Logistics System Simulation" course. The teaching team meticulously curates and organizes a diverse array of course-related materials designed to stimulate students' interest and engagement. Prior to each "Logistics System Simulation" session, key knowledge points are provided for independent study, with all instructional materials being uploaded to the online learning platform. To ensure comprehensive support for students' self-directed learning and understanding before class, the platform offers an extensive range of multimedia resources, including videos, presentations, documents, case studies, and experimental modules.

Course teaching videos facilitate the delivery of fundamental knowledge that is easy to learn and understand, adhering to the technical standards of micro-movies and Flash-based interactive animations. Through online teaching platforms, students can access a wealth of diverse learning resources and engage in self-directed pre-study. The platform also enables meaningful interactions between instructors and students, as well as among students themselves. To enhance communication, a discussion board for the "Logistics System Simulation" course has been established.

3.2. Implementing interactive teaching in the classroom

Students utilized the online teaching platform to independently study and master the foundational concepts of the lesson before class. To facilitate interactive teaching between students and teachers, the teacher focused on addressing learning challenges encountered by students during their independent study and emphasized problem discussion and communication in class. In the "Logistics System Simulation" classroom, based on students' understanding of logistics simulation software fundamentals, the teacher discussed the experimental model for the simulation software experiment section. The teacher provided a comprehensive analysis and explanation of the modeling process, simulation procedures, and optimization results of each simulation experiment conducted by students using logistics simulation software.

3.3. Consolidate knowledge after class

Use online teaching platforms to administer online tests or give relevant homework after class. On the school's online teaching platform, the key concepts and simulation model modeling process are shown as Flash animations. Students can also access learning resources like knowledge sorting and model analysis to study on their own after class. Teachers reinforce the consolidation of pertinent knowledge by offering assistance and Q&A via interactive platforms.

4. Creating a practical teaching plan in mixed modes for "Logistics System Simulation"

The course of "Logistics System Simulation" should select a reasonable teaching mode based on the actual situation, as shown in Figure 1. In order to create an open teaching environment, the specific adoption model is as follows:

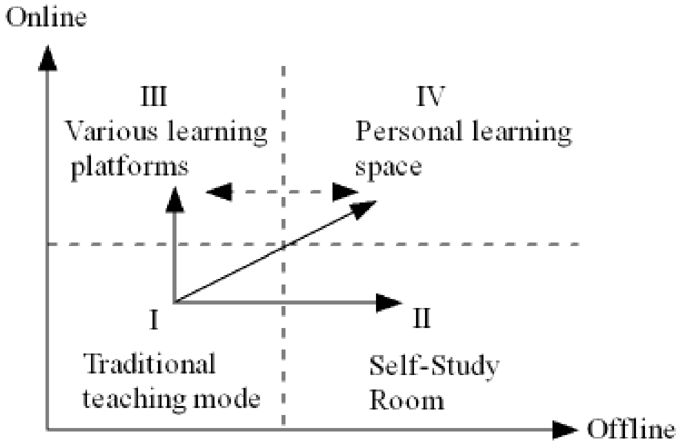

Figure 1. Schematic Diagram of Teaching Mode Relationship

4.1. Course study style I → III

With online teaching platforms, instructors can give students assignments for their courses ahead of time. Students can share their learning ideas, experiences, and processes on the learning platform once they have finished self-studying the course material. This improves classroom interaction and guarantees the caliber of online instruction. Instructors use PowerPoint, audio, and video to deliver lectures in the classroom. Students can see their attendance status in real time by using the sign-in attendance feature. Teachers are free to pose questions, administer tests, and engage in other class activities.

4.2. Course study style I→II+IV

Instructors have the option to pre-upload recorded videos or course materials to the learning platform so that students can study on their own. Students can access course materials, watch instructional videos, and more after logging into their own learning area. To improve students' comprehension and retention of the course information, teachers can also upload exercises, discussion questions, and experiments on the online teaching material platform after class. Students can grasp the material they have learnt and set learning objectives based on their unique circumstances in this way. Although the location, time, and space restrictions for this learning style are somewhat lax, students must possess strong self-management and self-motivation skills.

4.3. Course study style I→III+IV

Utilizing the learning platform as a means of bridging the gap between in-class instruction and individual learning, delivering course material to students via the platform, or pre-recording course videos and putting them online, followed by practice exercises. Students can ask questions about the course material in their own learning environment, and teachers will respond. Teachers also give students tailored explanations of the material based on their completion level.

4.4. Learning mode for interactive courses

Online teaching platforms enable educators to issue course learning reminders before class sessions commence. Students can access uploaded courseware materials for self-directed study and familiarize themselves with the lesson's teaching strategies and learning objectives through the platform. During pre-class online previews, students can select lessons based on their foundational knowledge and learning capacity. To facilitate focused in-class explanations, teachers utilize the platform to monitor and evaluate students' understanding of various concepts. The discussion section of the learning platform facilitates idea exchange and addresses specific queries between teachers and students. Teachers may also assign relevant discussion topics to enhance students' comprehension of challenging material. Upon completing each course section, instructors use pre-designed assignments to assess learning outcomes. Through online systems, students can submit assignments or lab reports and provide feedback on teaching methods to continuously improve the course. Teachers can assign and review homework using the grading module.

The use of post class testing on learning platforms can be used to verify teaching effectiveness, identify students' learning weaknesses, and understand their true reactions through classroom teaching. By strengthening the organic integration of "offline" and "online" teaching modes, the advantages of the two teaching modes can be complemented. According to the difficulty level of the course learning content, it can be divided into three categories, and the specific implementation methods are shown in Figure 2.

