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Preface

The 8th International Conference on Economic Management and Green Development (ICEMGD 2024) is an annual conference focusing on research areas including finance, economics and business management. It aims to establish a broad and interdisciplinary platform for experts, researchers, and students worldwide to present, exchange, and discuss the latest advance and development in finance, economics and business management.

This volume contains the papers of the 8th International Conference on Economic Management and Green Development (ICEMGD 2024). Each of these papers has gained a comprehensive review by the editorial team and professional reviewers. Each paper has been examined and evaluated for its theme, structure, method, content, language, and format.

Cooperating with prestigious universities, ICEMGD 2024 organized five workshops in Bratislava, Murcia, Edinburgh and Beijing. Dr. Lukáš Vartiak chaired the workshop “Practicing How the EFQM Model Helps Manage the Organization”, which was held at Comenius University in Bratislava. Dr. Javier Cifuentes-Faura chaired the workshop “Policies to Enhance Sustainable Development through the Green Economy”, which was held at University of Murcia. Prof. Gbenga Adamolekun chaired the workshop “Decoupling Corporate Finance Implications of Firm Climate Action”, which was held at Edinburgh Napier University. Prof. Xinzhong Bao chaired the workshop “Innovative Strategies in Microeconomic Business Management”, which was held at Beijing Union University. Dr. Li Chai chaired the workshop “Environmental Economics and Sustainable Business”, which was held at China Agricultural University.

Besides these workshops, ICEMGD 2024 also held an online session. Eminent professors from top universities worldwide were invited to deliver keynote speeches in this online session, such as Dr. Lukáš Vartiak from Comenius University in Bratislava and Dr. Javier Cifuentes-Faura from University of Murcia. They have given keynote speeches on related topics of finance, economics and business management.

On behalf of the committee, we would like to give sincere gratitude to all authors and speakers who have made their contributions to ICEMGD 2024, editors and reviewers who have guaranteed the quality of papers with their expertise, and the committee members who have devoted themselves to the success of ICEMGD 2024.

Dr. Lukáš Vartiak
General Chair of Conference Committee

Workshops

Workshop – Bratislava: Practicing How the EFQM Model Helps Manage the Organization



September 26th, 2024 (GMT+2)

Faculty of Social and Economic Sciences, Comenius University in Bratislava

Workshop Chair: Dr. Lukáš Vartiak, Associate Professor in Comenius University in Bratislava

Workshop – Murcia: Policies to Enhance Sustainable Development through the Green Economy



October 30th, 2024 (UTC+1)

Research Group on Economics, University of Murcia

Workshop Chair: Dr. Javier Cifuentes-Faura, Researcher in University of Murcia

Workshop – Edinburgh: Decoupling Corporate Finance Implications of Firm Climate Action



August 28th, 2024 (UTC+1)

The Business School, Edinburgh Napier University

Workshop Chair: Prof. Gbenga Adamolekun, Assistant Professor in Edinburgh Napier University

Workshop – Beijing: Innovative Strategies in Microeconomic Business Management



September 27th, 2024 (GMT+8)

Management College, Beijing Union University

Workshop Chair: Prof. Xinzhong Bao, Professor in Beijing Union University

Workshop – Beijing: Environmental Economics and Sustainable Business



September 21st, 2024 (GMT+8)

International College Beijing, China Agricultural University

Workshop Chair: Dr. Li Chai, Associate Professor in China Agricultural University

The 8th International Conference on Economic Management and Green Development

ICEMGD 2024

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A Comparative Study of the Economic Development of China and Japan after World War II

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Abstract: China's economy is currently facing difficulties such as a slowdown in development, an economic structure that is not adapted to the new world economic situation and so on. How to get out of these difficulties has become an important issue. From a historical perspective, this article compares the economic development processes of China and Japan after World War II and analyses the enlightenment that China can draw from Japan's economic development. The study of this article concludes that after World War II, the economic development models of China and Japan were highly similar. Both countries implemented a development strategy that prioritized heavy and chemical industries, introduced economic development policies that emphasized exports and adopted a government-led economic development model. Both are currently encountering similar development difficulties. Based on Japan's economic development experience and lessons, China should focus on real estate bubbles, market mechanism adjustment and improvement, etc. to adapt to the needs of the new economic situation.

Keywords: Economic development, comparative research, Chinese economy

1. Introduction

After the reform and opening up in 1978, China gradually began the process of transforming from a planned economy to a market economy. After more than 40 years of efforts, the market economy has basically established the dominant position in the operation of the national economy. Through measures such as opening up its economic sectors and implementing export-oriented strategies, China has rapidly grown into the world's second-largest economy. However, in more than 40 years of economic development, the Chinese economy has also encountered many problems that need to be solved urgently. The most critical problem is the prominent structural contradictions, which are manifested in the real estate bubble and the incompatibility of government control measures with the market mechanism.

Although China and Japan have different development paths, there are many similarities in the economic development models adopted by the two countries. It took Japan 30 years after the war to become the world's second-largest economy, and its economic development model is also called the "Japanese model." However, with the bursting of Japan's bubble economy, Japan's economic development has stagnated and entered the "Lost Decades". After the reform and opening up in 1978, China gradually began the process of transforming from a planned economy to a market economy. After years of efforts, the market economy has basically established the dominant position in the

operation of the national economy. By opening up the economic sector, introducing foreign investment, and implementing export-oriented strategies, China has achieved rapid economic growth and rapidly grown into the world's second-largest economy. However, with the rapid economic growth, problems gradually accumulated and exposed in China's economy have begun to become prominent, mainly manifested in the weak demand-pushing role in economic growth, the emergence of real estate bubbles, and other problems. The industrial structure problems that Japan has encountered and the relationship between government intervention and market regulation have all appeared in China's economic growth. Through comparative analysis and study of the post-war economic development processes of Japan and China, it can find some enlightenment about the current economic development of China.

2. Comparability of Economic Development between China and Japan after World War II

2.1. Cultural Background

China and Japan have had close cultural exchanges and interactions since ancient times. This long-term and close cultural interaction gives the two countries similar cultural backgrounds. China and Japan are both located in East Asia. Their geographical proximity has led to frequent exchanges between the two countries since ancient times. Japan has historically studied and borrowed a lot from Chinese culture, including writing, religion, philosophy, art, and literature. Many Japanese institutions, such as bureaucracy and law, were originally influenced by China. The long-term economic exchanges and trade exchanges between the two countries have also promoted the mutual learning of cultural elements. Although Japan has maintained a certain degree of autonomy and selectivity in the process of absorbing Chinese culture, this process of learning and reference makes Japanese culture similar to Chinese culture in many aspects. The differences in decision-making styles are small. This cultural similarity reduces the differences between the two countries and facilitates the analysis and research of the economic development processes of the two countries.

2.2. Similar National Conditions

China and Japan, as two important countries in Asia, share many similarities in their national conditions. First of all, Japan and China are both countries with large populations. They are currently facing the disappearance of demographic dividend and the intensification of social aging. As of 2022, Japan's total population is approximately 124,947 thousand, of which approximately 36,236 thousand are over the age of 65. From the perspective of changing trends, Japan's population is currently showing a continuous decreasing trend, the working-age population continues to decrease, and the elderly population continues to increase [1]. As of 2021, China's total population will exceed 1.4 billion, accounting for approximately 18% of the world's total population. The total population continues to grow, but the growth rate has slowed down. At the same time, China is also facing the challenge of population aging [2]. Secondly, in terms of natural resources, the national conditions of the two countries are also similar. Although the total resource disparity between the two countries is large, the per capita resource possession of both countries is very low. In addition, there are many similarities between the two countries in terms of science and education. China and Japan have similar basic education systems and higher education examination systems, and the governments of the two countries also attach great importance to the fields of education and science and technology. Finally, the two countries also share some similar political characteristics. Both governments emphasize administrative efficiency and development and have efficient administrative systems; the policies of both countries show a certain degree of continuity and stability. These similar national conditions between China and Japan make the economic development processes of the two countries highly comparable.

China and Japan have similar development histories. Japan's economic development after World War II can be roughly divided into five stages, namely postwar economic reconstruction (1945-1955), rapid growth (1955-1970), oil crisis (1971-1979), real estate bubble (1980-1989), and disappearance. 20 years (1990-2010). In the post-war economic reconstruction stage, the national system established during the 1940 war promoted Japan's post-war recovery. The government economic departments that operated Japan's economy during the war were mostly retained after Japan's defeat in 1945. Officials in the nationwide system promoted by the reformists before the war were still not dismissed after the war, but a large number of government officials in the military, administrative, public security, and other departments were dismissed. Because the occupying forces had little understanding of Japanese culture and national operating mechanisms, they were even used as puppets to promote the reconstruction of the Japanese economy after the war. During the high-speed growth stage, the national system played a powerful role in achieving strong and high-speed growth of the Japanese economy. During the oil crisis, Japan's economic growth was still very good compared to other developed countries such as the United Kingdom and the United States. During the real estate bubble stage, the Japanese economy experienced a crisis, economic growth was weak, and it entered a long-term downturn, that is, the "Lost Decades" [3].

From the post-World War II period to the reform and opening up in 1978, China was in the era of a planned economy, with the government leading economic development. After the reform and opening up in 1978, China's economy entered a period of rapid growth. After the outbreak of the global financial crisis in 2008, China's economic development gradually slowed down due to its impact. At the same time, the real estate market was extremely prosperous.

Japan started from the ruins after World War II and developed into the world's second-largest economy after thirty years of development. Starting from a comprehensive backwardness during the reform and opening up in 1978, China has developed for nearly 40 years and has now replaced Japan as the world's second-largest economy. Throughout the development process of the two countries, the development speed and final level reached by the two countries are very similar, which makes Japan's development process more valuable for China.

2.3. Similar Problems Currently Encountered

As the two major economies in Asia, China, and Japan are currently facing some similar development challenges. The first is the issue of population aging. After World War II, both China and Japan experienced a baby boom, which enabled the two countries to enjoy huge demographic dividends and promoted the development of economic construction in both countries at that time. However, both China and Japan are currently experiencing rapid growth in the aging of their populations brought about by the baby boom. This puts pressure on both countries' labor markets, social security systems, and overall economic growth. Along with the problem of population aging, there is also pressure on social welfare. With the arrival of an aging society, the pressure on social welfare expenditures in both countries is increasing, and there is a need to find sustainable social security solutions. Secondly, both China and Japan are currently facing the problem of slowing economic growth. As the two countries' economic development enters a more mature stage, economic growth will naturally slow down. Both China and Japan are seeking new growth points to maintain economic vitality. In addition, the economies of both countries are relatively dependent on exports and face the risk of external market fluctuations. In recent years, both China and Japan have made efforts to enhance domestic demand to reduce dependence on external markets. Finally, both China and Japan face huge environmental and resource pressures. Affected by the national conditions of large populations, both countries face severe challenges in environmental protection and resource utilization and need to find a balance between protecting the environment and maintaining economic growth.

3. Similar Economic Development Factors between China and Japan

3.1. Development Strategy Giving Priority to Heavy and Chemical Industries

Both China and Japan have chosen to prioritize the development of heavy and chemical industries in their economic development, forming a capital-intensive industrial structure. The key to Japan's rapid economic development after World War II was to break through the pre-war economic structure dominated by light industry and enter the era of heavy chemical industry. During this period, the Japanese government's policy of emphasizing the heavy chemical industry drove the development of basic industries such as raw materials and equipment. It provides impetus for the development of the entire industrial system, thus greatly promoting the development of the national economy [4,5]. From the 1950s to the 1960s, Japan's per capita output growth rate remained at a high level of 8.0% per year, compared with 2.1% in the United States [6].

In the early 1950s, China embarked on a total of 156 key engineering projects, covering key industries such as electricity, coal, petroleum, steel, nonferrous metals, and chemicals. The implementation of these projects has promoted the rapid growth of China's economy. The original economic structure dominated by agriculture has gradually transformed into a system with relatively complete industrial categories, and the economic structure has also experienced significant changes [7]. The heavy chemical industry has the following characteristics: First, the products have high-profit margins and large potential market demand. Secondly, the heavy chemical industry has a strong spillover effect, and its development can drive and accelerate the development of other industrial sectors. Therefore, the heavy chemical industry has great traction in the development of the entire national economy. In addition, the development of the heavy and chemical industry can significantly increase production to meet the expanding demand by expanding and upgrading production capacity. The continuous improvement of labour productivity reduces production costs and the relative prices of products, thereby further stimulating the expansion of demand and accelerating economic development. These characteristics of the heavy chemical industry mean that its development can promote the development of other sectors of the national economy and provide an impetus for economic development; it can also improve technical strength and strengthen the international competitiveness of commodities; it can increase national income and increase capital accumulation. Therefore, the heavy chemical industrialization of the industrial structure is an important factor for China and Japan to change the old economic structure and realize economic modernization.

3.2. Economic Development Policies that Emphasize Exports

In terms of economic development policies, both China and Japan attach great importance to exports. After the war, Japan adopted a development strategy that emphasized foreign trade, actively participated in the international division of labour, and achieved industrial modernization by continuously expanding exports. The role of exports in Japan's economy is reflected in two aspects. The first is to provide foreign markets for products and expand effective demand; the second is to improve the international balance of payments structure and expand its import capabilities. The essence of the strategy of "building a nation through trade" is to exchange industrial products produced by Japan's rich and high-quality human resources for the production raw materials that Japan urgently needs and lacks. Due to the scissor gap between industrial products and agricultural products, Japan is in a very favourable position to participate in the international division of labour, which greatly promoted Japan's post-war economic development.

Since the implementation of the reform and opening-up policy in 1978, China has established special economic zones and other measures to attract foreign investment, promoting the rapid development of its export-oriented economy. What followed was a surge in foreign trade volume and

a significant increase in trade dependence. These changes had an extremely critical impact on China's economic progress.

3.3. Government-led Economic Development Model

The governments of China and Japan have played important roles in formulating industrial policies and adjusting industrial structures. The government-led economic development models adopted by the two countries have effectively promoted economic growth.

As an island country with a large population, little land, and scarce resources, Japan will not be able to achieve rapid economic growth in a short period if it only relies on the natural evolution of industry or its resource endowment advantages to develop its economy when all industries are in decline after the war. The boosting effect on economic growth is one of the important driving forces for Japan's economic growth. After the war, the Japanese government formulated and implemented industrial policies with Japanese characteristics, including industrial structure policies, industrial organization policies, and industrial technology policies, based on the objective realities of Japan's relatively backward economic development, low industrial technology level, and lack of resources. The core of Japan's industrial structure policy is to select leading industries and pillar industries to support at different times, thereby stimulating economic growth. The Japanese government selected the heavy chemical industry, which has a strong diffusion effect, can sustain long-term rapid growth, and can continue to progress through the development of science and technology, as the leading industry for a long period after the war to support, and as the economic development stage changes, The Japanese government has selected different industries as leading industries to support in different historical periods. The main content of Japan's industrial organization policy is to support large-scale enterprise groups with international competitiveness so that they can develop as quickly as possible and participate in international competition. On the other hand, Japan provides support to small and medium-sized enterprises that are temporarily not internationally competitive. and industry sectors to implement protection to ensure that they will not be impacted by foreign companies and products before they grow and expand. Japan's industrial technology policy mainly provides support by selecting key industrial technology fields with development potential. At the stage when Japan achieved high economic growth, the Japanese Government successively chose three sectors, namely, the energy industry, basic industry, and new industry, and the Government supported them using credit and taxation to import a large amount of advanced technology from overseas to be digested and assimilated and to innovate based on such technology. This enabled the technological level of these sectors to gradually catch up with that of other Western developed countries.

China's government-led economic development model is a special kind of market economy. Under this model, the Government plays a leading role in economic development through macroeconomic regulation and policy guidance. The Government not only invests in infrastructure development, important industries, and key sectors but also guides the flow of private capital and market activities through legal and policy frameworks. This model emphasizes the Government's decisive role in resource allocation, industrial planning, and economic stability, while also using market mechanisms to improve economic efficiency. After the founding of the People's Republic of China in 1949, China adopted a planned economic system in which the government controlled the allocation of resources and decision-making on economic activities. During this period, the government-led model helped China build the foundations of industrialization. In 1978, China embarked on a policy of reform and opening up, which marked a major shift in the country's economic development model. The government promoted the construction of a market economy while continuing to play a role in macro-control and policy guidance. In 1992, China further deepened its reforms, established the goal of a socialist market economy, and pushed forward the transformation of its economic system. During this period, the government continued to play a key role in restructuring industries and guiding the

direction of economic development. In 2001, China joined the World Trade Organisation (WTO), an event that accelerated the internationalization of the Chinese economy while promoting further optimization of its economic structure. At the beginning of the 21st century, China's economy continued to grow at a rapid pace, and the government-led model continued to evolve in the new international and domestic environment, with an emphasis on innovation and high-quality development. China's economic model combines government activism and market effectiveness, aiming to achieve rapid economic development and long-term social stability. This model has transformed a planned to a market economy over the past decades, while its role has been continuously adapted and optimized, thus helping China to achieve significant economic growth and industrialization.

4. What China can Learn from Japan's Economic Development

4.1. Preventing and Defusing Real Estate Bubbles

After the Plaza Accord, the yen appreciated sharply and Japanese asset prices rose. By 1989, Japan's land prices had risen by almost 70 percent. Against this backdrop, the Japanese government began to restrict real estate, and the Japanese economy has been in a prolonged depression ever since [8]. The formation of the Japanese real estate bubble was due to several important factors in addition to the appreciation of the yen. In the 1980s, Japan's economic development entered a new phase with a slowdown in urbanisation and an aging population, factors that led to a weakening of the fundamental underpinnings of the real estate market. In response to the international economic environment and the appreciation of the yen, the Bank of Japan implemented an accommodative monetary policy, leading to an increase in the money supply, which in turn pushed up asset prices. The land tax reform and policy adjustments at the time failed to effectively check land investment speculation and instead fuelled the expansion of the property bubble [9]. In the context of financial liberalization and deregulation, commercial banks and investors, based on the motive of maximizing profits, invested heavily in the real estate market, forming a capital operation mechanism that supported the generation and expansion of bubbles. The global market that Japan's manufacturing industry can capture is becoming saturated and the market cannot expand. Domestic manufacturing costs have risen due to high housing prices and long-term economic growth, which has affected economic health. The interaction of these factors ultimately led to the overheating of the Japanese real estate market and the formation of bubbles.