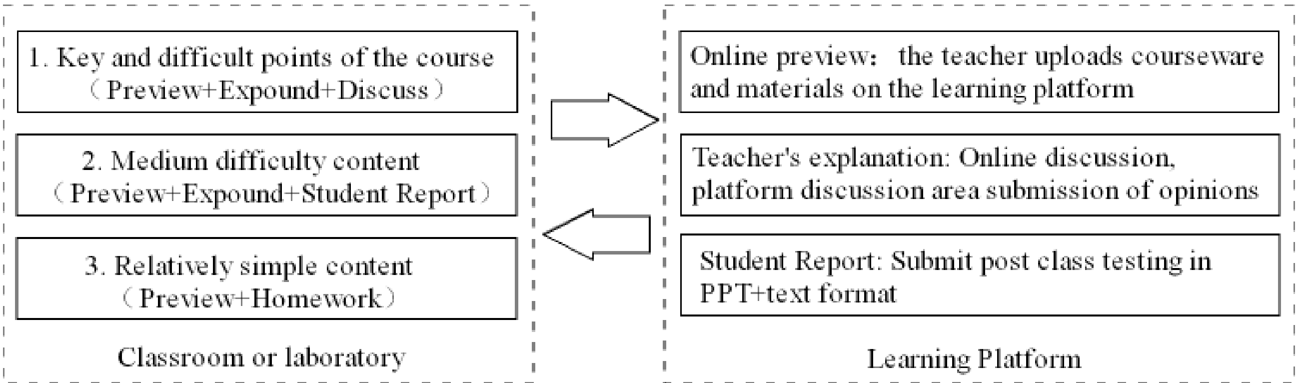

Figure 2. The Interactive Mode

Based on the four fundamental forms described above, Table 1 presents five common teaching modes: MOOC+SPOC+Online Flipped Classroom, SPOC+Online Flipped Classroom, Video Open Courses/Resource Sharing Courses+Online Guidance, Teaching Material Sharing+Online Guidance, and "1+U+S" collaborative cross-school teaching mode.

Table 1: Five Typical Teaching Modes

Typical teaching mode	Content
The "1+U+S"collaborative cross-school teaching model	Cross regional and cross school online open courses "1 (course)+U (university)+S (student group)"

MOOC+SPOC+Online Flipped Classroom	Combining student-centered open online courses with targeted online courses
SPOC+Online Flipped Classroom	Students are the primary focus of targeted online teaching courses
Video Open Courses/Resource Sharing Courses+Online Guidance	The teacher's online teaching is the main focus, with Q&A as a supplement
Teaching Material Sharing+Online Guidance	Students mainly self learn online, with teachers answering questions as a supplement

5. Conclusion

Universities can collaborate effectively by mobilizing and coordinating diverse resources, leveraging online course alliances and platforms, curating a wide range of high-quality course materials, and jointly developing and distributing professional courses. Additionally, they can provide comprehensive support services. To facilitate collaborative lesson planning and interactive teaching, instructors should fully utilize online teaching platforms to redesign the instructional design, teaching process, course organization structure, and learning performance evaluation framework of the "Logistics System Simulation" course. This will ensure students have access to premier online learning materials, personalized learning support services, and guidance for in-depth learning.

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References

[1] H.L. Dong. Research on the application and effect evaluation of hybrid teaching mode in colleges and universities under the background of "Internet plus" -- Taking the reform of Logistics Management as an example. *Logistics Technology*, 2023,39 (6): 130-133.

[2] X.Y. Sun, Y.M. Zhou, and W.K. Jiang. Research and Practice on Blended Teaching Mode of "Smart Logistics" Course. *Education and Teaching Forum*, 2020 (53): 244-246.

[3] H.M. Li, Y. Han, H. Yan, etc. Exploration of Blended Teaching Mode and Its Application in Modern Logistics Management Course. *Education and Teaching Forum*, 2022 (14): 230-232.

[4] Y.H. Hong. Research on the Teaching Reform of "Introduction to Logistics" Based on the Blended Online and Offline Teaching Mode. *Logistics Technology*, 2023,43 (7): 183-185.

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Study on the Quality of Human and Machine Translation of The Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area

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Abstract

This study is grounded in the theory of functional equivalence and selects the Outline of the Development Plan for the Guangdong-Hong Kong-Macau Greater Bay Area as a case study. It aims to explore the quality assessment of government document translation between human and machine translation. By delving into the three dimensions of vocabulary, pragmatics, and culture as they relate to functional equivalence theory, this research explores the performance of human and machine translation in handling specific types of texts such as government documents. The study reveals that despite of advancements in machine translation, it still has limitations in dealing with complex semantic structures, cultural contexts, and specialized terminology. Human translation offers advantages in accurately conveying semantics, managing cultural differences, and defining specialized terminology. The paper proposes effective solutions to enhance the accuracy and readability of machine translation in practices, emphasizing the importance of translation quality in conveying accuracy in government documents, promoting international communication, government document as well as enhancing regional economic prosperity.

Keywords

Functional Equivalence Theory; Human-Machine Translation; Quality Comparison; Government Documents.

1. Introduction

1.1. Research background

In the era of globalization, the demand for fast and accurate language translation has surged, positioning machine translation as a critical tool. Over the decades, machine translation has evolved from rule-based and statistical methods to advanced neural machine translation, leveraging large corpora and deep learning to enhance efficiency and accuracy. Despite these advancements, machine translation struggles with complex semantics, cultural nuances, and specialized terminology, limiting its applicability in all scenarios.

This study focuses on *the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area*, comparing human and machine translation quality to explore the strengths and limitations of machine translation in processing government documents. Government documents, as a subset of political literature, require precise and authoritative translation due to their formal nature and specialized contents. While human translation captures semantic and stylistic nuances effectively, it is time-intensive and sometimes subjective. Machine translation, though faster, often falls short in handling the unique linguistic and terminological demands of such texts.

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The Guangdong-Hong Kong-Macao Greater Bay Area is a key driver of China's economic growth, making the translation of its government documents crucial for both domestic and international stakeholders. The region's linguistic diversity and complex terminology pose significant translation challenges. Comparative studies of human and machine translation can highlight machine translation's potential and limitations, guiding the development of translation technologies and supporting the standardization and internationalization of the region's government documents.

The current study selects *the Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area as one case* to compare human and machine translation quality on government documents. The study aims to analyze machine translation quality on specific texts, contributing to the theoretical and practical advancement of translation studies and technology.

1.2. Research objective

The study conducts a detailed comparison between the official human-translated version and the translations generated by three advanced language model systems (ChatGPT, Youdao Translation, and Google Translate). The paper evaluates the capabilities of human and machine translation in accurately conveying semantics, handling cultural differences, and expressing specialized terminology from three dimensions: lexical, pragmatic, and cultural, analyzing their strengths and weaknesses. The purpose of this study is to provide theoretical support for enhancing the quality of government document translation and promoting the advancement of translation technology.

2. Literature Review

2.1. Artificial intelligence

The development of artificial intelligence (AI), initiated in the mid-20th century, is marked by multidisciplinary contributions and significant technological milestones. Turing (2007) set a human-like intelligence benchmark with the Turing Test in the 1940s-1950s. McCarthy's 1956 introduction of "artificial intelligence" at the Dartmouth Conference formally established AI as a research field [1]. The second development wave, driven by expert systems, saw AI applications in domains like medical diagnosis. The 21st century witnessed AI's mainstream adoption, with deep learning achieving notable successes. Mari (2024) reviews AI's history across domains, including theorem proving, expert systems, neural networks, natural language processing, genetic algorithms, deep learning, reinforcement learning, super-intelligence, and future trends [2]. Sandfeld (2024) examines the synergy between human and machine civilizations from an information perspective [3]. In summary, AI's evolution encompasses technological progress and profound societal, cultural, and ethical impacts, poised to play a crucial role in future human development.

2.1.1. AI and language

Early programming languages, like machine languages, offered rapid execution but were challenging to write and inefficient. The advent of high-level languages such as Fortran, COBOL, and ALGOL simplified programming, resembling natural language. Programming languages act as a medium for human-computer communication. Natural language, with its rich vocabulary and complex grammar, contrasts with the structured, rule-bound nature of programming languages. Despite their distinct origins, technological progress has fostered their integration. Advances in natural language processing have improved computer understanding of human instructions, and programming language evolution has streamlined human-computer interaction. Future AI and machine learning breakthroughs are likely to further blur the lines between these languages, enhancing interaction efficiency.

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2.2. Artificial intelligence use in translation

The surge in AI technology has elevated machine translation as a key focus in translation studies. Originating in the U.S. in the 1940s for Cold War intelligence, machine translation officially began with Georgetown University and IBM's 1954 experiment. Ward (1989) traced its evolution from rule-based to example-based, statistical, and now neural machine translation, with recent deep learning breakthroughs significantly enhancing translation quality [4]. In China, despite a later start, rapid progress from rule-based to statistical methods has led to notable tools like Baidu Translate and Google Translate, sparking extensive scholarly comparisons between human and machine translation quality.

2.3. Human-machine translation quality

Translation quality evaluation, traditionally subjective and inefficient, is crucial in translation studies. Automated methods like BLEU, METEOR, and TER have emerged to improve efficiency and objectivity by comparing machine translations to reference texts. Recent research, such as Sinambela (2024) corpus-based study, highlights machine translation's challenges with specialized terminology and cultural adaptation, despite advances in accuracy and fluency [5]. This underscores the need for human assistance in complex translations. As machine translation technology advances, evaluation methods are becoming more automated and intelligent, leveraging big data and deep learning for enhanced accuracy. This evolution not only improves assessment tools but also provides feedback for refining machine translation, foreshadowing a future of more sophisticated, automated quality analysis in translation practice and research.

2.4. Artificial intelligence applied to political texts

Political text translation is a critical field in machine translation, as its quality directly impacts international communication and diplomatic relations. Scholars have been analyzing political text translation quality using the functional equivalence theory. Ye and Xu (2011) explored the "deformation and conservation of meaning" strategy in English translation of political public diplomacy, using Hu Jintao's speech as an example [6]. Afterward, the research focused on the translation of political text metaphors and was conducted in conjunction with artificial intelligence algorithms. The results indicated that this research plays a significant role in the translation of political text metaphors. Meanwhile, it emphasized the crucial significance of integrating cultural perspectives for accurate translation [7]. In other respects, the research compared the differences between AI translation and human translation in legal text translation, aiming to explore whether there are distinctions between the two and the quality of AI translation. By selecting professional translators and AI programs to translate legal texts and evaluating them based on five criteria - accuracy, competency, content, language, and style - the results showed that human translation has a slight edge in legal text translation, while AI translation has advantages in terms of speed and consistency. The research holds that the translation method should be chosen according to specific requirements and points out that although AI translation may progress in the future, professional human translators are still needed to ensure the quality of legal text translation for now [8]. Duan (2023) mainly focuses on the Chinese-English translation of political texts from the perspective of curriculum ideology and explores its application value in translation teaching. These studies provide a theoretical foundation and practical guidance for translation of political texts [9].

3. Methodology

This study compares the quality of human and machine translation in translating government documents using the *Outline Development Plan for the Guangdong-Hong Kong-Macau Greater* Bay *Area* as a case study. The research uses the official Chinese version of the Outline

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Development Plan and machine-translated versions generated by three language models: ChatGPT, Youdao Translate, and Google Translate. The methodology combines quantitative and qualitative approaches, analyzing representative paragraphs from the original text and focusing on vocabulary accuracy, discourse structure, and cultural adaptability. The study also analyzes the advantages and disadvantages of human and machine translation in each dimension, and proposes future improvements based on these differences.

4. Case analysis

4.1. Characteristics of Target Texts

Government documents, as important documents issued by the government, possess a high degree of rigor and authority. These characteristics pose the following challenges for translation:

Firstly, the language used in government documents is often carefully selected, with each word carrying specific semantics and intent. Translators must ensure the accuracy and rigor of the translation, avoiding ambiguity or misunderstanding. For example, key terms such as “strategic positioning”, “development goals” and “key tasks” that frequently appear in the *Outline Development Plan for the Guangdong-Hong Kong-Macau Greater Bay Area* require translators to accurately grasp their meanings and provide precise equivalents in the translation. Additionally, government documents typically have a strict structure and clear logic, with closely linked sections. Translators need to maintain the logical structure of the original text, ensuring that the translation is coherent and the argument is clear. For instance, content related to regional development positioning, spatial layout, and cooperation priorities in the *Outline Development Plan for the Guangdong-Hong Kong-Macau Greater Bay Area* requires careful analysis by translators and reasonable organization in the translation.