Along with the continuous deepening of China's housing monetisation reform and the continuous expansion of the scale of the real estate market, the phenomenon of overheating of the real estate market has appeared from time to time in China in recent years, with 2016 being the most urgent case of serious overheating of the real estate market in parts of the country. There are many similarities with the behaviour of Japan in the mid-to-late 1980s during the period of soaring land prices and inflated property bubbles. Firstly, the macro-environmental triggers of the severe overheating of China's property market at the beginning of the 21st century are similar to those in Japan back then. With decades of rapid economic growth after reform and opening up, China's economic strength and residents' income levels have been greatly improved. Coupled with a high national savings rate, private wealth accumulation has become increasingly large, and the investment demand has continued to grow. Further supported by favourable economic fundamentals and strengthened by the expectation of the continuous rise in property and land prices in the previous period, China's real estate has become the object of a large amount of capital, as it was in Japan at that time. Secondly, in terms of financial credit, the importation of huge amounts of capital was the main source of localised overheating in China's real estate market in the 1990s. Since 2015, China's central bank has implemented a series of proactive monetary policies to promote the recovery and growth of the real

economy. Against this backdrop, banks and related market players have taken advantage of policy preferences and government regulatory gaps to engage in so-called "financial innovation", moving huge amounts of capital to the property market in key cities through credit and financial products, driving up demand for property investment and speculation and driving up property prices. Finally, in terms of government regulation and intervention, the local government's control of land and housing prices is incompatible with its incentives to run the city and improve its financial capacity, thus delaying and missing the best time to regulate. In the context of China's institutional environment, where land finance is the main source of local revenue, the lack of regulatory and coordination mechanisms for property market regulation has led to inefficiencies in the operation of the system of local responsibility for property regulation and control. Overall, the deep roots of the localised overheating of China's property market in recent years lie in the interest mechanisms that drive market actors to support or engage in property investment speculation. In sum, the emergence of a real estate market bubble in China, similar to that in Japan, is the result of self-interested behaviours of the government and the market in a particular macro-environmental and institutional context [10].

The history of Japan's property bubble provides important policy lessons for contemporary China. Firstly, China needs to be wary of excessive credit expansion and speculative home purchases, which could lead to a property bubble. Timely regulation and moderate market intervention can help avoid bubble formation. Secondly, China should implement differentiated regional policies. As China's regional development is uneven, real estate policies should be formulated and implemented by the specific conditions of each region to ensure the stable and healthy development of the market. Thirdly, a long-term real estate market control mechanism should be established and improved, including various aspects such as finance, land, and taxation, to promote the stable and healthy development of the real estate market. Fourthly, the relevant Chinese government departments need to optimize the structure of the real estate market, promote a balance between supply and demand in the real estate market, and rationally guide real estate development to meet housing demand at different levels, to avoid the concentration of risks caused by a single market structure. Fifthly, China should strengthen regulation and risk early warning, enhance supervision of the real estate market, establish effective risk early warning and response mechanisms, and identify and deal with potential risk points promptly. Sixthly, it should focus on the functional positioning of the real estate market, clarify the residential property attributes of properties dilute their asset attributes, and ensure the healthy development of the real estate market through policy guidance. Seventhly, the government should maintain the stability and continuity of the market, by maintaining the continuity and stability of the real estate market policy, to avoid the frequent changes in the policy leading to the market ups and downs.

4.2. Focusing on the Adjustment and Improvement of Market Mechanisms

After the Second World War, the government-led catching-up economic system enabled Japan to achieve high economic growth and become a major economic power. However, with the completion of the catching-up task and changes in the economic environment, the Japanese catching-up economic system did not make timely changes and adjustments, and excessive government intervention in the economy caused problems such as rigidity in the economic structure, financial bubbles, and high fiscal deficits.

China has also succeeded in achieving rapid economic growth over a long period after making a major change from a planned economy to a market economy. However, no economic system is immutable and should be readily adjusted in response to changes in economic conditions and the economic environment. At present, China's economy is facing a new economic development background of slowing economic growth, industrial structure transformation and upgrading, and the disappearance of the demographic dividend, etc., and the corresponding economic management system should be changed accordingly to avoid falling into Japan's historical mistakes. Efforts should

be made to build and improve the competitive market structure and create a fair and competitive market environment. In the process of adjusting the industrial structure, the establishment of a market mechanism for fair competition should be taken as the first prerequisite to ensure that enterprises, regardless of their size, can enter any industrial field equally and freely. Monopolistic barriers to industry and restrictions on market access to industry should be further eliminated, so that enterprises of all sizes and ownerships can compete in a truly fair market environment.

5. Conclusion

This paper uses the methods of literature research and data analysis to compare the economic development of China and Japan and to analyse what China can learn from Japan's economic development history. Both China and Japan experienced a period of high economic growth after World War II, but both encountered difficulties in their development and a decline in their development rate. This paper first analyzes the comparability of the post-World War II economic development history of China and Japan and finds that they are highly comparable. Then, this paper analyses the similar economic development factors of China and Japan, and finds that both China and Japan chose to give priority to the development of the heavy chemical industry in their economic development strategies, which greatly promoted the development of the national economy; in terms of economic development policies, both China and Japan attached great importance to exports, and achieved industrial modernization by continuously expanding exports; in terms of choosing the mode of economic development, China and Japan chose the government-led economic development model, the government plays an important role in industrial policy formulation, industrial structure adjustment, etc. The government-led economic development model adopted by both countries has effectively promoted economic growth. Finally, based on Japan's post-World War II economic development history, this paper puts forward relevant suggestions for China's future economic development, including preventing and resolving real estate bubbles and focusing on the adjustment and improvement of the market mechanism to meet the needs of the new economic situation.

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Divergence in ESG Ratings and Its Impact on Corporate Reputation and Management Strategies

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Abstract: With the growing global focus on climate change and environmental issues, the significance of Environmental, Social, and Governance (ESG) considerations within corporations is increasingly paramount. In the context of the current "green environmental protection" paradigm, ESG, as a product of the new era, aligns seamlessly with China's sustainable development philosophy. Based on this context, this paper elucidates the composition of divergences in ESG ratings and discusses the implications and impacts of these divergences on corporate reputation and management strategies based on relevant theories. This paper provides a reference for understanding the disparities in ESG ratings among different enterprises and their resultant impacts.

Keywords: ESG Rating Divergence, Corporate Reputation, Management Strategy

1. Introduction

In his report to the 20th National Congress of the Communist Party of China, General Secretary Xi Jinping stated, "Enterprises have not only economic and legal responsibilities but also social and moral responsibilities." "Only entrepreneurs who sincerely give back to society and effectively fulfill their social responsibilities can truly be recognized by society and are entrepreneurs who meet the requirements of the times." These significant remarks clarify the direction for the implementation of China's ESG development theories and sustainable corporate development, further embedding the concept of green environmental protection into the public consciousness. Therefore, analyzing the emergence of ESG rating divergences and elucidating their content is crucial for assessing their impact on corporate reputation and management strategies.

2. Emergence of ESG Rating Divergence

ESG rating refers to the scoring of a company's environmental (E), social (S), and governance (G) aspects by ESG rating agencies based on the company's published corporate social responsibility reports and other available data. These agencies then produce a comprehensive ESG rating for the company or investment portfolio according to their respective indicator systems.

Analysis of Domestic and International ESG Rating Divergence:

There are significant cultural and social differences between domestic and international ESG rating agencies, leading to variations in evaluation criteria. Regardless of factors such as "local preferences," institutional backgrounds, ownership attributes of companies, and "implicit" social responsibilities, as well as ESG ownership disclosures, it is not feasible to apply uniform requirements uniformly across all contexts [1].

Analysis of Domestic ESG Rating Divergence:

2.1. Differences in Indicator Measurement

For major domestic ESG rating agencies (such as China Securities Index, Huazheng Index, and Shangdao Ronglv), there are significant discrepancies in the ESG performance ratings of individual domestic companies. The lack of universally standardized ESG measurement criteria leads to considerable disparities in how different data providers measure and evaluate ESG.

2.2. Differences in Weighting Setting

Domestic scholars have studied the differences in weighting among three databases. The results show that in CNRDS, the social dimension has the highest weight, nearly three times that of the other two dimensions. In CSMAR, the environmental dimension has the highest weight, nearly twice that of the social and governance dimensions. For Wind, the social dimension has the highest weight, approximately three times that of the environmental dimension [2].

2.3. Textual Divergence in ESG Reports

ESG rating agencies' judgments and evaluations depend on the quality of ESG reports. In their assessments, ESG rating agencies consider whether these reports are comprehensive, balanced, and quantifiable enough. Therefore, the quality of ESG report texts voluntarily published by listed companies decisively influences the ESG ratings of these companies.

2.4. Other Reasons for ESG Rating Divergence

2.4.1. Governance Structure and Mechanisms

The governance structure and mechanisms of companies in ESG may vary due to different social systems. For example, some countries may emphasize corporate social responsibility and sustainable development, while others may prioritize profitability and economic benefits. This difference can lead to discrepancies in companies' decisions and actions regarding ESG.

2.4.2. Expectations and Demands of Stakeholders

Decisions and actions of companies in ESG may be influenced by various stakeholders. For example, investors, consumers, governments, employees, and the general public may have different expectations and demands from companies. These expectations and demands may vary due to different social systems and cultural backgrounds, leading to discrepancies in companies' ESG approaches.

2.4.3. Regulations and Policies

Regulations and policies in different countries and regions may have varying impacts on companies' decisions and actions regarding ESG. For instance, some countries may have strict environmental regulations, requiring companies to adhere to certain environmental standards during production,

while others may have more lenient regulations. This difference can lead to discrepancies in companies' decisions and actions regarding ESG.

2.4.4. Culture and Values

The cultural backgrounds and social systems of different countries or regions may result in varying values among companies regarding environmental, social, and governance aspects. For example, some companies may prioritize economic benefits and profit maximization, while others may prioritize social responsibility and sustainable development. This difference can lead to discrepancies in companies' decisions and actions regarding ESG.

2.4.5. Inconsistent Rating Standards

Different rating agencies may have different opinions on which factors significantly impact the environmental (E), social (S), or governance (G) aspects and the weights of these factors in ratings. Additionally, standards used for comparing specific industries may differ, with some using relative benchmarks and others using absolute benchmarks.

2.4.6. Discrepancies in Data Collection

ESG ratings rely on extensive data collection and analysis, but there may be discrepancies in data acquisition. On one hand, different data sources and channels may provide different information, potentially leading to divergent rating results. On the other hand, the accuracy and completeness of data may also affect rating outcomes.

2.4.7. Company Self-Reporting and Transparency

If companies do not adequately disclose their performance in ESG or if the disclosed information is inaccurate, rating agencies may be unable to make accurate assessments, resulting in divergence.

3. Impact of ESG Rating Divergence on Corporate Reputation

Corporate reputation is a crucial factor for companies to gain competitive advantages. The perception of a company's reputation depends on its image and status among various stakeholders. ESG performance comprehensively measures a company's social, environmental responsibilities, and corporate governance. A strong ESG performance can help companies establish a positive public image, send positive signals to various market participants, and consequently build a good corporate reputation. With this in mind, this paper, based on the perspective of signal transmission, combined with panel data from some listed companies in China from 2011 to 2021 [3], and measured corporate reputation [4], studied how ESG performance affects corporate reputation. The research found that ESG rating divergence may impact companies in the following aspects:

3.1. Complexity of Investment Decisions

For investors, ESG ratings are crucial investment decision references. However, when there is divergence, investors may face decision-making difficulties, unsure which rating agency's standards to follow. This uncertainty may increase investors' risk perception, thereby influencing investment decisions regarding companies.

3.2. Ambiguity in Market Perception

ESG rating divergence may lead to ambiguity in the market's perception of companies. When multiple rating agencies provide different rating results, the public and investors may be confused about the true situation of the company, which is not conducive to establishing a clear and distinct brand image for the company.

3.3. Uncertainty in Corporate Strategy

When formulating ESG strategies, companies usually refer to rating agencies' recommendations and standards. However, ESG rating divergence may introduce uncertainty for companies in formulating and executing strategies. Companies may need to spend more time and effort addressing the requirements of different rating agencies, potentially diverting attention from their core business development.

3.4. Decrease in Trustworthiness

ESG rating divergence may lead to a decrease in the public and investors' trust in a company's true performance. If there are significant differences in rating results from different rating agencies, the public and investors may doubt the company's integrity, thereby affecting perceptions and attitudes towards the company.

3.5. Impact on Brand Image

ESG rating divergence may damage a company's brand image. The company may be perceived as lacking in environmental, social, and governance aspects, thereby affecting its image among the public and investors. This damage to the brand image may impact the company's market competitiveness and even lead to the loss of customers and partners. 6. Stock Price Volatility: ESG rating divergence may affect a company's stock price. If there is divergence in a company's ESG rating, investors may doubt the company's future prospects, leading to stock price volatility. This volatility may have a negative impact on the company's market capitalization and financing capabilities.

ESG rating divergence is crucial to corporate reputation. In implementing the national green environmental protection concept and adhering to corporate sustainable development, enhancing corporate reputation can be approached from the following aspects:

First, clarify the company's ESG strategy: Companies should clarify their ESG strategies and goals, ensuring that all stakeholders understand and agree with these strategies and goals. This will help companies maintain consistency when facing ESG rating divergence, reducing reputational risks.

Second, strengthen communication with rating agencies: Companies should actively communicate with rating agencies to understand their evaluation criteria and methods, ensuring that their ESG performance aligns with these standards. At the same time, companies can provide their own data and information to rating agencies to help them more accurately assess the company's ESG performance.

Third, publicly disclose ESG information transparently: Companies should transparently disclose their ESG information, including environmental, social, and governance data, policies, and achievements. This will help enhance the understanding and trust of the public and investors in the company, reducing the impact of ESG rating divergence on corporate reputation.

Fourth, strengthen ESG awareness training: Companies should enhance internal education on ESG awareness, ensuring that employees understand the importance of ESG and actively practice it in their daily work. A company with a strong internal consensus on ESG principles can respond more confidently and firmly to external ESG rating divergence.

Fifth, involve diverse stakeholders: In addition to rating agencies and investors, companies should actively communicate their ESG strategies and performance to other stakeholders such as customers, suppliers, partners, and employees. Through the participation and feedback of diverse stakeholders, companies can gain a comprehensive understanding of their ESG performance, identify and improve existing issues in a timely manner, and continuously improve and innovate. ESG rating divergence provides opportunities for companies to improve and innovate.

Finally, strengthen international cooperation and exchange in the face of ESG rating divergence: Companies can enhance cooperation and exchange with international peers and partners to jointly promote the improvement of ESG standards and evaluation methods. Through international cooperation, companies can learn from the successful experiences of other companies, jointly address ESG challenges, and adapt to the divergence in ESG ratings.

4. ESG Rating Divergence and its Impact on Management Strategies

4.1. Analysis of Characteristics of Traditional Enterprise Management Concepts

Traditional enterprise management strategies typically focus on improving production efficiency and maximizing corporate and shareholder profits, often overlooking their "ecological-human" attributes. In recent years, environmental awareness has become increasingly important, leading to the emergence of new energy companies. However, some companies, considering the operational risks associated with fulfilling environmental responsibilities, prefer to pay fines rather than improve related measures. The emergence of ESG ratings has, to a certain extent, promoted the transformation of companies from being purely "economic entities" to "ecological entities" [5], achieving rational effects [6].

4.2. Impact Orientation of ESG Rating Divergence on Corporate Management Strategies

4.2.1. Establishing the Concept of Corporate Sustainable Development

Corporate social responsibility refers to a company's obligation to not only fulfill legal responsibilities in production and operation but also to bear responsibilities to stakeholders such as shareholders, investors, employees, customers, suppliers, partners, and the public. Against the backdrop of the previous "dual-carbon" environment, the transformation of corporate management concepts requires companies to find a balance between economic and environmental benefits, adopt more environmentally friendly production methods, reduce waste emissions, and improve resource utilization efficiency [7]. Additionally, in the macro environment, empirical evidence suggests that good ESG investment can help companies' stocks decrease less during market downturns and recover faster during market upturns, forming a good protective mechanism.

4.2.2. Balancing Economic, Social, and Environmental Benefits

Under the influence of the ESG concept, companies should actively assume more social responsibilities to achieve higher ratings, focus on social issues, participate in community development, and engage in philanthropy. At the same time, companies need to increase their focus on corporate governance, establish and improve internal control mechanisms, and strengthen communication and cooperation with shareholders and stakeholders. While uncertainties exist in the emergence of ESG rating divergence, the overall starting point is positive. Companies should think about longer-term development and make corresponding changes in management strategies according to market conditions. This includes promoting innovation in green management models and green

technologies, and enhancing the performance evaluation and risk management systems of green management [8].

4.2.3. Building a Good Corporate Reputation

Table 1: Association between Corporate Reputation and ESG Performance

ESG Performance	Information Transmission	Information Reception	Effect	Corporate Reputation
Social Responsibility Report	Company Website/Social Media	Investors/Employees/Consumers	Enhance corporate reputation, increase investor trust, enhance employee belonging and loyalty.	
Environmental Responsibility Activities (Sustainable Development/Environmental Innovation Products)	Charity Projects/Press Releases/Product Promotion	General Public/Media/Consumers/Industry Experts	Shape corporate environmental image, increase brand awareness, increase product sales, and gain public support and expert recognition.	
Corporate governance policy	Government Communication /Industry alliance	Government officials /Enterprise personnel	Establish good government relations, strive for policy support, ensure compliance, and shape the image of industry leaders.	

From previous years' data, companies with higher ESG ratings often have good corporate reputations. Additionally, companies with high ESG ratings benefit from better financing opportunities and

significant capital market effects resulting from ESG information disclosure. Moreover, transitioning from "strategy" to "substance" on the basis of ESG is essential for building a good reputation [9] and improving ESG scores [10].

5. Conclusion

ESG rating discrepancies are a complex and multidimensional issue involving methodological differences among different rating agencies, variations in a company's own ESG performance, the influence of industry characteristics, and differences in investor understanding and application of ESG ratings. Firstly, in constructing rating models, different ESG rating agencies may exhibit significant differences. For instance, some agencies may emphasize the impact of environmental factors, while others may focus more on social and governance aspects. Additionally, divergences may arise in the selection of ESG evaluation indicators and the determination of weights by different rating agencies, directly leading to differences in rating results. This disparity necessitates investors to thoroughly understand the methodologies and evaluation criteria of each rating agency when selecting ESG ratings, in order to better comprehend and compare rating results and mitigate potential impacts on corporate reputation or management strategies due to rating discrepancies.

Secondly, a company's own ESG performance is also a significant factor contributing to rating discrepancies. There are considerable differences in companies' performance in environmental, social, and governance aspects, directly impacting the evaluation results by rating agencies. Some companies may excel in certain ESG areas while exhibiting deficiencies in others, leading to different rating outcomes from different rating agencies and consequently affecting corporate reputation and management strategies.

Moreover, industry characteristics (varied environmental, social, and governance challenges across different industries) also play a crucial role in ESG ratings. Therefore, companies in different industries may experience differences in ESG ratings. When comparing ESG ratings, investors need to take industry factors into full consideration to avoid being misled by rating discrepancies between different industries.

Lastly, investor understanding and application of ESG ratings also influence rating discrepancies. Variations may exist among investors in understanding and applying ESG ratings, leading to different perceptions and judgments on the same company's ESG ratings. Therefore, investors need to enhance their learning and understanding of ESG ratings to better apply them in investment decision-making, aiding companies in improving management strategies and enhancing corporate reputation.

In conclusion, ESG rating discrepancies are a complex and multidimensional phenomenon involving various factors. To mitigate the risks associated with ESG rating discrepancies, investors, rating agencies, and companies need to collaborate and communicate effectively, promoting the continuous improvement and development of the ESG rating system. Simultaneously, companies should enhance their reputation and continuously optimize management strategies based on their own circumstances and societal needs.