The language of government documents is usually formal and standardized, in line with the language style of official documents. Translators should use standardized translation language, avoiding colloquial or slang expressions. For example, professional terms such as “regional cooperation,” “innovative development”, and “institutional mechanism reform” used in the *Outline Development Plan for the Guangdong-Hong Kong-Macau Greater Bay Area* require accurate translation and consistent use of terminology.

Guangdong, Hong Kong, and Macau have different historical, cultural, and linguistic backgrounds, which translators need to consider and make appropriate adjustments and transformations. For example, place names, institutional names, and proper nouns that appear in the original text need to be translated according to the cultural background of the target audience to avoid misunderstandings or confusion. This involves many professional terms in economics, finance, technology, and other fields, which require translators to ensure the accuracy and professionalism of the translation. For instance, professional terms such as “CEPA Agreement”, “free trade zone” and “technology innovation corridor” require accurate translation and compliance with professional standards in relevant fields.

Finally, government documents may contain cultural imagery or expressions, and translators need to consider how to effectively convey these cultural images to the target audience. For example, concepts such as “Belt and Road” and “Pearl River Delta” that appear in the original text require appropriate explanation or clarification by translators to help the target audience understand their meanings.

4.2. Comparative Analysis of Machine Translation and Human Translation

4.2.1. Lexical Equivalence

This section presents the differences between machine translation and human translation in some commonly used words in political documents (see Table 1). In terms of specialized

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terminology, official translation typically employs more standardized and contextually appropriate terms. For instance, “粤港澳大湾区” is translated as “Guangdong-Hong Kong-Macao Greater Bay Area” in official translations, which not only preserves the precise meaning of the place names but also enhances the regional characteristics and development context of the translation. In contrast, machine translations like Google Translate may simplify or omit certain information, such as translating it to “Greater Bay Area”, which appears concise but lacks necessary regional information, thereby reducing accuracy. Additionally, both official translation and Google Translate adopt accurate translation for specialized terms like “一带一路” (Belt and Road), “粤港澳大湾区” (Guangdong-Hong Kong-Macao Greater Bay Area), and “战略性新兴产业” (strategic emerging industries), reflecting the principle of functional equivalence. When discussing the term “科技创新” (technological innovation), the official translation may use “technological innovation”, “ emphasizing the close integration of technology and innovation. However, in machine translations such as Youdao Translate, it might be translated as “innovation in technology”, which is notcorrect in literal terms but appears flat in tone, failing to fully convey the deeper meaning embedded in the phrase within political texts. Furthermore, specific policy terms like “区域合作” (regional cooperation) are clearly translated as “regional cooperation” in official translations, whereas machine translation versions may suffer from semantic ambiguity or inconsistency. For example, ChatGPT might use “cooperation in the region”, making the translation more general and less professional.

Regarding vocabulary omission, Youdao Translate exhibits omission in some terms, such as translating “经济互补性强” (strong economic complementarity) to “strong economic complementarity”, omitting “性(ness)”. This omission can lead to a decrease in translation accuracy, for example, “经济发展水平” (economic development level) translated as “level of economic development” is less accurate than the official translation “economic development level”, as it lacks the word “水平” (level), affecting the completeness and accuracy of the translation.

In terms of word addition, both official translations and Google Translate sometimes add words, such as translating “区位优势明显” (the location advantage is obvious) to “The location advantage is obvious”, and “便捷高效的现代综合交通运输体系” (a modern comprehensive transportation system that is convenient and efficient) to “a modern comprehensive transportation system that is convenient and efficient.” This addition can make the translation more fluent, but it may also introduce unnecessary words, affecting the conciseness of the translation.

Regarding word substitution, Google Translate sometimes substitutes words, such as translating “国际化水平领先” (the level of internationalization is leading) to “The level of internationalization is the lead.” This substitution can alter the meaning of the translation, for example, “The level of internationalization is the lead.” is unclear and far from the original meaning of “the level of internationalization is leading.”

Research shows that the inadequacies of machine translation in handling specialized terminology often result in information confusion and misunderstanding [10]. Nida and Taber’s (1982) theory of functional equivalence emphasize that the accuracy and appropriateness of vocabulary are crucial for conveying information, especially in the translation of government documents, where precise term selection is indispensable [11].

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Table 1: Human vs. Machine Translation on Specific Words from the lexical equivalence.

Aspect	Text	Official Translation	Machine Translation (e.g., Google Translate, Youdao Translate, ChatGPT)
Specialized Terminology	粤港澳大湾区	Guangdong-Hong Kong-Macao Greater Bay Area	Greater Bay Area
Depth of Terminological Meaning	科技创新	technological innovation	innovation in technology
Vocabulary Omission	经济发展水平	economic development level	level of economic development
Clarity of Policy Terminology	区域合作	regional cooperation	cooperation in the region
Word Substitution	国际化水平领先	the level of internationalization is leading	The level of internationalization is the lead

4.2.2. Pragmatic Equivalence

At the pragmatic level, translators must pay attention to the context of language use, the purpose of communication, and the needs of the audience. Human translators, through contextual understanding, can convey not only the literal meaning but also capture the pragmatic function of the text (see Table 2).

In terms of sentence structure, both official translations and Google Translate generally maintain consistency, adhering to the habits and norms of the target language. For example, “区位优势明显” is translated as “The location advantage is obvious”, and “经济发展水平全国领先” as “The level of economic development is leading the country.” However, Youdao Translate exhibits differences in some sentence structures, such as translating “便利高效的现代综合交通运输体系正在加速形成” as “a modern comprehensive transportation system that is convenient and efficient is accelerating its formation.” These differences may result in a decrease in the fluency of the translation.