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Analysis of Factors Influencing Artwork Pricing

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Abstract: Artworks, as unique commodities, possess both properties and aesthetic value. For consumers, understanding the factors affecting artwork pricing can mitigate the risks associated with market pitfalls. For collectors intending to sell artworks, knowing the factors influencing the pricing of artworks can help them better assess the value of their collections and make more informed decisions on when, where and how to sell. This paper analyzes the influencing factors on art prices from three perspectives: intrinsic attributes of artworks, demand dynamics, and special elements of the art market. Each factor's variation can lead to significant fluctuations in art prices.

Keywords: Artwork, Factors Affecting Pricing, Art Market Intermediary

1. Introduction

Artwork, alongside stocks and real estate, are considered as three major investment assets. Art assets have the following characteristics: Firstly, the threshold of art investment is high, art investment requires long-term accumulation of professional knowledge and market experience, and the high price of art makes the market become the exclusive stage for the rich, with a narrow scope of transaction, low frequency of transaction and poor liquidity. Secondly, the heterogeneity of artwork is high, and the subjective preference of investors varies greatly. Thirdly, investing in art entails high transaction costs, poor information transparency, and elevated risks. The costs of many aspects associated with artwork, such as appraisal, valuation, transport, storage and insurance, are higher. Consumers need to face substantial transaction costs if they engaged in artwork transaction through auction channels.

The value of artworks is determined by factors such as historical significance, cultural relevance, academic significance, and artistic merit. However, the price of artworks does not necessarily correlate directly with their intrinsic value and exhibits significant volatility[1]. indicates that the variance in art prices is two to three times higher than that of the Dow Jones Industrial Average and corporate bonds. Numerous scholars have investigated the pricing of artworks[2]. Finding a correlation between the rise in art prices and inflation trends. It suggests that income inequality can drive up art prices[3]. It proposes understanding art prices through social institutions, networks, and frameworks, suggesting that art prices are influenced by social and political forces within the market[4]. It analyzes Italian art prices between 2006 and 2010, identifying industry size, average prices, artist specialization, background, renown, production, market structure, nationality, and art period as primary factors affecting Italian art prices [5]. Finding that the consumer confidence of high-income groups and the popularity of the art market have a significant impact on art price trends[6] . Using data on market performance from 1148 artists in three Dutch museum digital

archives from 1930 to 1989, employ network analysis to study the influence of artist reputation on art prices[7] .

On the basis of previous studies, this paper aims to explore the various factors affecting the price of artworks from three perspectives: the intrinsic attributes of artworks, the demand for artworks and the special elements of the art market. It should be noted that the premise of all analyses in this paper is that the social order and economic structure are in a relatively stable state. In times of social instability, fluctuations in art prices often lack rationality and are not within the scope of this paper.

2. The Intrinsic Attributes of Artworks

The intrinsic attributes of artworks form the foundational factors influencing their prices. This paper analyzes five factors related to artworks: the time of creation of artworks, the quantity in existence, the level of productions, size, and prestige.

2.1. The Time of Creation

Time is the most direct factor influencing the price of artworks. This is because works created in earlier eras have undergone more comparisons and eliminations with contemporaneous and subsequent works. Among the remaining treasures, naturally, are the finest examples. Additionally, after numerous contemporaneous artworks and cultural artifacts gradually dissipate, those that are preserved not only possess their own artistic value but also acquire the added value of history from their contemporaneous works. This accumulation of historical significance over time gradually increases the value of the artwork, and after several years, it may become a priceless antique.

Generally speaking, the factor of time directly affects the scarcity of artworks. For artworks of the same type and similar quality, there is a significant positive correlation between their prices and the proximity of their creation time. However, if the production of artworks is very close to their sale time, and time does not directly influence the supply-demand relationship of the commodity, then the impact of the time factor on pricing may be minimal, or even negligible. Of course, different types of artworks have their own ranges for the temporal relationship between the time of sale and the time of completion of the artwork, requiring specific analysis based on the type of artwork.

2.2. The Quantity in Existence

When artworks are generally the same, the quantity of artworks extant significantly influences their prices. For instance, for artworks of the same type, from the same era, with similar themes and quality, the larger the quantity of artworks extant, the more abundant the market supply, leading to lower prices of artworks. Conversely, if the quantity is lower, the prices tend to be higher.

2.3. The Level of Productions

In this paper, the level of production in artworks can be considered as an alternative term for quality.

The quality of artworks directly determines their prices, which is undisputed. However, the issue lies in the subjective and stochastic nature of how artworks satisfy individual desires. Different people may have significantly different criteria for assessing the quality of artworks, leading to considerable pricing discrepancies for the same artwork among different collectors. In some cases, the irreplaceability of an artwork's ability to satisfy desires can greatly influence people's judgment of its quality.

Fortunately, although the quality of artworks cannot be quantitatively calculated in principle, common sense and expertise suggest that on most occasions there is a very strong positive correlation between the level of production and the quality of the artwork. For society at large, when discussing

market pricing, these two terms can almost be considered equivalent propositions. The term of production generally involves three aspects: difficulty, materials, and the inherent uniqueness of the artwork itself.

Difficulty is the most intuitive criterion for determining the level of production. The level of difficulty tests the skill of the maker, which typically reflects the quality of the product. Concepts such as “simple and natural” and “simplicity from complexity” are also reflections of the level of difficulty.

As artworks intended for collection, their level of production is sometimes directly reflected in the choice of materials. On one hand, the greater the difficulty in processing the materials, the higher the level of production required for the artwork. On the other hand, the preciousness of the materials used in the artwork will directly influence its pricing. It should be noted that since consumers purchase artworks primarily for collection purposes, the permanence of the materials is especially important for artworks.

Another intuitive criterion for assessing the level of production is to examine whether the artwork is easily replaceable. The more exquisite an artwork, the more difficult it is to replicate; conversely, the more difficult it is to replicate an artwork, the higher the artistic achievement it generally represents.

2.4. The Size of Artworks

The size of artworks has a significant impact on their prices. For artworks intended for different purposes, the relationship between size and price needs to be analyzed specifically, but it is evident that price does not directly correlate with size. For instance, in the case of artworks used for decoration, the ideal size is typically one that fits well for home decor, such as a medium size. If an artwork is too large, it may be less desirable for display, resulting in a decrease in its price.

2.5. The Prestige of Artworks

In the art market, the prestige of artworks significantly influences their prices. Being recognized by respected peers within the industry or having exhibitions in authoritative institutions such as museums not only reflects intrinsic rewards for artists but also serves as a prerequisite for obtaining external economic returns.

There are two main mechanisms by which works of art acquire prestige and thus increase in price. One is that works of art acquire fame by virtue of their own outstanding attributes. For example, works of art that are old, have a small number of survivors, or are of a high standard of production will naturally have greater fame, and their prices will be higher. Secondly, the artist directly confers his or her own fame to the artwork he or she creates. Artist popularity is like a brand guarantee for artworks. Putting aside the aesthetic enjoyment and spiritual enlightenment brought by the artworks themselves, some collectors actually have similarities with the purchase of luxury goods, i.e., they belong to the flaunting consumption, and the purchase of artworks is a sign to show off their social status, economic strength and cultural connotation. As a result, the reputation of the artist seems to become the brand trademark of the artwork, bringing brand premium to the artwork. In addition, by choosing a famous artist, collectors can also avoid the cost of searching the market for artworks with outstanding attributes, so naturally collectors will be willing to pay more money for the artist's reputation.

3. The Demand for Artworks

The higher the demand for artworks, the higher their prices naturally turn out to be. This section will analyze several factors that influence the demand for artworks.

3.1. Overall Economic Level of Society

Because artworks are not essential goods, demand for them is not rigid but highly elastic. Changes in the overall economic conditions can impact the art market, leading to fluctuations in art prices. When the overall economic conditions are low, people tend to prioritize cutting expenses on items beyond basic necessities, with artworks often being the first to be affected. Conversely, during periods of economic prosperity, the art market typically flourishes rapidly. This is because when economic conditions are favorable, people tend to have a certain limit on material consumption, beyond which there is not much growth. Excess funds will be consumed on the realm of spiritual life, with the art market being a major area of interest. Consequently, art prices rise accordingly.

3.2. Conditions of Other Investment Markets

Other investment markets include the real estate market, stock market, the precious metal market, cryptocurrency market and so on. If other investment market are thriving with high returns, indicating a so-called bull market, the funds entering the art market will significantly decrease. Consequently, the market price of artworks under such economic conditions will be relatively low compared to when the art market is booming.

3.3. Overall Education Level of Society

Under the condition of higher education level, people's cultural level usually increases in parallel. With a foundation of elevated cultural awareness, individuals tend to have a higher level of appreciation and are generally more inclined to consume artworks.

3.4. Influence of Culture and Trends of the Era

The types of collectible artworks universally recognized worldwide are actually quite limited. The prices of most artworks are influenced by the cultural atmosphere of their circulation area, especially by the unique cultural concepts of nations and ethnicities. For instance, with the growing economic strength and purchasing power in China, the prices of jade, jadeite, and Chinese paintings have significantly increased over the past decade, which is clearly linked to the strong sense of identification among Chinese (ethnic Chinese) buyers with Chinese aesthetic culture.

At the same time, certain styles or themes of artwork may be more popular during a certain period of time, and their prices will naturally be relatively higher during this period.

In addition, if the origin of the artwork was created is associated with a certain highly publicized historical story, it may attract more buyers and thus increase its own price.

4. The Special elements of the Art Market

The art market, compared to traditional financial markets, exhibits more frequent departures from rational market behavior, and the transaction prices of artworks also have some peculiarities.

4.1. Art Market Intermediary

Among art market intermediaries, the influence of art transaction intermediaries on art prices far surpasses that of other general goods or investment intermediaries. On one hand, art transaction intermediaries play a crucial role in determining the transaction costs within the art market. Transaction costs refer to the expenses incurred in completing a transaction, encompassing both the time and monetary costs expended during the buying and selling process. The transaction costs associated with artworks include expenses related to disseminating information, advertising, market-

related transportation, as well as activities such as negotiation, consultation, contract signing, and contract execution supervision. In the primary market, artists sell their artworks to consumers through gallery representation, with galleries often extracting a significant percentage of commissions. In the secondary market, such as auction houses, high commissions are also levied during the transaction process, in addition to appraisal fees and advertising expenses. On the other hand, art transaction intermediaries have the capacity to actively manipulate art prices within a certain range. For instance, in the art market, transactional entities with strong reputations often command higher prices. Similarly, in the secondary market, art intermediaries exert more control over art pricing. They can regulate the influx of artworks into the market, determine the intensity of art promotion, and adjust the timing of art transactions. Generally, autumn auctions are more vibrant than spring auctions, resulting in higher art auction prices.

Other art market intermediaries encompass art banks, art funds, art trust investments, art pawnshops, art property trading, art insurance, art leasing, museums, art galleries, and art fairs. The flourishing and development of art intermediaries are conducive to advancing the financialization of artworks and fostering the growth of the art market.

4.2. Art Critics

In the art market, there is a very special participant - the critic. Throughout the entire market transaction process, they are neither sellers nor buyers, yet their influence on art prices is significant, sometimes even determining whether a transaction can be successfully completed. Critics, especially renowned ones, shape consumers' value judgments of artworks through their writings, playing a guiding role in the market. This is particularly true for works by lesser-known artists in the market. The attention and evaluations given by critics largely determine the market trends of these artworks.

At the same time, the phenomenon of investors and critics colluding to manipulate for economic gain has also emerged. This requires critics to maintain an attitude of absolute objectivity and fairness. Otherwise, the short-term balance of the art market is inevitably disrupted.

4.3. Anchoring Effect

Anchoring effect in the art market refers to the significant autocorrelation of artworks, whereby past transaction prices will often become an important reference for the next auction price of the artwork.. If an artwork lacks a sales record, the sales records of similar items serve as direct reference points. This is an unconscious psychological behavior but often influences the actual selling prices of artworks.

In markets with insufficient maturity or significant speculative activities, the anchor effect plays a significant role. In more mature market mechanisms, repeated bargaining tends to rationalize the sale of artworks. However, the potential negative impact of the anchoring effect should not be underestimated, as it is a universally existing psychological phenomenon, and anchor prices derived from historical prices often carry some randomness and arbitrariness.

4.4. Region

Region is also a factor influencing the pricing of artworks. Apart from the specific types of artworks mentioned earlier, selling prices vary across different regions. For general artworks, the location of the auction venue directly affects pricing. Generally, auction prices correlate with the international financial influence of the region where the auction takes place. Founding that auction prices for paintings are highest in the United States[8]. On average, prices in the United Kingdom closely follow, reaching 72% of the U.S. level, while prices in Belgium are only at 22% of the U.S. level.

5. Conclusion

The transaction price of artworks often diverges from their artistic value, making the characteristics of their pricing difficult to determine, sometimes even highly complex and contradictory, displaying their inherent attributes and patterns. This paper focuses on the relationship between art and economics, with a focus on factors influencing the pricing of artworks, and analyzes from three aspects: the intrinsic attributes of artworks, the demand for artworks, and the special elements of the art market. Within the intrinsic attributes of artworks, factors such as the time of creation, the quantity in existence, the level of production, size, and prestige all have significant impacts on the pricing of artworks. The overall economic status, conditions of other investment markets, educational levels, etc., also indirectly influence the pricing of artworks by altering the demand curve for art. Additionally, within the art market, intermediaries and critics also wield considerable influence over the pricing of artworks.

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Enhancing Medical Information Security Through Blockchain Technology

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Abstract: Healthcare data management systems today face pressing challenges in maintaining data transparency, traceability, immutability, and security. Additionally, the centralized framework of many current healthcare systems raises concerns over potential catastrophic failures at single points. Blockchain technology stands out as a transformative solution, offering a decentralized and innovative approach with the potential to redefine healthcare data management. This paper investigates the transformative impact of blockchain in the realm of healthcare data management. It underscores how blockchain can drive revolutionary progress and substantial improvements in the sector. The paper examines the key features and benefits of blockchain, shedding light on the vast opportunities it opens up for healthcare. We provide an in-depth look at current projects and case studies, illustrating the practical application of blockchain in various healthcare contexts. Moreover, we address the significant research challenges hindering the full integration of blockchain into healthcare systems. The paper concludes by outlining future research directions that could further the advancement of blockchain in healthcare, paving the way for a new standard of excellence in data management.

Keywords: blockchain, medical data security, healthcare

1. Introduction

With the rapid development of emerging information technologies, the integration of various information technologies with the medical industry has become an inevitable trend. According to the "Opinions on Promoting the High-Quality Development of Public Hospitals" issued by the General Office of the State Council of China, the opinion proposes to fully integrate informatization into the high-quality development of public hospitals and strengthen the supporting role of informatization. The informatization of healthcare is the inevitable path to the modernization of China's healthcare and an important direction for healthcare construction. Among them, the Electronic Medical Record (EMR) system is valued and has become an indispensable part of medical services because it can provide high-quality medical services and reduce medical costs [1]. At the same time, its importance in medical data analysis cannot be ignored. During the COVID-19 pandemic, EMR datasets played a positive role [2]. With the surge in demand for medical services, more and more medical institutions are using EMR systems to replace paper medical records, which has promoted the development and application of medical information systems and also greatly increased the security risks of medical information storage.

The EMR (Electronic Medical Records) systems contain a vast amount of patient privacy data, and the structure and format of the data are not standardized [3]. Additionally, different institutions implement various management methods, leading to difficulties in the interoperability of medical data among different medical or insurance institutions, creating a serious “data island” issue [4]. Some patients share their medical data through cloud servers or applications, but the cloud servers provided by third-party vendors are semi-trustworthy, and they may steal or tamper with user data. Moreover, traditional EMRs store medical data on private or cloud servers, exposing the system to risks of malicious attacks, data breaches, and tampering, with the potential loss of private medical data. Therefore, reducing the security risks of medical information systems is crucial for personal privacy and social welfare.

Blockchain technology, characterized by its decentralization, high trustworthiness, traceability, and immutability, meets the secure and reliable needs of complex medical scenarios [5]. In recent years, blockchain has garnered widespread attention in the medical field.

2. Relevant Theories

2.1. Understanding Blockchain Technology

Based on asymmetric encryption algorithms, blockchain technology is an advanced technology. Blockchain uses a modified version of the Merkle tree data structure, combined with consensus mechanisms, peer-to-peer networks and smart contracts, amongst others, to create a distributed database technology. The system ensures that all records are immutable as trusted or semi-trusted nodes maintain an ever-growing chain through consensus mechanisms. The process relies on cryptographic means such as hashing, digital certificates and signatures to ensure the authenticity and security of records, rather than requiring central control. Therefore, blockchain naturally has the characteristics of decentralisation, high trustworthiness, traceability and immutability.

Blockchains, depending on their access and management rights, can be divided into public and private blockchains. In public blockchains, any participant can take part in the transaction and data consensus process, such as Ethereum, while private blockchains are closed networks that only allow highly trusted nodes to verify transactions and are only open to specific groups, such as Hyperledger Fabric. Traditional consensus mechanisms, such as Proof of Work (PoW) and Proof of Stake (PoS), typically require multiple block confirmations to be completed, which inevitably leads to efficiency issues. Private blockchains, represented by Hyperledger Fabric, use Practical Byzantine Fault Tolerance (PBFT) to solve the fast confirmation problem, improving consensus efficiency.

In addition, private blockchains are based on partial trust between participants, improving performance; use high-performance nodes as core nodes, reducing the need for each node to participate in full processing, improving scalability; restrict user access and transaction activity, improving stability; and can be modularly adapted to different needs, providing greater flexibility. Therefore, private blockchains are more suitable for the needs of medical data sharing [6].

2.2. Theories of Data Encryption and Cybersecurity

Attribute-Based Encryption (ABE) is highly beneficial for medical data as it allows for fine-grained access control. There are two primary encryption methods within ABE: Key Policy ABE (KP-ABE) and Ciphertext Policy ABE (CP-ABE). In KP-ABE, the user's private key is bound to a well-defined access structure, while the encrypted ciphertext is associated with a set of specific attributes. Only if these attributes match the requirements of the access structure in the private key can a user decrypt the corresponding ciphertext. This means that which ciphertexts a user can decrypt is determined by the access structure in the private key.

Conversely, in CP-ABE, the user's private key is associated with a set of attributes and the ciphertext is encrypted in accordance with a specific access policy. To successfully decrypt the information, a user must have a set of attributes that satisfy the requirements of the ciphertext's access policy. Therefore, in a KP-ABE system, it is the access policy of the ciphertext that is the determinant of which users have decryption rights.

In essence, KP-ABE emphasises how a user's private key determines which messages they can access, while CP-ABE emphasises how the access policy of the ciphertext controls which users can read the information [7]. Each method provides a flexible and robust solution for attribute-based data protection, each with its own characteristics and application scenarios.

Attribute-Based Encryption (ABE) provides one-to-many encryption and decryption capabilities that differentiate it from traditional public key encryption technologies such as Identity-Based Encryption. An ABE system doesn't need to know the specific identity of the recipient during decryption, unlike Identity-Based Encryption. Instead, ABE treats an individual's identity as a set of attributes and allows decryption only if the user's set of attributes meets the conditions defined at the time of encryption. As a result, access to data can be restricted on the basis of user attributes such as roles, departments or permissions. In the healthcare sector, this ensures that only authorised personnel can access sensitive health information. This approach provides greater flexibility and adaptability for encrypted communications.

2.3. Decentralization in Data Security

Blockchain networks can handle any type of digital transaction, with the size of the transaction depending on the data type involved. In our application, the network needs to process patient health-related data that may exist in formats such as word processing documents, scanned images, PDF reports, CD images, video files, or plain text. If all these types of data were to be stored on-chain within the blockchain network, it could lead to scalability issues. As the blockchain network grows, storage bottlenecks may arise. The system might struggle to handle the storage demands, as the size of the blockchain network could grow exponentially. Issues related to storage capacity could lead to scalability challenges for the system. Moreover, each full node might have a complete ledger copy, leading to file redundancy within the network and further space consumption. These limitations necessitate offloading data to off-chain storage systems that overcome space and scalability constraints.

In traditional network architectures, offline file storage would be accomplished within centralized file storage systems, possibly dedicated file servers or multiple file servers for different applications. For decentralized systems like blockchain applications, the concept of a centralized file system may not be applicable, as it contradicts the purpose of a distributed architecture. If a centralized file server were used in a blockchain application, it would become vulnerable to attacks and a single point of failure. For this reason, the file system used for such applications should also be decentralised in order to ensure the security and efficiency of the system.

IPFS, an acronym for InterPlanetary File System, is designed to decentralise file storage by using content addressing to identify files linked across a global network of computing nodes. As a peer-to-peer network protocol, IPFS works without a central server that takes care of the storage, retrieval and distribution of the data. Similar to BitTorrent, nodes on the network can publish new content or retrieve existing content from distributed storage. A distributed hash table (DHT) is used to address content, facilitating search and retrieval of distributed files. IPFS is a secure, high-throughput, content-addressable system that uses a block-based storage model to store large amounts of data.

Content addressability is achieved by assigning a unique hash address to each file uploaded to IPFS. This ensures consistency of the file hash addresses stored across all nodes in the system, as the same file will receive the same hash address if it is uploaded multiple times. The use of IPFS within

a blockchain architecture for storage allows the network to remain traceable, in addition to reducing dependence on complete nodes. IPFS is capable of storing any type of digital transaction and is applicable to a multitude of applications. Its deduplication mechanism effectively addresses the issue of data redundancy in decentralized systems.

The integration of decentralization and deduplication enhances system efficiency and reduces the waste of storage space. In blockchain networks, nodes only contain the hash addresses of data in transactions, not the data itself, which allows new nodes to join or rejoin the network after a pause more quickly. The off-chain storage integration of IPFS addresses the scalability limitations faced by blockchain networks due to storage issues. Data is also permanently stored in the IPFS network, ensuring its tamper-resistance and security [8].

The architecture of IPFS includes four main components to ensure high performance, high throughput, security, and low cost. These components are: Distributed Hash Table (DHT), Self-certifying File System (SFS), BitSwap protocol, and Merkle DAG structure. As shown in Figure 1, working together, these components make IPFS a powerful decentralized storage solution.

IPFS components		
	High Throughput	Low Cost
High Performance	DHT A directory system for content location.	BitSwap The core protocol for block exchange.
High Security	Merkle-DAG A self-verifying data structure representing file relationships.	SFS A secure file system based on public key hashes.

Figure 1: IPFS Components (Photo/Picture credit: Original).

3. System Analysis and Application Research

3.1. Analysis of Existing Medical Information Systems

Today's patients expect a more personalized, fluid and coordinated care experience [9]. To accomplish this, healthcare providers must integrate health information from multiple, isolated data sources - including medical records, payment systems, genomics, clinical trials, and government websites - in order to make diagnoses. However, two major issues limit this integrated approach: first, the significant security and privacy concerns associated with sharing health records; and second, the

fragmentation of information as a result of patient interactions with numerous healthcare providers [10].

Recent high-profile incidents of medical record security breaches have heightened concerns about data security and patient privacy. A recent study reveals that the scale of healthcare data breaches and their impact on healthcare organizations and patients is growing rapidly. Patients are most concerned that they have little or no control over their information once it is made available to payers, providers, or healthcare exchanges. Patients want a clearer picture of how their data is being used, who has access to it, and when it is being modified.

In addition, patients' medical histories involve multiple caregivers, including pediatricians, dentists, employer health plan providers, or medical specialists. Over time, they leave a trail of data across multiple healthcare systems that enclose data in siloed repositories. This results in a trail of health records that are difficult to collect, difficult to piece together, and largely owned by healthcare providers. Table 1 summarizes other current pain points in healthcare and potential applications of blockchain technology.

Table 1: Pain Points in Traditional Healthcare Information Systems and Potential Opportunities in Blockchain.

Pain Points	Blockchain Opportunities
Healthcare Data Liquidity--Data silos, distrust, ownership conflicts, and lack of interoperability incentives.	Establishes a distributed trust framework. Facilitates secure data access and aggregation, bolstered by comprehensive auditing.
Healthcare Costs and Quality	Promotes optimal utilization and risk management by fostering a holistic physician-patient relationship. Advocates for value-based care with analytics that bolster quality reporting.
Process Complexity	Streamlines processes with smart contracts and pre-authorizations for expedited payments. Enhances traceability and timestamps to mitigate fraud and abuse.
Patient/Consumer Engagement	Grants patients the autonomy to manage and share their data, leading to improved engagement and personalized care.
Privacy and Security	Ensures security through encryption and cryptography. Strengthens integrity with peer-to-peer accountability and the enforcement of specific permissions.

Efficiency in healthcare is in dire need of improvement. Currently, a large number of medical records are still stored in paper form and scattered, which limits their use in coordinating care, evaluating the quality of services or reducing medical errors. While healthcare data has begun to be collected digitally in various locations, the key is to extract maximum value from this data while avoiding an overly complex process. One of the main challenges facing the healthcare industry is how to record and store information easily and economically, as well as ensure secure sharing across different applications and systems [11]. It is also crucial to ensure portability and compatibility of data across different systems [12].

3.2. Blockchain Application in Healthcare: Case Studies

Blockchain technology, with its cutting-edge capabilities, is revolutionizing the healthcare sector. Its successful implementation has paved the way for seamless and efficient data sharing among key network participants and healthcare providers. This collaborative environment is fostering the

development of cost-effective treatments and advanced therapies for a multitude of diseases, setting the stage for a surge in healthcare innovation in the years ahead.

This technology is instrumental in enhancing the quality of life by being at the forefront of digital transformation and innovation. It offers a plethora of significant opportunities for the healthcare industry, fostering stronger connections between medical professionals and patients [13]. In the next section, Table 2, we will explore some of the key applications of blockchain in the healthcare landscape.

Table 2: Key applications Blockchain for healthcare.

Cases	Presentation
1 Recording a patient's information	The various phases of a clinical trial generate a lot of patient information and health data. This data includes blood test results, quality scores, estimates and health questionnaires. Using a blockchain system, healthcare providers can verify the validity of the stored data. Blockchain provides a secure framework for sharing data. It uses existing encryption technologies. When recording patient information, healthcare providers keep detailed records in the form of an electronic medical record, which is stored in a cloud computing platform or database and includes the patient's name, date of birth, diagnosis, treatment and outpatient history.
2 Analysing specific data	Researchers can conduct in-depth analyses of specific treatments for most patients if they have verified access to patient data. This can not only lead to breakthrough results, but also significantly optimise treatment management models for patient populations. Thanks to the infrastructure of blockchain technology, pharmaceutical companies are now able to collect critical data in real time so that they can customise precise drug prescriptions and healthcare services for patients. Blockchain technology also greatly simplifies the day-to-day operations of pharmacies, as it provides a comprehensive data storage platform. Pharmacists can use this information to more effectively guide patients on the proper use of medication. In addition, blockchain enables clinicians to keep tabs on their patients' immediate health status by synchronising data collected by wearable devices in real time and responding quickly in the event of an emergency.
3 Check Validity	With the support of blockchain technology, transactions are verified by sophisticated algorithms and eventually cemented in the chain. The process involves encryption, digital signatures and storage of data, which together provide a solid guarantee of the authenticity of the information. Currently, healthcare companies, cutting-edge technology developers, and the healthcare industry as a whole are exploring the potential of blockchain to make the future of healthcare safer and more cost-effective. Blockchain technology is expected to play a key role in building a more robust health ecosystem as healthcare management's ability to validate outcomes continues to grow.
4 Safety, security and transparency	Blockchain technology offers unparalleled safety and transparency, revolutionizing the healthcare industry by empowering physicians to focus more on patient care. This innovative approach supports clinical trials and the treatment of rare disorders, fostering a collaborative environment for medical solution providers. Through seamless data exchange, it enhances diagnostic accuracy, streamlines therapy delivery, and creates cost-effective healthcare ecosystems. Blockchain maintains continuous communication and information sharing by connecting different organisations in the healthcare ecosystem on a shared, distributed ledger, ensuring greater security and clarity. Without the need for additional measures to ensure integrity and confidentiality, users can effortlessly share and monitor their data and other system activities. This is paving the way for a more integrated, patient-centric healthcare environment.

Table 2: (continued).

5	Maintenance of health records	Blockchain emerges as a quintessential technology for meticulous record-keeping in the healthcare sector. Its myriad applications encompass the secure sharing of healthcare data, the meticulous upkeep of electronic healthcare records (EHRs), the streamlined management of insurance processes, and the facilitation of sundry administrative tasks. Patients are afforded the convenience of dispatching their health information directly to a Blockchain network via a dedicated app. This fosters a harmonious collaboration between sensors and intelligent devices, orchestrated through the robust framework of digital Blockchain contracts. A common challenge within the healthcare system is the disparate distribution of EHRs across multiple care institutions, leading to a segmented and incomplete picture of patient health histories. Blockchain technology heralds a new era of unity, amalgamating all pertinent details and bestowing upon patients unfettered historical access to their medical records. The consolidation of data in a singular, accessible repository will unveil novel insights into a patient's health trajectory. In essence, the Blockchain paradigm is a bastion of authenticity and legitimacy, safeguarding the sanctity of information while simultaneously preserving the privacy of its users. This paradigm shift heralds a transformative approach to healthcare, ensuring that patient data remains both inviolable and confidential.
6	investigate the origin	Blockchain is emerging as the quintessential technology for the meticulous maintenance of records in the health care sector. Its myriad applications include securely exchanging health data, meticulously maintaining electronic health records (EHRs), streamlining insurance processes, and facilitating various administrative tasks. Through a dedicated app, patients can conveniently send their health data directly to a blockchain network. This, orchestrated by the robust framework of blockchain digital contracts, facilitates harmonious collaboration between sensors and smart devices. The disparate distribution of EHRs across multiple care facilities, resulting in a segmented and incomplete picture of a patient's health history, is a common challenge in the healthcare system. Blockchain technology heralds a new era of unity. It brings together all relevant details and gives patients unfettered historical access to their medical records. It will provide new insights into a patient's health history by consolidating data into a single, accessible repository. At its core, the blockchain paradigm is a bastion of authenticity and legitimacy, protecting the sanctity of the information while at the same time preserving the privacy of its users. By ensuring that patient data remains both inviolable and confidential, this paradigm shift heralds a transformative approach to healthcare.

Blockchain technology stands as a revolutionary ledger system that meticulously documents transactions in a decentralized manner, transcending traditional healthcare management structures. Its precision and simplicity streamline processes, yielding time and cost savings, thereby reducing managerial burdens [13]. A paramount challenge within the healthcare sector is the unauthorized disclosure of sensitive data, often exploited for nefarious purposes. Blockchain's robust security measures offer a swift resolution to this issue, safeguarding critical information against misuse.

Furthermore, Blockchain facilitates real-time access to up-to-date and verifiable patient records, enhancing the accuracy of medical evaluations [14]. The potential of Blockchain in healthcare is immensely promising, as it addresses some of the most urgent problems plaguing the industry. By integrating therapy providers and ancillary services into a unified network, Blockchain ensures uniform data availability. The adoption of Blockchain technologies promises substantial advantages for the healthcare business ecosystem.

4. Discussion

4.1. Evaluating Blockchain in Medical Information Security

4.1.1. Enhanced Health Data Accuracy through Blockchain

The integration of blockchain technology in healthcare data management systems offers a transformative approach to patient medical data. Traditionally, a patient's health records are scattered across various healthcare facilities, medical centers, and insurance companies. To construct a comprehensive and accurate medical history, it is essential to amalgamate these disparate data fragments seamlessly. Blockchain technology serves as the keystone for this integration, providing a unified platform for storing all patient-related medical information—ranging from prescription histories and symptomatology to treatment modalities, facility utilization, financial transactions, and beyond.

Blockchain's inherent characteristics ensure that the stored data remain current, verifiable, and impervious to tampering. This fortifies the ability of healthcare professionals to administer effective, prompt, and appropriate care. Moreover, the immutable, transparent, and secure nature of blockchain data empowers healthcare providers with a holistic view of a patient's medical journey, thereby enhancing the precision of medical services rendered [15].

4.1.2. Making health information interoperable

Interoperability is the seamless exchange of information across diverse systems produced by various manufacturers. A multitude of Electronic Health Record (EHR) and Electronic Medical Record (EMR) products are founded on distinct clinical technologies, technical specifications, and functional capabilities, as noted in references [16]. These variances present obstacles in the creation and sharing of uniform data formats. In some instances, even EHR systems developed on identical platforms lack interoperability due to their customization to align with the unique needs and preferences of individual healthcare institutions. To bridge this gap, it is imperative that the transmission messages between EHR systems adhere to standardized coded data. The absence of such standardized data is a significant barrier, impeding the electronic sharing of data for patient care. This challenge can be surmounted through the adoption of a blockchain-based healthcare data management system. Within this system, all EHR/EMR data adheres to a uniform coding standard, thereby facilitating effortless access and utilization by any entity within the healthcare ecosystem [17].

4.1.3. Security of medical information

Over the past decade, a disturbing trend has emerged: numerous healthcare organisations have been targeted by cybersecurity attacks that could have been prevented [18]. Much of the healthcare sector still relies on manual, centralised systems to manage digital medical records. These systems are not only outdated, but also vulnerable to unauthorised changes with malicious intent. In addition, the centralised nature of these systems poses a risk of data loss during natural disasters, as they are susceptible to a single point of failure.

Introducing blockchain technology - the lighthouse of security in the digital age. The blockchain provides a robust solution to these security issues through its immutable ledger, which is underpinned by cryptographic principles and effectively eliminates the risks associated with the theft and mishandling of data. Furthermore, health data stored on a Blockchain is protected from the dangers of natural disasters or medical facilities collapsing. This is because there is no single point of failure, due to the decentralised storage of data across multiple nodes.

4.2. Challenges and Limitations in Healthcare Implementation

If used effectively, blockchain technology can provide a reliable approach to overcoming common limitations in healthcare applications, including issues related to privacy, confidentiality, reliability, sharing, interoperability, usability and timely updating of medical records. Despite these advantages, blockchain is not without its challenges. Integrating and applying it in healthcare has led to significant research hurdles, which need to be explored in depth. This section explores these challenges. A systematic classification is provided in the accompanying table3.

Table 3: Challenges of blockchain.

Challenges	Descriptions
Requirements for storage	Require significant storage for transaction records, creating challenges for nodes with limited capacity.
Regulatory uncertainty navigated	It is a complex puzzle to ensure that blockchain technology is compliant with some national data protection laws. Further complicating the adoption of this technology by organisations is the ambiguity surrounding regulatory compliance. Blockchain regulations are still evolving. Therefore, it is critical for organisations to remain vigilant and adapt to the ever-changing regulatory landscape. Health organizations need to be proactive in engaging with policy makers, seeking clarity and contributing to the regulatory discourse. With countries such as Singapore and Switzerland pioneering the use of regulatory tokens to accelerate blockchain integration, the regulatory landscape for blockchain is diverse. In the United States, on the other hand, the regulatory environment is a patchwork of state-specific legislation, rather than a single federal mandate. The stringent data privacy laws in the European Union are proving to be roadblocks in the widespread adoption of public blockchain networks. For blockchain to gain traction as a mainstream technology within the healthcare sector, it is imperative for industry stakeholders to collaborate closely with regulators. This partnership aims to refine and harmonize blockchain-related policies and practices, paving the way for its seamless integration into healthcare systems.
Scalability	(a) Block size and time required to create a block. (b) Inefficiency of the consensus protocol. (c) Increased acknowledgement times for creating a block.
Interoperability and standardisation	Healthcare apps struggle to work together because they lack ways to collect, share, and analyze information. Traditional electronic health records use centralized, offline systems, but blockchain is spread out and operates online.

Overcoming Interoperability and Standardization Hurdles.

The seamless integration of healthcare applications remains a formidable challenge due to the lack of robust mechanisms for data collection, dissemination, and analysis. Traditional Electronic Health Record (EHR) systems are anchored in centralized databases and operate on isolated infrastructures. In stark contrast, blockchain technology offers a decentralized and cloud-based paradigm.

Embracing this innovative approach necessitates the creation of a dynamic EHR system, one that is adept at fostering collaboration and data exchange among the scientific and medical communities. Transitioning EHR data to a blockchain framework involves navigating a labyrinth of technological hurdles. Current healthcare databases, with their non-distributed nature, pose significant integration and scalability challenges [19].

4.3. Future Prospects and Ongoing Research

Through the above research, a synthesis of thematic concerns has emerged, poised to captivate the intellectual curiosity of future academicians. The forthcoming discourse aims to delve deeper into these revelations.

4.3.1. Adopting a comprehensive approach

The adoption of a holistic approach is paramount, not merely as a theoretical construct but as a pragmatic blueprint for circumventing system vulnerabilities and enhancing security. Such an approach ensures seamless interoperability, and fortifies the mechanisms of access management. A panoramic understanding of blockchain technology is indispensable for the inception of comprehensive, legally sound, and ethically robust electronic healthcare frameworks. These frameworks necessitate robust data governance and foolproof authentication protocols, laying the groundwork for a resilient digital health infrastructure [20].

Moreover, we champion the necessity of rigorous evaluation of blockchain-oriented e-healthcare ecosystems within diverse geopolitical and institutional milieus. This scrutiny is instrumental in forging bespoke healthcare solutions that resonate with the unique contours of local and global healthcare landscapes. It fosters synergistic collaborations with entities embedded in the healthcare matrix, including but not limited to, avant-garde medical research institutions.

4.3.2. Enhancing Architectural Efficacy

In the vanguard of blockchain's evolution within healthcare, researchers are tasked with a pivotal mission: to refine and elevate the architecture of proposed or existing systems. The goal is to scale these systems adeptly, ensuring they rise to meet the anticipated surge in transactional demands as blockchain becomes increasingly woven into the fabric of healthcare operations.