In terms of voice, both translations predominantly use the active voice, maintaining consistency in this regard. Nevertheless, Youdao Translate occasionally employs the passive voice in some sentences, for instance, translating “香港、澳门服务业高度发达” as “Hong Kong and Macao have highly developed service sectors.” This difference may alter the tone of the translation. Additionally, both translations generally use a straightforward tone, consistent with the style of official documents. However, Youdao Translate sometimes uses a more colloquial expression, such as translating “便利高效的现代综合交通运输体系” as “a modern comprehensive transportation system that is convenient and efficient”, which may reduce the formality of the translation.

Regarding discourse coherence, official translations and Google Translate excel in maintaining coherence, as evidenced by the clear logical relationship between sentences like “区位优势明显” and “经济发展水平全国领先.” Conversely, Youdao Translate faces issues with discourse coherence, such as the lack of a clear logical connection between “香港、澳门服务业高度发达” and “珠三角九市已初步形成以战略性新兴产业为先导、先进制造业和现代服务业为主体的产业结构.”

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According to study, the quality of translation is closely related to the adaptability of the content [12]. Effective translation should consider the background and cultural receptivity of the audience. Machine translation often struggles to maintain pragmatic consistency when dealing with complex contextual backgrounds, leading to misunderstandings and information loss, which is particularly evident in texts requiring strategic thinking and policy orientation.

Table 2: Human vs. Machine Translation on words and phrases from the pragmatic equivalence

Aspect	Text	Official Translation	Machine Translation (e.g., Google Translate, Youdao Translate, ChatGPT)
Pragmatic Level	《粤港澳大湾区发展规划纲要》	Translates context, purpose, and audience needs	May lack contextual understanding
Sentence Structure	区位优势明显，便利高效的现代综合交通运输体系	Maintains consistency with target language norms (e.g., “The location advantage is obvious”).	May differ in structure (e.g., “a modern comprehensive transportation system that is convenient and efficient is accelerating its formation”).
Voice	香港、澳门服务业高度发达	Predominantly uses active voice (e.g., “Hong Kong and Macao have highly developed service sectors”).	Occasionally uses passive voice, altering tone.
Discourse Coherence	香港、澳门服务业高度发达”，“珠三角九市已初步形成以战略性新兴产业为先导、先进制造业和现代服务业为主体的产业结构.	Maintains clear logical relationships between sentences.	Lack of clear logical connection between “香港、澳门服务业高度发达” and “珠三角九市已初步形成以战略性新兴产业为先导、先进制造业和现代服务业为主体的产业结构”

4.2.3. Cultural Equivalence

Typically, the challenge of translation primarily lies in grasping cultural characteristics, customs, and implicit meanings, Table 3 presents the different versions of cultural-loaded words or phrases between human translation and machine translation. see Table 3.

Successful translation is not merely a conversion of literal meanings but a profound understanding of cultural connotations. Official translations excel in conveying the cultural colors of the language, for example, when mentioning the concept of “人文交流”, the official translation renders it as “cultural exchanges”, accurately conveying the significance and meaning of cultural integration. However, machine translations like ChatGPT’s version may handle such expressions more simplistically, resulting in phrases like “exchange of culture.” While this translation is understandable on a literal level, it fails to convey the importance of

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culture and interpersonal communication implied in the original text. Similarly, when referring to “合作共赢”, the official translation uses “win-win cooperation”, a phrase that is widely accepted in the target culture and rich in local color. Machine translation might render it as “cooperation that wins for all parties”, which, though comprehensible, is verbose and lacks conciseness, thereby diminishing the expression’s cultural impact and appeal.

The complexity of cultural translation lies in the differences between cultural symbols. For instance, the Chinese phrase “和为贵” is appropriately summarized by the official translation as “harmony is the most precious”, successfully conveying this cultural value. Machine translation might simply render it as “valuing harmony”, which, while conveying basic information, loses the deeper cultural background and emotional value.

Furthermore, official translations and Google Translate are relatively accurate in conveying the cultural connotations of the original text. For example, “一国两制” is translated as “one country, two systems” and “粤港澳大湾区” as “Guangdong-Hong Kong-Macao Greater Bay Area”, both reflecting the cultural characteristics of the original text. However, Youdao Translate has some issues in conveying certain cultural connotations, such as translating “岭南文化” as “Lingnan culture”, which, though similar in meaning, may not fully convey the rich connotations of the original text.

Both official translations and Google Translate are also cautious in handling culturally loaded terms, such as translating “龙舟” as “dragon boat racing” and “点心” as “dim sum.” However, Youdao Translate has some problems in dealing with certain culturally loaded terms, such as translating “点心” as “light meal”, which may not fully convey the cultural connotations of the original text. Due to differences in cultural background, some culturally loaded terms may require additional explanation. For example, “dim sum” may need an explanation of its meaning and background. Official translations and Google Translate do a better job in this regard, while Youdao Translate may have some shortcomings.

Official translations and Google Translate are relatively accurate in conveying the cultural values of the original text. For example, “打造世界级城市群” is translated as “Develop a world-class city cluster”, and “提升居民生活质量” as “Raise the quality of living of residents”, both reflecting the emphasis on economic development and the quality of life of the people conveyed in the original text. However, Youdao Translate may have some biases in conveying the cultural values of the original text.

Pym (2023) points out that effective translation also needs to consider the construction of bridges between cultures, and machine translation often appears rushed and lacks flexibility when handling these culture-specific words and phrases [13]. In the face of cross-cultural communication, machine translation, due to its lack of in-depth analysis of cultural connotations, can easily create barriers to understanding.

After a detailed analysis of the differences between official translations, Google Translate, and Youdao Translate in excerpts from the “Guangdong-Hong Kong-Macao Greater Bay Area Development Plan”, we observe that while each of these three translation versions has its advantages, they also have some defects. Official translations and Google Translate are closer to the requirements of the function...le translation has obvious advantages in terms of efficiency and convenience, it still relies on the professional skills of human translation experts when handling more complex and culturally rich text translation tasks.

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Table 3: Human vs. Machine Translation on words and phrases from the lexical equivalence.

Aspect	Text	Official Translation	Machine Translation (e.g., Google Translate, Youdao Translate, ChatGPT)
Cultural Connotations	合作共赢	win-win cooperation	cooperation that wins for all parties
	人文交流	cultural exchanges	exchange of culture
Cultural Symbols	和为贵	harmony is the most precious	valuing harmony
Cultural Connotations Accuracy	一国两制	one country, two systems	one country, two systems
	粤港澳大湾区	Guangdong-Hong Kong-Macao Greater Bay Area	Greater Bay Area
	岭南文化	Lingnan culture	culture of Lingnan (May not fully convey rich connotations.)
Handling Culturally Loaded Terms	龙舟	dragon boat racing	dragon boat
	点心	dim sum	light meal (Youdao)
Cultural Values Conveyance	打造世界级城市群	Develop a world-class city cluster	Youdao Translate may have biases in conveying cultural values.
	提升居民生活质量	Raise the quality of living of residents	

5. Conclusion

This study compares the quality of human and machine translation in Chinese-English translation of government documents, using *the Guangdong-Hong Kong-Macao Greater Bay Area Development Plan Outline* as a case study. The current study analyzes these translation versions from vocabulary, pragmatics, and culture dimensions and reveals that official translations and Google Translate are more accurate and standardized in translating specialized terminology, while Youdao Translate has inaccuracies or omissions in some terms. Additionally, the official translation and Google Translate are more in line with the norms and language structure of the target language and are more accurate in conveying the cultural connotations and values of the original text. However, Youdao Translate has shortcomings in handling culturally loaded terms, leading to misunderstandings. The study suggests that machine translation should be optimized by strengthening specialized terminology databases, refining algorithms, conducting human review based on machine translation, enhancing translation professional training, and establishing a more scientific and objective translation quality assessment system.

References

[1] A. M. Turing: Computing Machinery and Intelligence, In Springer eBooks (2007) p23-65.

ISSN: 2710-0170

[2] W. Mari: The Pre-History of News-Industry Discourse around artificial Intelligence, Emerging Media (2024).
[3] S. Sandfeld: Machine Learning Techniques, In: Materials Data Science. The Materials Research Society Series, Springer, Cham (2024).
[4] N. Ward: Review of Machine Translation: Past, Present, future, AI Magazine, Vol.10 (1989) No.1, p85.
[5] E. Sinambela: Advancements in Translation Technology: Innovations and Challenges (2024).
[6] Xiaobao Ye, Zhimin Xu: “Shaping While Preserving the Meaning” - English Translation of Political Publicity Can Also "Transform and Retain the Essence", Modern Communication (Journal of Communication University of China), (2011) No.4, p151-152.
[7] Y. He, C. Jiang: Cultural Perspectives on the Translation System of Political Text Metaphors Using Artificial Intelligence Research (2024).
[8] A. M. Moneus, Y. Sahari: Artificial intelligence and human translation: A contrastive study based on legal texts, Heliyon, Vol.10 (2024) No.6.
[9] Jiayan Duan: Research on Chinese-English Translation of Political Texts from the Perspective of Ideological and Political Education in Curriculum - A Review of "Chinese-English Translation Course", Science and Technology Management Research, Vol.43 (2023) No.23, p272.
[10] Y. Gambier: Impact of technology on Translation and Translation Studies, Russian Journal of Linguistics, Vol.23 (2019) No.2, p344-361.
[11] E. A. Nida, C. R. Taber: The theory and practice of translation (1982).
[12] P. Fawcett: Translation and language, Routledge (2014).
[13] A. Pym: Exploring translation theories (2023).

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Russia's Outbound Investment Review System and Risk Prevention and Control for Chinese Investors

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Abstract

The frequent emergence of uncertainties in the world has increased the risks for Chinese investors. Russia has implemented an outbound investment censorship system to protect national security and economic interests. At the same time, China has recently strengthened economic and trade cooperation with Russia, but most investors are unfamiliar with Russian politics, economy, laws, policies, especially in the tax, labor, choice of partners and other key issues lack of understanding, foreign investment in the existence of the potential risks, Chinese investors invest in Russia also need to carry out risk prevention and control, in order to protect their own interests and to avoid potential risks. This paper starts from the Russian foreign investment review system, analyzes the risk of Chinese investors, and tries to talk about the risk prevention and control measures for Chinese investors, so as to provide reference for Chinese investors to prevent and control the investment risk in Russia.

Keywords

Outbound investment; review system; risk prevention and control.

1. Introduction

As one of the important economies in the world, Russia has rich natural resources and huge market potential, attracting the attention of many international investors. As an important economic partner of Russia, China's investment in Russia continues to expand. However, Russia's strict review system for foreign investment requires Chinese investors to fully understand and comply with relevant regulations before investing in order to reduce investment risks.

2. Overview of Russia's Foreign Investment Review System

The Russian Outbound Investment Review System is a system for the Russian government to regulate and review outbound investments. According to relevant Russian laws and regulations, foreign investors are required to declare their investment plans to the Russian government and undergo a review. The content of the review usually includes the nature of the investment project, the amount, the source, and the background and intention of the investor. Based on the results of the review, the Russian government will decide whether to approve the investment and whether measures to restrict or prohibit the investment are required. The outbound investment review system covers a wide range of fields, including but not limited to energy, finance, military industry, communications, infrastructure and other industries. In particular, the level of scrutiny is more stringent on investment projects involving Russia's national security and critical infrastructure. It is very important for Chinese investors to understand and comply with Russia's outbound investment review system. When considering an outbound investment, Chinese investors need to fully understand the relevant laws and regulations, and make declarations and reviews according to the actual situation. In addition, Chinese investors

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should conduct comprehensive due diligence to ensure the legality, compliance and feasibility of the investment project in order to avoid risks and losses caused by the outbound investment review system. It should be noted that the Overseas Investment Review Regime may be adjusted due to changes in the policy and political environment. Therefore, Chinese investors also need to pay close attention to relevant policy developments to understand and adapt to the changes in a timely manner.