This endeavor involves a meticulous focus on optimizing performance and efficiency. It is envisaged that by strategically mitigating network latency, augmenting throughput, and judiciously allocating resources, the architecture will not only withstand but thrive under the weight of burgeoning data exchanges [21].

4.3.3. Data Security and Legal Compliance

In the vanguard of future research, the safeguarding of data alongside the sanctity of patient privacy and the intricacies of legal compliance emerges as a paramount concern. The advent of blockchain technology offers a robust solution, with its immutable ledgers and smart contract verification systems providing a bulwark against breaches, ensuring adherence to stringent data and personal privacy mandates such as the Health Insurance Portability and Accountability Act (HIPAA) [22]. This innovative approach heralds a new era of security in the management of medical information, promising enhanced integrity and trust in healthcare data transactions.

4.3.4. Enhanced Integration with Cutting-Edge Technologies

The strategic deployment of blockchain technology within the healthcare sector stands to gain immensely from a seamless integration with core business processes, thereby amplifying its functionality. For instance, scholars could delve deeper into the fusion of edge computing, machine learning (ML), and artificial intelligence (AI) with blockchain-driven healthcare ecosystems. This synergy has the potential to revolutionize analytic models, paving the way for highly personalized patient care and diagnostics. Additionally, the research frontier could shift towards augmenting service quality by weaving in a denser network of IoT-based sensors. Such an integration promises

to broaden service accessibility, fortify remote patient monitoring, and enhance emergency response services.

In pursuit of broadening the intellectual horizons in this domain, we advocate for two novel research trajectories. Firstly, an in-depth analysis of the ramifications of blockchain application in healthcare, particularly in nuanced yet analogous domains such as safeguarding patient's digital rights, streamlining drug prescription management, and curbing prescription fraud, is imperative.

Lastly, an investigative lens should be turned towards the repercussions of blockchain adoption on healthcare valuation and supply chains. Such scholarly inquiry could illuminate the nuances of patient-centric interoperability challenges and potentially lay the groundwork for standardized protocols tailored for the adoption of blockchain systems in research methodologies.

5. Conclusion

This study delves into the integration of blockchain technology in healthcare systems, underscoring its potential to manage health data in a decentralized, secure manner, thereby enhancing transparency, accessibility, traceability, and trust. The immutable nature of blockchain presents a robust solution for secure, tamper-proof health data storage. The investigation covers the features and benefits of blockchain technology, demonstrating its capacity to overhaul healthcare data management. It identifies key opportunities within the healthcare sector, exemplified by case studies where blockchain has already improved various systems.

However, the research acknowledges significant challenges that currently hinder the widespread adoption of blockchain in healthcare. These challenges encompass the nascent stage of blockchain development, scalability issues, interoperability, the siloed nature of projects, and the complexity of integrating with existing legacy systems. In conclusion, blockchain technology holds transformative potential for the healthcare industry, offering significant improvements in operational efficiency, data security, workforce management, and cost-effectiveness. Overcoming the technical challenges mentioned is pivotal for its successful integration into healthcare.

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The Application and Challenges of New Energy Vehicles in the Logistics and Distribution Sector

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Abstract: With the continuous enhancement of public environmental awareness and the promotion of sustainable development in logistics and distribution, the recognition of new energy vehicles in the logistics and distribution sector is gradually increasing due to their characteristics such as low carbon emissions and low noise. However, new energy vehicles face serious range anxiety, short driving range, low coverage of charging and swapping stations, long charging times, and lack of uniform standards, making it difficult for them to cope with the complex logistics and distribution environment. Additionally, the high initial investment in new energy vehicles hinders their promotion in the logistics and distribution sector. This article proposes suggestions such as increasing research and development efforts for new energy vehicles, accelerating the construction of charging and swapping station infrastructure, and strengthening industry collaboration to promote the standardization process, providing reference for the application of new energy vehicles in the logistics and distribution sector.

Keywords: New energy vehicles, logistics and distribution, development recommendations

1. Introduction

Since China proposed the strategic goals of "carbon peak" by 2030 and "carbon neutrality" by 2060 at the United Nations General Assembly in 2020, people have begun to pay more attention to environmental pollution and energy consumption issues. Meanwhile, the logistics industry in China has been developing rapidly. In 2023, the total social logistics volume in China reached 35.24 trillion yuan, an increase of 5.2% over the previous year. The total social logistics cost was 1.82 trillion yuan, up 2.3% over the previous year, with transportation costs accounting for the largest proportion at 9.8 trillion yuan. Traditional transportation vehicles are mainly fueled vehicles, and the extensive use of fuel vehicles has led to serious environmental and energy problems, contradicting the goals of "carbon peak" and "carbon neutrality." New energy vehicles have the characteristics of low emissions, low consumption, and low pollution. The widespread promotion of new energy vehicles can effectively alleviate environmental pollution and energy consumption problems and has been favored by major logistics companies[1]. In 2023, China's cumulative sales of new energy logistics vehicles reached 277,100, an increase of 10% over 2022. The "Development Plan for the New Energy Vehicle Industry (2021-2035)" points out that in national ecological civilization pilot zones and major areas for air pollution prevention and control, the proportion of new energy vehicle purchases should not be less

than 80%. It is necessary to vigorously promote new energy logistics vehicles and gradually increase the proportion of new energy vehicles in urban distribution vehicles[2].

2. Overview of New Energy Vehicles and Their Current Application Status in the Logistics and Distribution Sector

2.1. Overview of New Energy Vehicles

New energy vehicles refer to automobiles that utilize unconventional vehicle fuels as power sources, incorporating advanced technologies in power control and propulsion, resulting in vehicles with new technologies and structures. Currently, existing new energy vehicles mainly include pure electric vehicles, extended-range electric vehicles, hybrid electric vehicles, fuel cell vehicles, hydrogen engine vehicles, etc. Pure electric vehicles are driven by batteries, emitting zero emissions and low noise, making them suitable for urban travel. Extended-range electric vehicles and hybrid electric vehicles combine internal combustion engines and electric motors to meet short-distance travel needs while also addressing long-distance travel requirements. Fuel cell vehicles and hydrogen engine vehicles both use hydrogen as fuel, with the main difference being that the former generates electricity through fuel cells, while the latter burns hydrogen directly in the engine, with water as the final product, making it an efficient and clean mode of transportation[3].

2.2. The current application status of new energy vehicles in the logistics and distribution sector

Due to the large space occupied by the power systems of extended-range electric vehicles and hybrid electric vehicles, which would reduce the cargo carrying capacity of logistics vehicles, and the limited availability of hydrogen refueling stations, pure electric vehicles, which are green, pollution-free, and have low noise levels, occupy a predominant position in new energy logistics vehicles[4]. Large logistics and express delivery companies such as SF Express and JD.com are gradually increasing the scale of their use of new energy logistics vehicles. As of the end of 2022, SF Express, as the largest express delivery company in China, had deployed over 26,000 new energy vehicles, covering 232 cities, including scenarios such as regular and large-item collection and delivery within cities, short-distance trunk and feeder transport, and shuttle transportation. JD Logistics has deployed approximately 20,000 self-owned new energy logistics vehicles across seven regions and over 50 cities nationwide. However, despite the vigorous development of new energy vehicles, they face serious range anxiety, slow charging speeds, and limited range, which hinder the widespread adoption and application of new energy logistics vehicles. Currently, there are mainly two ways to replenish the mid-journey electricity of new energy vehicles: fast charging and battery swapping..

2.3. Policy Support for New Energy Vehicles in the Logistics and Distribution Sector

In January 2022, the State Council's "14th Five-Year Plan" for comprehensive energy conservation and emission reduction emphasized the need to increase the proportion of new energy vehicles in logistics vehicles[5]. In 2020, Chongqing Municipality lifted restrictions on the passage of new energy pure electric light-duty trucks. Except for certain roads in the main urban areas and designated routes for truck restriction management, vehicles with Chongqing's new energy special license plates and a maximum design total weight of less than 4.5 tons are exempt from truck restriction management on most urban roads throughout the city, without the need for additional truck permits[6]. The "Convenient and Ultra-Fast Charging Action Plan for New Energy Vehicles in Chongqing (2024-2025)" aims to achieve widespread deployment of ultra-fast charging infrastructure by 2025. According to the principle of "intelligent convenience and moderate advancement," the plan includes:

Establishing 1340 ultra-fast charging stations in the central urban area[7]. Implementing a rational layout and full coverage of ultra-fast charging infrastructure in the main urban areas and Wan Zhou District, with 430 stations[8]. Ensuring basic coverage of ultra-fast charging infrastructure in other areas, with 100 stations. Achieving full coverage of ultra-fast charging infrastructure in highway service areas, with 170 stations. Overall, constructing 2040 ultra-fast charging stations with 4000 charging piles throughout the city.

3. The Advantages and Challenges of Applying New Energy Vehicles in the Field of Logistics and Distribution

3.1. The advantages of applying new energy vehicles in the field of logistics and distribution

New energy vehicles use clean energy sources such as electricity or hydrogen, featuring zero emissions, which effectively reduces environmental pollution and meets the modern society's requirements for environmental protection[9]. Although the purchase cost of new energy vehicles may be higher, their operating costs are relatively lower, and the government has enacted a series of policies to encourage the use of new energy vehicles, such as vehicle purchase subsidies and free charging, providing financial and policy support for logistics companies to purchase and use new energy vehicles. As cities impose increasingly stringent requirements on tailpipe emissions, some cities have implemented preferential policies for new energy vehicles, such as free passage or exemption from tolls, while new energy vehicles typically have lower noise and vibration levels, minimizing their impact on residents and providing more convenient conditions for logistics distribution[10].

3.2. The challenges faced by the application of new energy vehicles in the field of logistics distribution

3.2.1. The infrastructure issues such as charging and swapping stations

The insufficient construction and coverage of charging and swapping stations pose one of the primary challenges for the application of new energy vehicles in the logistics and distribution sector. Specifically, this includes insufficient numbers of charging and swapping stations, especially during peak hours and in popular areas. The distribution of these stations is uneven, with some areas having ample facilities while others lack them. Parking facilities with charging infrastructure are scarce, with many parking lots or spaces lacking charging stations. This leads to vehicles being unable to replenish their battery while parked, necessitating them to be brought to charging and swapping stations for recharge. During the logistics and distribution process, new energy vehicles inevitably need to visit these stations for battery replenishment. While the coverage of charging and swapping stations is relatively high in first-tier cities, in some remote areas or on the outskirts of cities, the lack of these facilities restricts the use of new energy vehicles in the logistics and distribution sector.

3.2.2. The issues of driving range and charging time

The range and charging time of new energy vehicles pose another significant challenge. Despite continuous advancements in battery technology, some new energy vehicle models still suffer from short range and long charging times. Compared to the 5-10 minutes it takes to refuel a conventional vehicle, the charging time for new energy vehicles is excessively long. Although some scholars have proposed partial charging strategies, where electric vehicles determine how much charge to replenish based on their remaining battery level and the need to serve additional customers before returning to the distribution center, this approach can reduce mid-route charging time and lower charging costs.

However, in reality, customer demands are often dynamic, and relying on having just enough battery to return to the distribution center poses significant risks. When new orders are added, there is a risk of insufficient battery capacity, leading to the need for secondary charging at the station, increasing costs and wasting time. Moreover, logistics and distribution operations require a certain level of timeliness, and spending excessive time charging en route reduces delivery efficiency.

3.2.3. The issue of standardization and safety

In the field of new energy vehicles, there are various technical standards and specifications. The inconsistency of these standards leads to compatibility issues between different models of new energy vehicles, increasing the difficulty of charging and swapping, and making the management and operation of new energy vehicles in logistics and distribution challenging. There are also safety risks associated with this inconsistency. The inconsistency of charging standards adds inconvenience for users of new energy vehicles, as different brands of vehicles may require different types of charging facilities. Therefore, establishing unified charging standards is crucial for promoting the development of new energy vehicles. New energy vehicles involve high-voltage batteries, electric motors, and other electrical components, making safety standards essential. These standards need to ensure the safety of vehicles during charging, driving, and parking, as well as their safety performance in the event of accidents. The construction of new energy vehicles differs from traditional internal combustion engine vehicles, requiring special materials and manufacturing processes. Therefore, establishing standards related to vehicle structure, materials, and manufacturing processes is an important means to ensure vehicle quality and safety. New energy vehicles typically feature intelligent connectivity functions, requiring communication with the external environment. Therefore, establishing vehicle communication and connectivity standards can ensure effective connectivity between vehicles and other vehicles, infrastructure, and intelligent transportation systems. The safety of charging facilities is crucial for the safety of users and vehicles. Establishing safety standards for charging facilities can ensure that their design, construction, and operation meet safety requirements, reducing the risk of accidents.

3.2.4. The economic viability issue

New energy vehicles have very low operating costs, but the purchase cost of the vehicles is usually high, mainly due to the high cost of key components such as batteries. Additionally, in areas with low coverage of charging and swapping stations, significant investment is required upfront for the construction of a large number of charging and swapping facilities. Therefore, the initial investment in new energy vehicles is high. Furthermore, new energy vehicles have a fast pace of technological updates, leading to relatively low resale value in the second-hand market, which also affects the return on investment for businesses investing in new energy vehicles.

4. The development suggestions for new energy vehicles in the logistics and distribution sector are as follows

4.1. Government-related policy support

The government has introduced policies to encourage logistics companies to use new energy vehicles, including vehicle purchase subsidies, tax incentives, operational subsidies, and relaxation of restriction standards. It supports research and innovation by new energy vehicle manufacturers, providing certain financial or policy support. In terms of infrastructure construction such as charging and swapping stations and standardization, it requires joint planning and layout by the government

and enterprises. Additionally, there is a need to strengthen post-management and supervision of new energy vehicles to ensure their safe and stable operation.

4.2. Increase the construction of charging and swapping stations and other infrastructure

The government and relevant departments should increase investment in infrastructure construction such as charging and swapping stations, enhancing their coverage and density. Rational planning for the layout of charging and swapping stations should be formulated, taking into account urban development plans and transportation needs, to determine the locations and quantities of these stations and improve resource utilization efficiency. For example, in logistics parks, urban distribution centers, and around major transportation hubs, the construction of charging and swapping facilities should be accelerated. In suburban or remote areas where distribution routes are relatively fixed, distribution routes can be planned rationally, and a certain number of charging and swapping stations can be constructed along these routes to provide convenient charging and swapping services for new energy vehicles.

4.3. Strengthen industry collaboration and communication

Enhance collaboration and communication among various new energy vehicle manufacturers, as well as upstream and downstream enterprises such as logistics companies and charging facility suppliers. This collaboration aims to promote the standardization and normalization of technical standards and specifications related to new energy vehicles, including charging interface standards and battery specifications, in order to improve the compatibility and universality of new energy vehicles. Additionally, it is essential to establish a sound supporting policy and service system for new energy vehicles, including charging services, maintenance, and other aspects of support.

4.4. Strengthen technological innovation and research and development

Increase investment in technological innovation and research and development for new energy vehicles, establish innovative platforms such as industry-university joint laboratories and technology innovation centers to promote the integration and cooperation of resources from all parties, and accelerate the incubation and application of new technologies. Strengthen cooperation between industry, academia, and research institutions, establish a collaborative innovation mechanism between industry, academia, and research, and jointly conduct cutting-edge technology research and application exploration. Pay attention to the training and introduction of professional talents in the field of new energy vehicles, establish a talent training system, and cultivate a team of talents with innovation awareness and technical capabilities. Improve the performance and reliability of new energy vehicles, especially in continuous innovation in battery technology, charging technology, etc., enhance the safety and range of batteries, accelerate the charging speed of batteries, and improve the performance and competitiveness of new energy vehicles.

5. Conclusion

New energy vehicles, with advantages such as energy conservation, environmental protection, zero emissions, low operating costs, and low noise, along with policy support, are more suitable for application in urban logistics and distribution, gradually replacing conventional fuel vehicles. However, challenges such as inadequate charging infrastructure, limited range, long charging times, lack of industry standards, and high initial investment exist for new energy vehicles. To accelerate the pace of new energy vehicles' application in the logistics and distribution sector, the government should lead efforts to unite various new energy vehicle manufacturers, logistics companies, etc., to

promote the establishment of industry standards, increase the construction of charging infrastructure, enact policies to support research and innovation by new energy vehicle manufacturers, and encourage logistics companies to extensively adopt new energy vehicles.

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Digitalization's Enhancement in HR Practices: The Impact of Incorporating AI in the Process of Recruitment and Selection

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Abstract: Many organizations' desires to attract the most value-adding talent has pushed their increased adoption of artificial intelligence in the processes of recruitment and selection. As AI can be generated into tools to conduct an analysis of applicants and provide an overview, it reduces the recruiter's time allocation on administrative tasks to focus on making more advanced decisions to execute the business's desired strategic directions and developments. This paper mainly examines the impact of AI in the talent acquisition processes on the three aspects of practical, ethical, and strategic impacts. The practical approach can improve the efficiency in recruitment and selection to find the best-fit candidate through AI algorithms for certain roles. The ethical approach of AI can ensure a fair talent acquisition process that reduces bias and discrimination to support final decision-making. The strategic approach allows organizations to use AI in conducting recruitment and selection practices with considerations on the future growth of the business, prospecting the required talents to achieve such growth. The attraction of using AI in the hiring process can lead to a more digitalized and trendy employer branding, making organizations appeal and expand to innovative pools of candidates. However, there are downsides to all approaches, including the lack of human involvement, the risks of data security and breaches, and the consistency of employer branding in utilizing AI technology. In exploring the benefits and limitations of AI's impact on talent acquisition, there should be a more structured approach to unleashing this technology in the HR practice.

Keywords: Artificial Intelligence, recruitment and selection, human resource practices, talent acquisition

1. Introduction

In an era of robust use of technology, many organizations have increased the adoption of AI tools in recruitment and selection. AI tools emphasize the accuracy of gathering applicants' information and evaluating their potential fit for the recruiting roles. As AI tools for recruitment and selection were initiated a decade ago, there are still limited areas of discussion regarding the effectiveness of AI tools in finding the right talent to add value to the business. It also raises questions on fairness and ethical considerations of utilizing such tools during the hiring process. Considering new issues emerge as AI

tools are constantly evolving and optimizing, this paper seeks to investigate the impact of the current involvement of AI tools in the process of talent acquisition [1]. By focusing on the practical, ethical, and strategic approach of AI tools in recruitment and selection, this paper seeks to highlight the degree of AI enhancement of HR practices, with relevant areas of limitations stated in each approach, through an in-depth analysis of the current examinations into AI tools for talent acquisition. The aim of this investigation is to outline the benefits of using AI tools in HR practices, while suggesting key considerations on how to tackle the current limitations to appropriately adopt AI tools to engage in making selection decisions.

2. Research Question

2.1. Practical Approach

One of the key highlights of the current involvement of technology and automation in business operations is efficiency. By adopting AI tools in talent recruitment and selection processes, firms are able to achieve greater efficiency which leads up to the practical approach of AI in the HR field. Recruiters are often seen as the most important contact point by candidates, as they establish meaningful relationships with candidates and build on their first impressions towards the hiring organisations that increasing the likelihood of offer acceptance, proactiveness in interview preparation, and creating positive relationships [2]. These aspects of recruitment are important, as it provide greater potential for recruiters to select the best-fit candidates to fill the recruited positions.

2.1.1. New Ways of Recruitment – Increased Efficiency

However, the current pain points in the traditional recruitment and selection assessments reflect the need for a highly standardized and automated talent acquisition structure. The traditional need for recruiters to conduct administrative manual tasks works of information gathering and determining different types of job knowledge, cognitive, or personality tests for a wide range of roles can decrease the efficiency, cost-effectiveness, and the amount of time allocated to select the best candidates. Using AI recruitment and selection tools helps to reduce time consumption in the process of shortlisting finalists for interactive interviews through combined algorithm analysis of job applications and candidates' social media. To maximize recruiter's dispersed work time, the availability of AI tools to match, select, predict potentials, and conduct compliance and legitimacy investigations on candidates can improve the recruiter's flexibility to make better-informed judgments and hiring decisions [3]. The AI tool improves the process for recruiters to select high-potential candidates amongst large recruitment pools while broadening the talent pool to reach high potential candidates through social media in the modern e-recruitment process.

2.1.2. Chatbot – New Form of Communication

The act of utilizing AI tools further expands the organization's talent competitive advantage throughout the process, by enhancing communication quality with user-generated content. This seeks to decrease the costs required to establish processes in communicating important talent acquisition information, providing more practical potentials for recruiters to delve their focus deeper into determining fit by comparing different candidate qualities and potentials. According to Tian and peers' research, the current machine learning approaches to recruitment and selection more specifically allow text-mining AI tools to extract and analyze meaningful information about the candidate to match vacant jobs and job descriptions, which reduces 16% of recruitment administration tasks [4]. With this advancement, AI tools can reduce recruiter's efforts in completing administrative tasks, CV and resume screening, and automate communication and interview booking requests with touch

points made in time. It saves recruiters from filtering through numerous candidate information and assessing them based on the requested criteria on the job description, and creates space and time for recruiters to establish meaningful interactional interviews with potential best-fit candidates. This increases recruiters' capabilities to make better-informed decision-making to benefit firms in attracting and onboarding the best talents. The potential to apply AI's machine learning in recruitment and selection can optimize its support for recruiters, so they are able to focus fully on fields that require more expertise and human decision-making. The AI Chatbot function expanded from machine learning leads to the pre-selection assessment that records and analyses candidates' initial screenings for job vacancies [5]. Demonstrating timeliness and emphasis on the hiring business's response to candidates, Chatbot can provide reasonable and prepared responses to candidates enquiring about the organization and application process, which represents organizations utilizing the Chatbot function as highly modernized and tech-savvy. This reduces the amount of effort recruiters engage with candidates with repetitive inquiries, while also performing to the standard of making key contacts with candidates in a timely manner.

2.1.3. Limitations in AI Practicality

In terms of the practical approaches, the utilization of AI tools in recruitment and selection could lead to negative experiences and poor results from the organization's AI interview process, as the lack of flexibility in AI recruitment and selection could lead to losing potential applicants based on the pre-determined selection criteria [5]. As humans design the selection criteria, it's possible for the algorithm to contain certain levels of biases that could overlook potential candidates to fit specific positions. Unlike the AI selection process, the human selection process in finding the best-fit candidate may not match every criterion of job requirements but contains the ability, potential, and expertise to perform well at the recruited positions. Raising concerns about the current maturity of AI technology, HR professionals believed a failure to incorporate flexibility in recognizing potential candidates may result in a loss of talent and barriers to create hesitations for job searchers to apply. Furthermore, automated communications, acceptances, and rejections may create a negative image of the organization as a less human-centric business. Due to fewer interpersonal interactions being exercised throughout the recruitment process, AI tools could lead to potential dissatisfaction with the recruitment experience, shaping a negative representation of the organization. This creates an impression that it is not an employer's choice workplace, as less perceived empathy is exerted in the AI recruitment process [6]. Therefore, careful considerations on the extent of AI tools applications should be reviewed before launching the attempts to engage in recruitment and selection.

2.2. Ethical Approach – The Elimination of Human Bias

Regardless of the maturity levels of conducting AI tools in the recruitment and selection process, the machine learning aspect of algorithms in AI tools are able to detect biases from job descriptions and resume analysis and provide suggestions on removing certain structures to prevent human bias [7]. This aspect of AI tools benefits the ethical aspects of recruitment and selection at organizations, presenting more objective and less manipulative analytical results [6]. Since recruitment and selection processes traditionally involve more human interactions, final decisions would generally be more subjective, as candidates could influence the final decisions. So, utilizing AI tools are able to guide recruiters to make more objective and fairer decisions based on designed benchmarks, identifying the best-fit candidates for recruited positions.

2.2.1. Tailored Skill Assessment

The future workforce consists of candidates from a generation that grew up with technology and lived through technological advancement decades. The recruitment aspect of incorporating AI tools can further provide areas of applicant attraction, due to the ability for websites and messages to customise messages that targets specific applicants [8]. It improves candidate's satisfaction in the experience of browsing through different job advertisements with specialized designs. This can provide better-fitting positions that align with the applicant's needs, exerting applicant attraction by delivering the recruiting organization's job advertisements to high-potential candidates that could be interested in the role and meet the selection criteria. Moreover, AI tools are able to tailor questions to match candidate's skill levels, which does not provide tests that fall outside of a person's skill level. For example, the Computer Adaptive Tests (CAT) can determine the test questions given to candidates, which decides on the difficulty of the next question presented based on their correct or incorrect answer to the previous questions. This showcases an easier test analysis method for recruiters to identify the ceilings and floors of each candidate's skill level and make more ethical selection decisions that align with the organization's strategic goals. This would be beneficial to implement in roles that require heavy utilization of skill sets, acting on the fairness of testing based on the level of experience and knowledge of each candidate.

2.2.2. Algorithmic Machine Learning and Filtering Human Characteristics

Furthermore, AI tools are able to reduce bias by capturing specific data points of candidate behaviors during the assessment process, allowing for an in-depth focus on predicting the performance of candidates by combining skills and competency levels with personality traits and characteristics [9]. To eliminate bias after analyzing the characteristics of candidates, AI can be altered to ignore the candidate's personal attributes and personality characteristics during the interview, which provides a comprehensive understanding of the candidate's obtained skill sets, level of proficiency, and behaviors that could lead to certain, predicted results. By analyzing asynchronous interviews, AI algorithms are able to detect and break down different competencies while also comparing them to the current top performers' competencies to generate a shortlist of potential candidates [7]. AI is able to conduct a thorough analysis of top performers' data, which derives the desired aspects of current top performers to match with job applicants who have shown similar traits and skill sets. This helps recruiters to provide predictions of job applicants' fit and likelihood of achieving success in specific roles, with data-driven evaluations of their performances during the interviews. By conducting a data-driven analysis through criteria of top performers, the bias-prone intuitive decision-making process of recruiters will be less involved in designing the frameworks for AI tools to operate, based on the machine learning benefits of AI in recruitment and selection. It generates an autonomous analysis in assessing all aspects of performances that enables data-driven evaluations for direct comparison amongst candidates. Considering a good HR administration aspect, the use of automation systems can attract more applicants, based on the perceived fairness of the standardized job application process and good administrative experience in the initial stages of application and screening [8]. Thus, AI can support a better-informed recruitment and selection process based on standardized processes that increases fairness in making final recruitment decisions.

2.2.3. Limitations – Data Security and Privacy Breach

There are also visible limitations to adopting AI tools in the recruitment and selection process in the ethical approach, such as data security and privacy issues that remain unanswered in the current field of research [9]. AI tools can lead to a loss in privacy, which could be detrimental to candidates if the data security systems within the recruiting organization are weak and have the potential to leak

personal information. Therefore, it would be necessary for businesses to provide a request for information usage to job applicants, and applicants should have the opportunity to make decisions to agree or disagree with sharing their personal information with AI. In addition, the extent of privacy invasions in job applicant's personal social media profiles used for AI analysis in the recruitment and selection process can also raise questions on the appropriateness of assessing the job-fit potentials of candidates based on their personal and family background, which could increase bias and discrimination considering the reliability and purpose of using profiles, as part of the assessment criteria. Therefore, the extent of using AI in the recruitment and selection process should be specified, while also protecting the privacy of candidates before utilizing them to make more informed recruitment decisions.

2.3. Strategic Approach – The Act of Best-fit Practice and Expanding Competitive Advantage

In terms of incorporating AI tools in recruitment and selection as the strategic approach of businesses, AI can provide the most recent technology and information that allows businesses to find the best-suited candidate. This can serve to find candidates who can execute the strategic goals of the business and build upon the human competencies in acquiring human talents. In terms of attracting a high-quality pool of talent, the impact of adopting AI as the modern way of recruitment reflects the business's responsiveness to the popular and efficient technological trends in the modern way. Use AI tools in recruitment and selection, would often be viewed as innovative, flexible, and fast-paced, which sells an image of a business with high potential and strong adaptability to future trends of digitalization [10]. It serves to brand businesses to attract tech-savvy and new generation of candidates with exposure to digitalization, which attracts talented candidates that are willing to delve into their careers in growing with businesses that invest in AI tools and automation technologies. According to recent research conducted, AI tools in the recruitment and selection process can determine a candidate's offer acceptance rate and justifications on the extent to of AI can contribute to the overall perceived organizational attractiveness [11]. Furthermore, by focusing on transparency of AI tools usage in the recruitment and selection process can emphasize fairness in the selection process, contributing to candidate's experience and influencing their performances and final offer acceptance decisions.

2.3.1. The Rise of the Technological Digital Age

AI is also beneficial in the selection practice that contributes to the strategic success of a business because it can evaluate information and predict a business's advancements in the future years. With this feature enabled, recruiters have to make decisions that forecast future job requirements in the role in addition to the current requirements to obtain candidates that have the ability or potential to conduct high performances to align with the business's strategic ambitions. Being able to compare and contrast different candidate profiles, and collect and analyze quantifiable candidate data, AI tools can act by the personnel management theory, which supports a better decision-making process by assessing the candidate's "aptitude and suitability" for the advertised roles [12]. It narrows down different fields that require specific personal characteristics and skill sets for the applied jobs, while the machine learning aspect of AI tools frequently syncs data and information from the internet, firm analysis, and varied future requirements to find the right candidates for the recruiting jobs. However, since the final recruitment decision is still determined by humans, AI tools serve to reduce the intuitive decision-making aspect in the traditional human selection process, as it requires recruiters to consider more fact-based information to support their results when making a decision. Thus, AI

tools can provide strategic suggestions for the development of the business, regarding recruitment and selection directions and decisions.

2.3.2. Industry-specific Recruitment and Selection

The use of AI tools in recruitment and selection can be tailored to match the needs of organizations in different industries. The organisation needs to attract and retain employees from the initial stages of talent acquisition [13]. By adopting the new ways of recruitment and selection, AI can conduct an analysis of the job pursuit intentions, which allows employers to understand the aspects of jobs that have attracted candidates and what developmental attempts should be applied to the candidates in the future to retain candidates with high potentials. This further provides a prediction on the motivational and satisfactory factors required to attract talents in the talent pools for specific advertised roles, allowing a more accurate assessment of the requirements of obtaining best-fit employees. In the context of the hospitality industry, it is shown that an AI candidate selection method has increased the overall performance by 20% while also decreasing turnover rates by 35%, which demonstrates an improvement in the alignment of person-job and person-organisation fit with AI tools [8]. Furthermore, AI tools can perform predictive and assessment analysis on a candidate's degree of cultural fit with the hiring organization, in addition to measuring skills competencies, and personality [14]. The result it acts as a tool for recruiters to determine the potential organizational trust that the business can gain from the candidates, while also providing more attraction and favors to the screening candidates after acknowledging the AI-enabled aspect of the business [15]. Through these results, recruiters can narrow potential candidates to people that align with the organization's culture and values, deeming the best-fit candidate for the hiring positions.

2.3.3. Limitation – Employer Branding Requirements

Considering the benefits of using AI tools to achieve the business's strategic goals, the key disadvantage of using AI in talent acquisition for strategic goals would be a possible mismatch in the human and algorithmic perception of goals. Organizations will need careful consideration in the type of employer branding desired to align with the organisation's goals, given that AI in talent acquisition automatically provides a digital image for branding [16]. This needs to be tailored to suit different industries and organizations in communicating the message that matches the daily tasks of candidates going into specific roles. By narrowing the direction of employer branding, organizations can further determine how AI processes can be implemented to assist HR and the overall strategic goals of the organization. As predicted, 70% of job recruitment will be actioned by AI by 2025, the business needs to understand the aspect of recruitment and selection required for HR professionals to be involved and make final decisions, as the daily operation of organizations could alter, and high skill or interpersonal roles are dependent on human operations. This highlights the need for human power to achieve strategic goals in these organizations, calling for the need for recruiters to determine the best person-job fit.

3. Conclusion

Automation has been a key area of development and application in the current HR practices. In the field of recruitment and selection, AI can make practical, ethical, and strategic impacts on the efficiency, fairness, and strategic progression of organizations, contributing to various aspects of adding value and improving an organization's competitive advantage. This paper provides insight into the importance of performing AI tools with careful consideration, which could lead to positive or negative impacts on the hiring process and results. AI acts as a double-edged sword that could lead to high returns or high losses, depending on the extent of AI information used in decision-making and

the structured application that impacts its effectiveness in talent acquisition. Due to the nature of this current developing technology, there are limitations to this paper in examining the area of a fast-evolving technology with the lack of comprehensive views of the possible advancements. In the future, research can be conducted through surveys and interviews to explore the experiences from applicant's perspectives, who are directly impacted by the execution of AI tools in recruitment and selection. This research could focus on the different experiences and limitations of using AI in differing roles across all industries. It highlights the potential of further involvement of AI in specific roles and industries while determining AI tools as ineffective in other roles and industries due to insurmountable barriers in its nature.

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Understanding Deflationary Trends in China: Internal and External Factors Analysis

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Abstract: This paper investigates the recent deflationary trend observed in China, exploring its underlying causes from both internal and external perspectives. Since the 1970s, China has undergone significant economic reforms, embraced market principles and experienced a substantial expansion in its money supply. Despite expectations of inflation due to the substantial money supply relative to GDP, China has experienced a period of low or negative inflation rates since April 2023. This study examines potential factors contributing to this deflationary period, including exchange rate fluctuations, monetary policy dynamics, economic structural shifts, and external shocks. Furthermore, the paper evaluates the development of transmission routes of monetary policy and possible impacts on the responsiveness of price level to money supply, particularly within the context of China's evolving financial system. Additionally, it analyses shifts in the key drivers of the Chinese economy—investment, net exports, and consumption—and their role in exacerbating deflationary pressures. The study extends its analysis to February 2024, observing potential signs of a transition away from deflation. It emphasizes the risks associated with deflation and the Chinese government's efforts to balance inflation targets with economic stability and employment objectives, particularly in light of challenges in the real estate sector.

Keywords: Money supply, inflation rate, economic growth, structural change, real estate

1. Introduction

Since the 1970s, China has gradually introduced the market as a character into its economy, followed by mass currency supply: by the end of 2023, China's M2 has increased 1.19 times compared with the end of 2013, equal to 2.32 times its Gross Domestic Product. The enormous size of the money supply compared with GDP based on long-term relationships built on QTM has raised concerns about a drastic rise in the inflation rate. Nevertheless, we have observed a period of low (0.1%) and even negative inflation rates since April 2023, which is unseen from 1998 to 2002 and during the global financial crisis. In nearly three decades, the causes of deflations in China have varied due to developing economic structures, policy transmission mechanisms and external shocks. This essay will try to elaborate on the possible causes of the recent deflations by aspects of exchange rate, monetary policy, economic and financial structure, and carry out the possible factors that contribute to such deflation.

2. Concept Explanation

Deflation, a phenomenon marked by a widespread decline in prices, stands in stark contrast to inflation's upward price trends. This condition often leads to diminished consumer spending and can signal an economic downturn. One of the principal tools for gauging deflation that will be used in this paper is the Consumer Price Index (CPI), an index that contains a basket of goods and services to measure the change in the general price level. In the past century, researchers have identified several factors that could cause changes in the general price level. The Phillips curve, for instance, is a theorem that suggests that lower unemployment levels within an economy could result in higher rates of inflation, and vice versa. Within a globalized economy, there could be other factors that affect the domestic price level, known as imported deflation, which occurs when a surge of lower-priced imported goods drives down the domestic price level. There are mainly two causes for such deflation: either having an appreciating currency or foreign goods and services having a lower cost of production. Moreover, consumption patterns are significantly influenced by wealth and consumer expectations. The wealth effect theorizes an increase in spending as asset values rise. Furthermore, theories, such as the directly proportional relationship between the price level and the money supply, which is known as the Quantity Theory of Money. While traditional QTM suggests that price levels are directly proportional to the money supply in both the short run and long run [1], further theory development suggests the uncertainty of such a relationship between two factors in the short run, yet they will be fully reflected in the long run [2].

The rapid development of China in past decades has drawn further attention to the dynamic of money supply and price level. Although empirical evidence proves the long-term relationship suggested by the QTM [3], the short-term effects of changing money supply remain uncertain: For example, Shuai found that monetary growth in China harmed inflation over 1993-2001 [4]. As China's deflation happened again around 2008, researchers' focus changed to the dynamic of such a relationship [5]. The latter research examined the effects M0, M1 and M2 caused on inflation and deflation from January 1991 to June 2014 [3], which covered two deflation periods out of three, suggesting the relative ubiquity of its conclusion: The effects of different money supplies on different period varies, which suggests a dynamic development of their relations.

3. Development of Financial Structure

The level of maturity of the financial system is crucial to the effectiveness of monetary policy since it is typically viewed as inversely proportional to the level of financial frictions: for developed countries, well-developed financial markets make financial frictions have few influences on the transmission of monetary policy [6], while developing countries with the underdeveloped financial system were suffered from this [7]. Financial frictions not only imply the presence of transmission channels for both interest rates and credit but also underscore their existence: As the financial system develops, which indicates more transmission through the interest rate channel, financial friction will decrease, whereas the impact of the credit channel operates in the opposite direction [8]. Xu's study, which is based on empirical findings, illustrates that the overall improvement in China's development in financial sectors enhances the effectiveness of monetary policy. Consequently, this facilitates a more seamless transmission of monetary policy shocks within the financial market [9]. Further investigations reveal that as of 2019, the interest rate channel's contribution to China's monetary policy transmission has diminished to 31%, while the credit channel, although slightly reduced, remains predominant at 42%. Meanwhile, the asset price channel has significantly strengthened, accounting for 20% of the transmission mechanism. This shift is primarily attributed to the rapid expansion of household wealth resulting from China's booming stock and real estate markets [10].