3. Risks of Chinese investors investing in Russia

Chinese investors need to pay attention to some risks when investing in Russia, among which the common risks are: political risk, legal risk, economic risk, tax risk, labor risk, the risk of choosing partners, etc. The following is a description of the specific content of these risks:

3.1. Political risk

As a geopolitically important country, Russia's foreign policy and diplomatic relations may have a direct or indirect impact on overseas investment. For example, Russia's strained relations with other countries and sanctions such as the more sensitive Russia-Ukraine conflict may adversely affect Chinese investors' outbound investments. There may be changes in Russia's policy environment, including investment regulatory policies, foreign investment regulations, and industry access. Adjustments to these policies may have a direct impact on Chinese investors' outbound investments, such as restricting or prohibiting foreign investment in certain industries. Political factors may affect the implementation of laws and judicial independence, which may have an impact on Chinese investors' outbound investments. The Russian outbound investment review system may involve national security considerations. Chinese investors may face the risk of national security scrutiny and regulation when involved in sensitive industries or projects. This may result in the rejection or restriction of investment projects or face stricter regulatory requirements.

3.2. Legal risks

There are significant differences in the legal systems of Russia and China in terms of legal regulations. As an independent judicial sovereign state, the authorities of the Russian Federation do not have an independent regional legal system, and different regions will design their own regulations according to the different characteristics of their respective regions, which leads to the legal system of the Russian Federation there are obvious regional differences [Zhang Bo, Zhang Xinyue, Zhu Mingxin. “Current situation, comparison and prospect analysis of agricultural trade between Liaohe and Russia under the background of “Belt and Road” [J]. Economic Perspectives, 2017, (4).

] And The Russian legal system is relatively complex, and there may be uncertainties in the interpretation and implementation of laws. Investors should have a detailed understanding of Russian laws and regulations, especially investment-related laws, as well as relevant judicial practices, in order to avoid legal risks, and should be fully aware of relevant laws and international treaties: such as the Law on the Procedure for the Entry of Foreign Investments in Business Organizations of Strategic Significance for the Safeguarding of National Defense and National Security of the Russian Federation, the Multilateral Convention on the Implementation of Measures Relating to Tax Agreements to Prevent the Transfer of Tax Base Erosion, and other relevant provisions involving Chinese investors' The Law on the Procedure for the Organization of Businesses of Strategic Significance for the Entry of Foreign Investment in Russia for the Purpose of Safeguarding National Defense and Security There are differences in business customs and legal culture between China and Russia. Investors should understand Russian business customs and legal culture and properly handle contracts, transactions and disputes with Russian partners in order to avoid legal disputes and losses.

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3.3. Economic risks

The economic environment and market conditions in Russia are different from those in China, and there may be currency fluctuations, inflation and interest rate risks. These factors may have an impact on Chinese investors' offshore investments, including the loss of capital exchange rate and the risk of debt default. The market environment and business culture in Russia are different from those in China, involving risks in terms of market competition, consumer demand and supply chain management. Chinese investors need to consider factors such as market awareness, market adaptability, and competitive dynamics when making outbound investments in Russia. Russia's economic and industrial policies may have an impact on Chinese investors' outbound investments, including tax policies, subsidy policies, and industrial access policies. Changes in policies may have an impact on the profitability and sustainability of investment projects.

3.4. Tax risk

Chinese investors should be aware that the tax laws and regulations of Russia and China are different and Chinese investors are required to comply with local tax laws and regulations when investing outside Russia. Failure to understand and comply with the relevant regulations in a timely manner may expose them to tax compliance risks, including non-fulfillment of tax performance obligations and failure to file tax returns as required. Certain investors may attempt to avoid their tax obligations by means of manipulating financial data or taking advantage of tax incentives, which may involve false tax filings, tax evasion, etc., and may face hefty fines and legal liabilities if discovered. Disputes and controversies with tax authorities may arise in the course of investments outside Russia. This may involve issues such as tax assessment, tax accounting, tax incentives, etc., which require investors to reasonably defend their rights and respond to them. Russia and China have different international cooperation rules and tax information exchange systems in the field of taxation. If Chinese investors fail to fulfill the relevant obligations in a timely manner in the process of offshore investment, they may face international tax cooperation risks, including being included in the blacklist of cross-border tax cooperation and facing tax investigations and penalties from other countries.

3.5. Labor Risks

Russia has a set of detailed labor law regulations, including regulations on working hours, wages and vacations. Investors need to understand and comply with Russian labor law regulations to ensure legality and fairness. When engaging in labor activities in Russia, the hiring of laborers requires the signing of an employment contract. Investors need to ensure that the contract complies with the law and protects their rights and interests. Investors are required to pay laborers on time, to ensure that wages are in line with the Russian minimum wage and to comply with the relevant wage payment regulations. Russia has a range of social insurance and welfare programs, including health insurance and unemployment insurance. Investors need to understand and fulfill the relevant insurance and welfare obligations to ensure that workers enjoy due protection. In the event of labor disputes, investors need to understand Russia's labor dispute resolution mechanism and negotiate and communicate with workers to seek settlement or resolve disputes through legal channels.

3.6. Risks of choosing a partner

There are a number of risks for investors when choosing a partner in Russia such as the partner may not be reliable enough to fulfill their contractual obligations or may not cooperate in the agreed manner. This may lead to damage to the investor's interests, or even lead to the failure of the cooperation project. The financial situation of the partner selected in Russia may be unstable and subject to credit risk. This may lead to the partner's inability to fulfill its contractual obligations or to make payments on time.

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4. Risk Prevention and Control for Chinese Investors

In dealing with political risks, Chinese investors should actively establish good cooperative relationships with local governments, enterprises and relevant stakeholders, and ensure that stable communication channels are established with local partners in order to keep abreast of information on policy changes and risk dynamics. In addition, seeking professional legal and political consulting services and complying with local laws and regulations are also important steps to reduce political risks. Adopt a diversified investment portfolio, adjust strategies flexibly, etc. and seek professional help. These measures can help investors better cope with political risks and protect their investment interests.