4. Influence of the Real estate Industry and External Shocks

Before the onset of the current deflation, there were profound changes in the three major components that drive the Chinese economy, namely, investment, net exports and consumption. First, there was a slowdown in the Real estate industry. Being the primary catalyst for investment and economic expansion over recent decades, it drew substantial credit and spawned numerous financial derivatives owing to its anticipated high rate of return amidst declining economic growth rates and corporate profitability. However, its large price fluctuations have hurt financial stability, crowding out consumption and increasing financial leverage for the Chinese economy [11]. Secondly, the slowdown of the Real estate industry affects local government revenues and thus investment. With the slowdown of urbanization and the consideration of the negative impacts mentioned above, land finance becomes unsustainable: in developed regions with higher output per capita, such as Beijing and Shanghai, the dependence on land finance is not obvious, while other regions are different; as the differences of economic development in different regions are further widened by factors such as resource endowment, the siphoning phenomenon of developed regions on less developed regions becomes more obvious, making its Dependence on unsustainable land finance [12]. Finally, it is the pressure on China's import and export trade. Although the rise of the high-end manufacturing industry has played a significant role in the government's plan, the existing low-end manufacturing industry in Vietnam, India and other emerging economies, while the high-end manufacturing industry is facing trade protection measures. At the same time, as a country that is relatively poor in natural resources, its inflationary prices are mostly affected by imported raw materials, and the link between the two has been demonstrated in a variety of literature [13]. All three trends, overlaid with the 2020 pandemic, together contribute to the deflation of the July 2023 to January 2024 period.

During the pandemic, China emerged relatively quickly from the forced disruption of economic activity compared to other countries, thanks to a firm quarantine policy. While the GDP growth was noteworthy, it fell short of the high growth rates experienced in previous periods. At the same time, China has adopted a more cautious expansionary monetary policy to promote economic recovery than other advanced economies of the same period: either out of traditional inflationary concerns or to store up policy tools for possible next financial risks. Therefore, the growth in money supply has been modest: the frequent use of monetary policy over the past few years has reduced its marginal utility, making it increasingly difficult to regulate output and consumption [14]. On the other hand, because the Troika's low pace of development has been difficult as a structural problem in making it possible to carry out a large-scale consumption boost while maintaining moderate inflation. This, together with the fact that fiscal policy has not been as strong as it was in 2008, has led to a significant decline in the causes of inflation on the government side. Nonetheless, the strong trend in exports has improved consumer and business expectations to some extent, and the economy is still generally growing at a relatively high rate. However, as the outbreak began to spread again in the country, measures such as closure and control further increased consumer insecurity, and the forced cessation of economic activity in economic centers such as Shanghai added pressure on economic growth in 2022. However, imported inflation, particularly the spike in energy prices and commodities caused by the Russia-Ukraine conflict, has added to inflationary pressures to some extent [15]. In addition to this, fluctuations in the exchange rate can cause changes in import prices, which are then transmitted to a country's Producer Price Index (PPI) and CPI, and empirical evidence proves that the appreciation of the renminbi exacerbates deflationary pressures in China [13]. However, it is worth noting that the RMB exchange rate appreciates in 2020 and 2021 due to strong exports, and depreciates in 2022-2023 due to the FED's interest rate hike and other reasons. As net exports continue to expand will generate huge foreign exchange reserves, leading to the central bank passively creating more money at the same time, which leads to a temporary decline in aggregate domestic supply in the short run

[16]. However, the setback in the development of the Real estate industry as a crucial part of China's finance and economy turned itself into a reservoir, which accumulated money supply within it but was not transmitted into the circulation of other economic activities. On the one hand, the CPI in 2023 was affected by the decline in food prices, especially pork prices due to overproduction; on the other hand, the continued decline in international oil prices and the lack of demand for some industrial goods made the consumer prices of industrial consumer goods and services stabilize.

Moving into February 2024, the CPI recorded a 0.8% increase, reversing the negative or near 0% since April 2023. Whether the situation marks the break of the deflationary spiral, the vicious cycle of economies in which inflation decreases or even transforms into deflation, leading to a sustained recession. The Commodity Price Index (CBPI) stood at 111.4 in February, a small drop of 0.7% from the previous month and 7.5% year-on-year; and the RMB-dollar exchange rate stabilized at approximately 1:0.14 from approximately 1:0.15 at the same time a year ago, happening depreciation; the larger increase in inflation in February was due to seasonal factors such as rising food prices, (up 7.3% year-on-year). It is worth noting that the trade surplus continued to expand in January and February, and high-end manufacturing product exports continued to increase, reflecting the effectiveness of industrial upgrading. In the Real estate industry, there are expansionary plans for fiscal and monetary policy. Specifically, the low importance of imported deflation and the unsustainability of food price increases due to seasonal factors such as extreme weather and the Chinese New Year has made it difficult for consumer expectations to change in the short term, and it is not yet known whether deflation will continue.

5. Conclusion

This paper explores the possible causes of China's recent deflation from both internal and external factors. The dangers of deflation for the economy are clear, as the 2024 Chinese government work report sets the inflation target at around 3% and indicates that the target for new urban employment is set at "more than 12 million people", with an emphasis on "strengthening support for enterprises in tertiary sectors". It also emphasizes "strengthening support for enterprises in industries with large employment capacity", indicating the importance that the Government attaches to the employment of residents and the development of the service sector. However, the cooling of the Real estate industry has not reversed the trend, and the use of monetary policy needs to be controlled to meet the inflation target without generating excessive inflation. Nonetheless, this paper does not model the direct relationship, and a more accurate relationship would need to be determined through precise testing.

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Ecological Construction of China's Music Industry from the Perspective of Cultural Economy

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Abstract: As an important part of culture economy, the Chinese music industry has shown a steady growth trend from the supply side, consumption side, and channel side, but there are still some structural contradictions, weak links and problems. With draw lessons from international advanced experience, this paper considers that the healthy and vigorous development of the music industry of China requires the protection of intellectual property rights, the support of financial and tax policies, the cultivation of professional talents, the forging of the industrial chain, and the encouragement of the "going global" of the music industry. This paper believes that the pursuit of spiritual life by humans is endless, the world music industry has shown great market potential and bright growth prospects.

Keywords: Music industry, Copyright, Industrial chain

1. Introduction

In the Chinese ancient Book of Zhouyi, it is written: "The universe is enormous and full of countless cosmic inventories and can be considered as a magnificent career. The way of heaven changes quickly and constantly and this can be considered as the grand virtue." The universe is economy, the universe is wealth, the universe is poetry, the universe is music, the universe is numbers, the universe is beauty, the universe is order, and the universe is endless growth and change. She not only provides humans with the material civilization they rely on for survival, but also endows them with infinite spiritual civilization. As a creative source of people's livelihood and an innovative driving force of the national cultural system, cultural economy has become a strategic industry of countries, and has become the main way to enhance national soft power. Music, as a "world language", is the treasure of cultural economy, is an art form that expresses human thoughts and emotions, reflects real life, and is a special social production activity that cultivates sentiments, inspires wisdom, creates beauty, and enjoys beauty. The music industry has the characteristics of high added value and strong integration. Promoting the development of the music industry plays an important role in prospering the cultural market, enriching people's spiritual lives, driving economic growth.

According to the 2022 General Report on the Development of China's Music Industry by the Project Team of the Music Industry Development Research Center of Communication University of China, the total scale of China's music industry in 2021 was about 378.756 billion yuan, of which the output value of the core layer, related layer, and expansion layer were 92.929 billion yuan, 220.126

billion yuan, and 65.701 billion yuan, respectively. The core layer includes digital music, music performances, music books and audiovisual publishing, music copyright brokerage and management, with industry scales of 79.068 billion yuan, 11.76 billion yuan, 1.278 billion yuan, and 823 million yuan respectively, an increase of 13.98% compared to 2020; The related layer includes musical instruments, music education and training, and professional audio, with industry scales of 25.099 billion yuan, 113.38 billion yuan, and 81.647 billion yuan respectively, an increase of 11.38% year-on-year in 2020; The expansion layer includes karaoke, radio and television music, and "film , gaming, and anime music", with industry scales of 55.8 billion yuan, 9.161 billion yuan, and 740 million yuan respectively, a decrease of 5.85% compared to 2020.

The Chinese music industry has shown a trend of recovery and growth from the consumer side, supply side, and channel side, showing development characteristics such as IP oriented music products, diversified consumer demand, integrated music platforms, and scenario-based music consumption. In 2021, the concert tours of movies, anime, and game soundtracks have notably increased, with strong potential for local originality. Local originality and overseas copyright recreation have become the backbone of the development of the musical theater market. The number of small-scale and immersive musical performances and box office revenue have increased observably compared to 2020, and the number of music festival performances has significantly increased. Cross city performances by music fans have become a new highlight of cultural and tourism integration. The emergence of new models such as "music+ short video platform", "music+ social platform", "music+ tourism platform", "music+ metaverse platform", "music+ live streaming platform", and "music+ car networking" has led to the continuous integration and innovation of music platforms. Black vinyl records truly record the beauty of music and are the highest standard of listening experience and sound quality. They have not exited the historical stage due to their ancient traditions, but have created a consumption scene of "black vinyl revival" with their unique sense of ceremony, cultural connotation, and cultural value. The physical record market has shown a trend of stopping decline and rebounding.

2. The Weak Links in China's Music Industry

As a green sunrise cultural economy, the music industry leverages the performances of musicians, relies on rich and colorful instrument performances, conveys beautiful music ideas, creativity, aspirations, inspiration and other non-material factors, and shifts human development from material resource production to spiritual product production to meet spiritual needs in the blue ocean field. Music products, as one of the carriers of spiritual civilization, have a high demand, a wide audience, strong industrial penetration, a long product lifecycle, and a widely extended industrial chain. The Chinese music industry has been nurtured by traditional culture for thousands of years, and after decades of development through reform and opening up, it has formed an initial industrial system with strong development prospects. However, there are still some weak links in the current development of China's music industry, presenting some structural contradictions and problems, mainly reflected in the following aspects:

2.1. Music Copyright Protection is Still Weak.

Compared with countries such as the Britain and America, China's music industry lacks a complete and strong music publishing and record industry, and piracy issues remain severe, greatly damaging the interests of music creators and record companies. The imperfect and unclear legal formulation, difficulties in copyright recognition and implementation, inadequate operating mechanisms, and the rapid development of information technology have to some extent causes copyright infringement such as work tampering and distortion. Internet users spread their works recklessly, but creators themselves

are powerless to deal with such infringement, disrupting the normal operating procedures of the music market [1], and insufficient copyright protection has hindered the healthy and orderly development of the Chinese music industry.

2.2. The Continuous Supply Capacity of High-quality Works is Asthenia.

The continuous production of excellent original content is the foundation of a virtuous cycle in the music industry chain. In recent years, the lack of outstanding original works and creative motivation, and some shoddy popular music works have had a negative impact on the spiritual level of society because of their poor thinking, artistic dryness, lack of aesthetic depth, and detachment from life. The imperfect incentive mechanism for musicians hinders the realization of the value of their musical works. Improving incentive mechanisms and continuously launching high-quality new products and content has become the key to the healthy development of the Chinese music industry [2].

2.3. Insufficient music export ability.

Chinese culture is vast and profound. In history, a large number of brilliant Chinese songs, instruments, and music books have crossed oceans and borders, becoming wide reputation over the world, showcasing the splendid culture of an ancient civilization. Nowadays, in the domestic market where foreign music has entered in large numbers, showing a strong influence, while relatively few world-renowned music works and singers standing out in the world. While Warner, Universal, and Sony, the three major music groups, dominate the global music market, and China's music copyright trade deficit is still huge. Chinese contemporary music still has a long way to go to the world.

3. Experience and Reference from the International Music Industry

3.1. The Music Copyright Protection System in the United States

The income of the cultural industry in the United States accounts for 25% of the country's gross domestic product, surpassing the income of representative industries such as airplanes, automobiles, and agriculture, and becoming a pillar industry second only to the military industry. The copyright protection system of the music industry in the United States is relatively sound and complete. In the 1930s and 1940s, the copyright system in the United States gradually formed music copyright protection industry associations represented by the American Society of Composers, Authors and Publishers (ASCAP), Broadcast Music Incorporated (BMI), and the Society of European Stage Authors and Composers (SESAC) [3]. From the development history of copyright law in the United States, it can be seen that every modification closely follows the development of the times. The earliest copyright laws were limited to books, maps, and charts, and in 1831, 1856, and 1865, the United States added protection for musical plays, photographic works, and their authors, respectively. In 1982, the United States passed the Piracy and Counterfeiting Amendments Act, increasing penalties for copyright infringement in the film and recording manufacturing industry, and gradually improving the legal system for copyright protection. In 1998, the US legislative body officially formulated and implemented the currently influential copyright protection act, the Digital Millennium Copyright Act, which uses the concept of "indirect infringement" to constrain online infringement [4]. At present, the United States has joined international copyright conventions such as the Universal Copyright Convention, the Berne Convention, and the Phonographic Convention, and its copyright legal system is gradually moving towards internationalization.

The Collective Management Organization (CMO) centrally manages dispersed music copyrights through healthy competition, reasonable royalty distribution mechanisms, and an open and transparent operating model. This not only protects the legitimate rights and interests of music

copyright owners, but also effectively encourages the reproduction and creation of original music works, becoming the most important way for music copyright owners in developed countries to protect their rights. The music collective management organizations in the United States can be divided into performance rights organizations, forced mechanical reproduction rights organizations, and recording performance rights organizations. The Performance Rights Organizations (PROs) in the United States mainly include ASCAP, BMI, SESAC, Global Music Rights (GMR) etc. Organizations that enforce mechanical replication rights include Fox Agency (HFA), among others. Recording and performance rights organizations include Sound Exchange etc. In October 2018, the Music Modernization Act (MMA) came into effect. The music industry in the United States has a new collective management organization that conforms to the times - a new non-profit "Mechanical Licensing Collective" (MLC) to manage authorization and licensing fee transactions under a package of statutory licenses, and to collect information on the management of rights for music works and recordings. This organization conforms to the trend of digital development and plays a positive role in promoting the development of digital music.

3.2. Policy Support of France to the Music Industry

According to research evaluating the international competitiveness of cultural industries, France has an international competitiveness index of 66.47, second only to the United States' 71.44, ranking second in the world. As a cultural powerhouse, France's emphasis on and support for cultural industries are inextricably linked. Successive French governments have consistently provided adequate financial support for cultural development. For instance, in 2020, France's cultural budget was approximately 9.7 billion euros, accounting for approximately 1% of the national budget. In the face of the aggressive expansion of American culture, the French government recognized the importance of protecting its national culture to resist cultural invasion and prevent cultural homogenization. France first proposed the "Cultural Exception," which excludes culture from free trade to ensure that citizens worldwide can continue to enjoy the right to inherit their country's rich cultural heritage. France is the only country in the world led by its Ministry of Foreign Affairs in conducting external cultural activities, and it is also the first country to actively engage in cultural diplomacy. On one hand, France's support for cultural industries is evident in legal policies, such as enacting copyright laws and using tax reduction policies to encourage the development of high-quality original content. On the other hand, it has actively and swiftly responded to the rapidly evolving digital music industry. In 2015, the French government formulated new behavioral norms to promote digital music industry, implementing measures such as protecting songwriter copyrights, strengthening regulations on online advertisers, which received positive reviews from the entire music industry. The French legislative branch formulated the "Innovation and Internet Law," aimed at protecting creators' legitimate rights and interests and combating illegal piracy. The improvement of laws has undoubtedly created a favorable market environment for the development of France's digital music industry.

The essence of cultural life lies in sustained innovation and creativity. The French government actively encourages cultural innovation, prioritizing innovation as the core of cultural policy. France has established a comprehensive set of tax incentives to support the cultural industry, such as reducing value-added tax (VAT) rates for popular cultural products and industries like recordings and books, to promote market sales and meet the diverse needs of the public [5]. Measures such as subsidies, flexible pricing mechanisms, or expanding the scope of free services are implemented to facilitate opportunities for underprivileged social groups to participate in various cultural activities. To enhance the international influence of French music and aid in the promotion and dissemination of French musical works, France has established the Music Export Office. This office provides market intelligence, professional conference participation, promotional support, and financial assistance for

French professionals to be active in export. Each year, over 400 projects receive support from the Music Export Office.

3.3. The internationalization Experience of Korean Pop Music

Korean pop music, abbreviated as K-pop, has become an important force for Korean culture to go global market. In the process of creating music works, Korean music circles encourage team originality, such as members of new generation idol groups represented by SEVENTEEN, BTS, (G) I-DLE, etc., actively participate in choreography and music creation. This coincides the tradition of European and American music production that emphasizes the singer's personal involvement in music production. K-pop music closely integrates European and American pop music, creating competitiveness for K-pop music to enter the European and American markets. K-pop pursues "both Korean characteristics and the most popular music", with an international music style that further integrates local characteristics. For example, BTS incorporates Korean mask dance, three drum dance, and fan dance into dance performances, as well as traditional Korean cultural and artistic elements such as Korean clothing, lion dance, and SamulNori to showcase the style of traditional music and create a music stage with strong Korean ethnic characteristics. After the performance was broadcasted, it received widespread praise worldwide, enhancing the dissemination of traditional Korean culture internationally [6]. K-Pop aims to integrate multi elements fusion of audio-visual content into song creation in stages, dance, music videos, and clothing, as exemplified by the popular example of "Jiannan Style" becoming popular worldwide. Performing arts planning companies usually carefully select and launch new singers, and spend high costs on training. The cultivation system of idol artists is also one of the key achievements of the successful operation of K-Pop industry, forming a one-stop idol cultivation system from early selection, training, debut, and operation. In addition, the K-Pop industry has adopted the strategy of "Asianization- Globalization" when promoting its brand internationally [7]. K-Pop chooses to first enter the markets of Asian countries with natural geographical proximity to South Korea, to attract the attention of European and American media, and then enter the European and American markets. The experience of K-pop music in music production, newcomer selection, artist development, promotion and marketing are worth considering.

3.4. Canada's Prosperous Live Performance Industry

Live music is an important part of Canadian music consumption, accounting for 57% of Canada's annual music consumption, with concerts accounting for 38%, small music venues (such as coffee shops) accounting for 26%, music festivals accounting for 24%, and nightclub DJ activities accounting for 12%. Canadian live performances are profitable, with a focus on project development and talent investment. Live performances have become an important source of income and employment for Canadian musicians. The overall number of music festivals in Canada is relatively large, with at least 130 music festivals in the country, including famous ones such as Canada Music Week, Montreal International Jazz Festival, Lilith Tour Music Festival, Osheaga Music and Arts Festival, etc. Music festivals are held in diverse locations and music genres, with specialized music festivals for folk music, jazz music, electronic music, country music, and more. The Canadian music festival as a whole has shown strong vitality, not only being profitable, but also utilizing the two common languages of English and French to establish an international music festival. The concept of environmental protection is also a highlight of Canadian music festivals, such as the Osheaga Music Festival, which utilizes wind and solar energy to run lights and equipment, builds a green stage, and improves free bicycle parking and public transportation. 58% of Canadians participate in live music events at least once a year, 59% of live music viewers purchase tickets within the first few weeks of ticket sales, and the proportion of teenagers with this habit is as high as 71%.