Chang Cheng of Xi'an Petroleum University mentioned in the article “Research on Risk Management of S Company's Operation in Russia” that purchasing insurance is a more economical response to reduce the political risk of Chinese investment enterprises in their operation activities in Russia [Chang Cheng Research on Risk Management of S Company's Operation in Russia [D]. Xi'an Petroleum University, 2022, 06:54]. The author believes that the measure is also a good way to reduce political risk.

In order to cope with legal risks, Chinese investors should seek professional legal services and consultation, cooperate with local law firms, understand and comply with local laws and regulations, and develop compliant investment strategies and contract management systems. In addition, maintaining good cooperative relationships with local governments, enterprises and relevant stakeholders, and keeping abreast of information about legal changes and risk dynamics are also important means to reduce legal risks. In addition, the author suggests that the foreign economic management department should set up a professional department to review foreign trade laws in different countries and regions to solve the problem of insufficient understanding of foreign laws by foreign investors, or set up a professional qualification examination for foreign laws in the lawyers' profession, so as to urge foreign lawyers to systematically master the legal systems of different foreign countries and provide more professional legal services for Chinese investors.

In order to cope with economic risks, Chinese investors should conduct sufficient due diligence and risk assessment, understand the macroeconomic environment, political situation and industrial structure of Russia, and formulate risk management strategies. In addition, establishing a good cooperative relationship with local partners and understanding the actual situation and business environment of the local market are also important means to reduce economic risks. The international financial market has a certain unpredictability, the national economy is still in the doldrums, the trend of capital flight continues unabated, and Russia's economic interests are seriously affected [Cheng Min. Status Quo, Problems and Countermeasures Suggestions of Heilongjiang Province's Economic and Trade Cooperation with Russia under the New Situation[J]. China economic and trade guide,2019(4):33-37.] Therefore, in order to solve the economic risks of Chinese investors in Russia, it is necessary to conduct sufficient market research, diversify risks, and maintain the ability to learn and adapt. These measures can help investors reduce economic risks and increase the probability of investment success.

(iv) In order to minimize tax risks, Chinese investors can take the following measures:

Investors should establish a tax compliance team and hire professional tax consultants or accountants to help investors understand and comply with Russian tax regulations. Strengthen tax communication and cooperation, keep abreast of the latest tax policies and requirements, and fulfill tax declaration and payment obligations in accordance with the law. Seek double taxation avoidance to avoid double taxation between China and Russia. Be aware of the transfer pricing rules and capital weakening regulations in Russia for connected transactions to avoid anti-avoidance investigation of corporate income tax tax risks. According to the tax law of the

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Russian Federation, if a non-resident enterprise does not constitute a permanent establishment in Russia, it can apply for preferential treatment [See “Tax Guide for Chinese Residents Investing in Russia” issued by the International Taxation Department of the State Administration of Taxation.

Tax Guide for Chinese Residents Investing in Russia

The tax guide for Chinese residents investing in Russia]. Investors are advised to consult professional tax advisors or lawyers before making an investment to understand the specific tax regulations and risks, as well as to take appropriate measures to minimize the risks.

(e) In order to reduce labor risks, Chinese investors can take the following measures:

The investor should have an in-depth understanding of the labor laws and regulations of the target country including an understanding of the labor contract, working hours system, remuneration packages, labor protection and other regulations, and strictly comply with the relevant laws and regulations. Chinese investors should establish a compliant labor relationship with their employees, sign labor contracts that comply with local laws and regulations, and ensure that the contents of the contracts are clear and unambiguous to protect the rights and interests of both parties. Pay attention to the protection of workers' rights and interests in the target country, including the payment of wages, limitation of working hours and vacation system. Ensure that employees enjoy legal rights and interests, and actively participate in and support local labor rights and interests protection activities. Shall provide employees with necessary training and education to help them understand and comply with local labor laws and regulations, and raise their awareness of laws and labor protection. It shall maintain good communication and cooperation with employees, establish an open and transparent communication mechanism, promptly understand employees' needs and feedback, and resolve labor disputes and problems.

(vi) In order to reduce the risk of choosing partners, Chinese investors can take the following measures:

Before selecting a partner, investors should conduct adequate due diligence, including assessing and verifying its credit history, financial status, and operating ability. Consult professional legal and business advisors to understand the legal and policy environment in Russia, as well as the background and credibility of potential partners. Sign a clear contract with the partner, specifying the rights and obligations of both parties, including the mode of cooperation, allocation of responsibilities, and payment methods. Establish an effective cooperation monitoring mechanism to regularly track the progress of cooperation and identify and solve problems in a timely manner. “Don't put your eggs in one basket” Consider working with multiple partners to diversify risks and reduce dependence on a single partner. Although risk is inevitable, when choosing partners, investors should fully assess the risks and benefits, and take appropriate measures to reduce the risk.

5. Conclusion

This paper mainly discusses Russia's outbound investment review system and Chinese investors' risks and prevention and control. By analyzing Russia's outbound investment review system, we can see that the system plays a certain role in restricting and regulating the investment activities of foreign investors in Russia. At the same time, Chinese investors face a series of risks in overseas investment activities and need to carry out effective risk prevention and control. Russia's outbound investment review system is an important factor for Chinese investors to pay attention to and carry out risk prevention and control. Chinese investors should fully understand the review system of target countries and take corresponding measures to prevent risks and protect their investment interests.

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References

[1] Zhang Bo, Zhang Xinyue, Zhu Mingxin. "Current situation, comparison and prospect analysis of agricultural trade between Liaohe and Russia under the background of "Belt and Road" [J]. Economic Perspectives, 2017, (4).

[2] Chang Cheng. Research on Risk Management of S Company's Russian Operation [D]. Xi'an Petroleum University 2022, 06:54

[3] Cheng Min. Status quo, problems and countermeasure suggestions of Heilongjiang Province's economic and trade cooperation with Russia under the new situation[J]. China economic and trade guide,2019(4):33-37.

[4] See "Tax Guide for Chinese Residents Investing in Russia" issued by the Subject Group of Country (Region) Investment Tax Guide of the Department of International Taxation of the State Administration of Taxation