4. Building an Ecological System for the Healthy Development of China's Music Industry

The music industry, as a creation of spiritual value, is an important branch of cultural industry in contemporary society. In China, the music industry is still in a gradually emerging young industry. China's consumer entities have always been active, and the internal and external structure of the music industry is gradually adjusting. With the active layout of market entities in new fields, demand and supply respond in both directions, exploring and embracing new technologies and models, China's music industry is entering a new round of adjustment, optimization, and high-quality development stage.

4.1. Sound Music Copyright Protection

The main problems with music copyright protection are inadequate legislative systems, weak public awareness of copyright, unsmooth operational mechanisms, and insufficient legal sanctions. It is necessary to formulate laws and regulations based on the special laws of music and art, improve administrative and judicial mechanisms, strictly regulate collective copyright management organizations, enhance copyright enforcement efforts, improve dispute resolution and negotiation mechanisms, introduce competition mechanisms, and strengthen music copyright protection. Refine the provisions on punitive measures in the Copyright Law, streamline the process of law enforcement, reduce the cost of rights protection, more efficiently implement and enforce the protection of the music industry, punish infringers, and motivate rights holders to protect their rights. We strive to safeguard the interests of copyright owners while also ensuring the realization of social interests, promote the more effective implementation of the Copyright Law, and promote the sustainable and healthy development of China's music industry.

4.2. The Inheritance and Promotion of Traditional Chinese Music

The ancient and splendid civilization of the Chinese nation has nurtured a rich, colorful, and deeply rooted excellent traditional music culture. Music from the pre Qin period to the Song, Yuan, Ming, and Qing dynasties, such as "High Mountains and Flowing Water" from the Spring and Autumn period to "Spring River Flower and Moonlit Night" from the Ming and Qing dynasties, from the famous songs of the Eastern Han Dynasty such as "Eighteen Pairs of Hujia" and "Guangling San" to the Ming Dynasty's "Wild Geese Alighting on Sand "; From Central Plains music, Siyi music to exotic music, such as the oldest music in Yunnan, Naxi ancient music, known as the "music fossil", national intangible cultural heritage "Kunqu", to Yi ethnic folk songs (Yi wine songs), "Xinjiang Twelve Mukam", "Dong ethnic big songs", etc., it is brilliant and profound. Traditional Chinese music is accompanied by Palace Movements and Tonal Changes. Through the use of single tone melody stacking techniques, the combination of uniform rhythm and scattered beats, the beauty of music's artistic conception is expressed [8], reflecting the aesthetic ideas advocated by Confucianism and Taoism of "harmony between heaven and man" and "harmony is precious". Today, with the rapid development of cloud computing, the Internet, big data, and the meta universe, the audio, video, text and other information of Chinese excellent traditional music are preserved and protected by scientific and technological means. With AI artificial intelligence technology, VR virtual reality, blockchain and other scientific and technological means, it not only protects, but also innovatively inherits the traditional culture of Chinese excellent music. Dances such as Tang Palace Banquet, That's All Blue-green Landscape Painting and Prayer are excellent works of creative transformation and inheritance of ancient Chinese culture.

4.3. Adapting to the Development Trend of Digital Music Community Ecology

The digital music market in China is growing rapidly, and in addition to traditional telecommunications music value-added services, streaming media services, and online karaoke, a "music+" ecological industry chain with a payment model as the core is gradually forming. The habits of music consumption are undergoing profound changes, and the media of music consumption is shifting from simple listening to music+ video scenes+ self-expression. The music experience is more three-dimensional, more immersive, and can express oneself more freely. The copyright monopoly of digital music services has broken through, and competition in the digital music market has been activated. Music users are flowing across media and platforms, and the content and distribution centers of digital music are being restructured. Users are becoming increasingly picky about the experience of digital music platforms, requiring more engaging music, more immersive experiences, and more community content with a sense of belonging. With the changes in the competitive elements of the digital music market and the emergence of new competition, digital music service platforms represented by short videos are exerting a strong impact on the competitive barriers of traditional digital music platforms.

4.4. Cultivate Live Broadcasting Music Brands

With the development of artificial intelligence, big data, virtual reality, machine learning, financial technology, and social media, the live music industry has transformed into the "live streaming music industry", and the growth of live music is positively correlated with streaming media and digital music. The touching and lively improvisation and burst of live music, filled with warmth and true transmission, make the charm of the music scene irreplaceable and the core expression of music. Live music adopts a "real live, real music" attitude to ignite explosive performances in styles such as pop, rock, folk, jazz, etc., lighting up the beauty of life. With a genuine music attitude, a passionate music experience, creating the highest quality music scene, and leading billions of music fans to experience a rare audio-visual feast. At the same time, it also brings the performance back to the essence of music in both online and offline formats. Live music expresses people's souls and stimulates their sense of identity. Live music brings a synergistic effect to cities and promotes their economic development. Cultivating live streaming music brands requires mutual coordination between upstream and downstream, and support from various elements, creating a music industry base, launching a large number of classic music works, and cultivating a group of heavyweight music talents. Using music as an endogenous driving force, we achieve deep integration of marketing scenarios, and through the linkage of multiple content streaming pools such as "live music+ games, live music+ variety shows, live music + film and television", we try to cultivate brands by bring breakthrough limit.

4.5. Building the Competitiveness of Chinese Music in Going Global

The policy tools for promoting the music industry include three aspects: on the one hand, they are internal policy tools aimed at promoting exports, including various methods such as fiscal subsidies, government subsidies, and tax reductions; The second aspect is external policy tools aimed at suppressing imports through various means, including tariff barriers, quotas, and licenses; The third aspect is the support of relevant policy measures dealing with talent cultivation and overseas marketing etc.. Talents are the primary resource. We should not only be good at exploring and cultivating professional talents who can create high-quality music works, but also cultivate music professional agency talents that are in line with the international market, and improve the professional intermediary or agency industry chain for the music industry to go global. Creating public management bases or music industry parks for the music industry, bringing together music related enterprises, forming clusters for development, promoting effective integration of internal resources

within the industry, leveraging the clustering effect between enterprises and government preferential measures for clustering areas to improve the overall strength of the music industry.

5. Conclusion

Under the joint efforts of the government and the market, liberate new vitality in the creation of Chinese original musicians and excellent original music works. Actively guiding and deregulations, we are committed to cultivating a large group of leading music enterprises with ethnic characteristics that can obtain a place in the international competitive market, focusing on the production of high-quality music creation. The Voice of China, originating from a long history and splendid culture, has begun to go abroad, step onto the world stage, and make its own voice in the global music industry. The pursuit of spiritual life by humans is endless, and the integration of music and technology drives the upgrading of the global music industry value chain. The world music industry has shown great market potential and bright growth prospects.

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The Impact of Green Logistics on the Sustainable Development of Enterprises

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Abstract: This study examines the importance of green logistics for the sustainable development performance of enterprises. It analyzes the connotation and application of green logistics, the significance of corporate sustainable development, and the relationship between the two, to clarify the decisive influence of green logistics in contemporary enterprises. At the same time, it points out the existing problems in the development process of green logistics from multiple perspectives, indicating that the further development of green logistics requires the efforts and cooperation of enterprises, governments, and multiple parties in the supply chain. Following this positioning, several conceptual solutions are proposed, such as the innovation and sustainable utilization of green technology and green management in logistics, and the government's role as a third party in regulating the application of green logistics. The research results have theoretical significance, highlighting the impact of green logistics on corporate sustainable development and the important role of the government in sustainable development. The practical significance includes improving corporate sustainable development performance indicators in the technical and management dimensions, in order to further improve the organization's sustainable operations and behavior.

Keywords: Green Logistics, Sustainable development performance, Challenges.

1. Introduction

The development of human beings and its impact on the natural environment is growing, and the outbreak of environmental disasters such as climate change, smog, and natural resource depletion has become a global concern. In addition, the rapid development of society has raised people's awareness of the necessity and importance of being responsible for nature. Therefore, sustainable development and green growth have increasingly become emerging hot issues that organizations around the world pay attention to. It emphasizes the necessity of simultaneous activities in specific areas of human survival [1]. Achieving sustainable development is not an easy task, and it is affected by various aspects. More specifically, it depends on a country's economy, political stability, cultural aspects, legal aspects, and overall social environment [2]. This requires the establishment and transformation of systems, standards, technologies, management, and a series of business strategies, so that the organizational level can also have sustainable development capabilities, obtain sustainable development performance, and meet new challenges. China is in a new period of economic transformation and development to high-quality. Achieving the "double carbon" goal of peak carbon

dioxide emissions, carbon neutrality, and driving low-carbon green development of the economy have become key drivers of China's economic structure transformation and innovative growth [3].

Another focus of this study is how green logistics affects the sustainable development performance of enterprises. The 12th Sustainable Development Goal "Responsible Production and Consumption" emphasizes the importance of designing modern and future-oriented business systems aimed at sustainable manufacturing. Logistics is a key link in the operation of enterprises, and the overall design of the logistics system will directly affect the performance of enterprises. Green logistics is the embodiment of the digitization and intelligence of traditional logistics, and to a certain extent, it plays an important role in promoting the sustainable development performance of enterprises. As a sustainable logistics model, green logistics has gradually become an important issue in promoting the transformation of modern logistics development, sustainable supply design of enterprises, and sustainable development.

However, some studies have found that there are some problems in the development of green logistics and its role in the sustainable development performance of enterprises. First, in recent years, scholars have paid more attention to the two theoretical perspectives of "green technology innovation" and "green management innovation". Green technology innovation emphasizes a series of innovative activities related to environmental protection and green development with the aim of reducing environmental pollution and improving the ecological environment [4]. Green management innovation emphasizes the integration of environmental protection concepts into new models of enterprise management, especially in the application and practice of digital transformation. Some studies have pointed out that green technology and management innovation are core capabilities in the process of enterprise development, which can greatly improve enterprise performance [5]. However, existing studies have shown that due to the impact of enterprise operating costs and input-output ratios, green technology innovation and green management innovation practices are insufficient and have not achieved significant results in logistics development. Secondly, the purpose of performance indicators is to further evaluate the compliance, policies and programs aimed at achieving organizational goals, including sustainable goals. However, due to some factors, the definition of sustainable indicators is still unclear, and there is a lack of assessment of the overall overview and effect of organizations' operations and behaviors in sustainable practices. Finally, in China, traditional logistics lacks international competitiveness, and the level of smart logistics still lags behind the international first-class level. China lacks corresponding incentives and protection measures for the transformation of logistics structure, and also lacks the introduction of laws, regulations and policies related to the sustainable development practice of enterprises.

In summary, this article reviews the previous literature on green logistics and corporate sustainable development, and based on the latest domestic and international consensus, reviews the impact of green logistics on corporate sustainable development performance. It identifies the existing problems in China's green logistics field to increase understanding of sustainable supply and lays the foundation for future large-sample research on green supply technology and management in China.

2. Connotation of green logistics system

With the increasing demand for raw materials and the growing scarcity of natural resources, the concept of green logistics has been proposed and continuously updated in recent years, attracting widespread attention from scholars. Green logistics refers to the comprehensive logistics activities that use advanced logistics technology, scientifically plan and implement logistics plans, and orderly complete various links such as transportation, storage, loading and unloading, handling, packaging, circulation processing, distribution, and information processing [6]. Compared with traditional logistics, green logistics is based on the development of smart logistics, integrating modern new technologies and new facilities, such as big data, artificial intelligence, cloud computing, and

blockchain. Through resource optimization and integration, it integrates logistics systems and related supporting facilities, achieving further innovation in logistics structure, improving the efficiency of logistics distribution while reducing the environmental impact of logistics activities to a certain extent, and improving issues such as cargo damage, environmental pollution, and resource waste. Green logistics has gradually become an important promoter of China's sustainable growth and a new highlight of green development in recent years.

The connotation of green logistics can be specifically reflected in: (1) intensive use of resources. Intensive use of resources is the essence of green logistics and one of the main guiding ideologies of the development of the logistics industry. By integrating existing resources and optimizing resource allocation, waste can be reduced and resource utilization increased. (2) Green transportation. Transportation is the primary link in logistics. By reasonably laying out and planning transportation routes, shortening transportation routes, improving vehicle load rates, and reducing the number of vehicle transportations, energy saving and emission reduction can be achieved. (3) Green warehousing. The selection of logistics warehousing sites needs to be reasonable, and the layout needs to be scientific to maximize the available warehouse area and minimize transportation costs. (4) Green packaging. Green packaging is a decisive factor in achieving green logistics. The first is to implement packaging reduction; the second is that packaging is easy to repurpose or recycle, which includes using the least amount of materials to make packaging; the third is the ecological design of packaging, including the use of materials that are harmless to the environment and human health, and the design of packaging that can decompose naturally. (5) Waste logistics. According to actual needs, the items that have lost their original value in economic activities are collected, sorted, processed, packaged, transported, stored, etc., to realize the recycling and reuse of waste. (6) Reverse logistics. It is the reverse sequence of forward logistics, which refers to It includes five material streams: direct resale product stream (recycling → inspection → distribution), reprocessed product stream (recycling → inspection → reprocessing), reprocessed parts stream (recycling → inspection → dismantling → reprocessing), end-of-life product stream (recycling → inspection → dismantling → processing), and end-of-life parts stream (recycling → inspection → dismantling → processing). The American Logistics Management Association believes that reverse logistics is the process of planning, implementing, and controlling the efficient and low-cost flow of information about raw materials, processed inventory, and finished products from the point of consumption to the point of origin [7].

3. Corporate sustainability performance

Elkington et al. (1999) articulated the "triple bottom line" principle of sustainable development, which is that enterprises need to balance the relationship between economic, social and environmental in the process of sustainable development [8]. Currently, there is a general agreement in the academic community that corporate sustainability performance includes three aspects: environmental performance, social responsibility and economic performance [9]. In the modern changeable and ambiguous business environment, this multi-dimensional performance is essential for the success and sustainability of organizations [10].

3.1. Environmental performance

The environmental management system defines environmental performance as: the measurable environmental management system effectiveness achieved by an organization based on environmental policies, objectives and indicators, that is, the comprehensive effectiveness achieved by the organization through strengthening environmental management. The environmental performance of an enterprise is reflected in two indicators: financial and environmental quality.

With the deepening of research, on the one hand, existing studies have confirmed that resource allocation is an important factor affecting the environmental performance of enterprises [11,12]. On the other hand, technological innovation is also an important way to improve the environmental performance of enterprises [13]. In the process of development, enterprises are prone to inertial application of existing technologies, falling into path dependence, affecting the enthusiasm of enterprises for technology research and development, thus affecting environmental performance. On the contrary, it can improve the environmental performance of enterprises. Taking the manufacturing industry as an example, China has entered modernization and gradually set off a wave of digital transformation, which has greatly stimulated green technology innovation, introduced front-end cleaner production technologies, reduced excessive consumption and over-dependence on natural resources, improved product innovation capabilities, and played a positive role in enhancing the environmental performance of sustainable development of enterprises.

3.2. Economic performance

Economics defines it as: the efficiency evaluation of the economy and the use of quotas and resources.

On the one hand, in the era of digital economy, enterprises use digital technologies such as big data and cloud computing to widely mine users' favorite preferences, consumption patterns, and other information accumulated on the Internet platform, so as to improve users' information management systems, in order to strengthen customer understanding, improve operational efficiency, optimize production decisions and designs, and thus increase market share. This is the main way to improve the economic performance of enterprises.

On the other hand, the use and allocation of digital technology resources to improve the business performance of enterprises, in order to achieve higher market acceptance and improve product competitiveness, and create greater value can also effectively improve the economic performance of enterprises [9].

3.3. Social responsibility

Since the 1970s, the concept of social responsibility has been widely spread [14]. Corporate social responsibility can also be analyzed through three latitudes, and its core is also related to the environment, society, and economy. It can be regarded as the core and summary of corporate sustainability performance.

The environmental latitude of corporate social responsibility depends in particular on the organization's perception of the relative importance of the ecological environment and the organization's sustainability assessment of the organization's operations and behaviors to achieve ecological goals [15]. Another important factor is the development of a sense of conservation of nature among the stakeholders of the enterprise as their commitment and responsibility to ethics both inside and outside the enterprise, while also meeting general societal expectations [16,17]. Shareholders and managers play an important role in the coordination of sustainable development goals, such as short-term and long-term goals, social and economic goals, partial and shared goals [18,19].

The social latitude of corporate social responsibility depends on the organization's perception of the relative importance of expected social roles and norms in the environment, as well as the organization's assessment of the suitability of organizational operations and behaviors to achieve applicable environmental social principles [15]. The social literature also interprets corporate social responsibility as the extent to which the organization supports social good behavior "beyond corporate interests and legal requirements" ([20], p. 605). The social latitude of corporate social

responsibility is related to social issues or social goals that are worthy of attention and discussion in the current society. For example, the environment expects modern organisms to actively participate in solving pressing social issues such as labor relations, human-to-human relations in society, social development issues, growing demand for energy and food, poverty alleviation and equal development opportunities, etc.

The economic latitude of corporate social responsibility depends on the organization's perception of the relative importance of achieving economic outcomes and economic prosperity, as well as the organization's assessment of the economic adequacy of operations and awe to achieve economic goals [15]. Therefore, organizations understand economic development pragmatically, shifting their original focus from "profit maximization" to "responsible operation" in order to achieve "more sustainable economic outcomes for the organization" [21,22].

4. The role and significance of green logistics for sustainable development performance of enterprises

As the demand of academia and professionals for the economic, social and environmental elements of sustainable development continues to grow, scholars agree that green logistics has obvious potential to promote sustainable development goals [23]. For enterprises, green logistics has attracted more and more attention. In the beginning, the development of green logistics was mainly driven by economic and environmental challenges, which required companies to manage the trade-off between short-term profitability and long-term environmental sustainability [24,25]. As enterprises and society gradually increase their awareness of long-term development, enterprises gradually realize that green logistics system design has a non-negligible role in promoting enterprises to achieve considerable sustainable development performance in the market. This paper will also analyze the impact of green logistics on the three major benefits and competitive advantages from the three angles of enterprise sustainable development performance already mentioned above.

4.1. Environmental benefits

The implementation of green logistics can help enterprises achieve environmental benefits through energy conservation, emission reduction, resource recycling, and improved communication synergies.

First, green logistics focuses on the efficient use of energy and the reduction of pollutant emissions, which can get rid of the dependence of traditional logistics transportation on fuel-powered tools. For example, enterprises can adopt advanced logistics technologies and equipment, such as electric vehicles, intelligent route planning, etc., to reduce dependence on traditional fuel-powered vehicles and reduce energy consumption and carbon dioxide emissions during transportation.

Secondly, green logistics can promote the recycling of resources [26]. Under the traditional logistics model, resources such as packaging materials and transportation equipment are often discarded after only one use, resulting in waste of resources and environmental burden. Green logistics can enable enterprises to use recycled packaging materials and equipment. Such as degradable packaging materials, recycling of renewable resources, etc., to reduce resource consumption and waste generation.

At the same time, green logistics enables enterprises to jump out of the single latitude growth model. In the process of applying the green logistics platform integration to the bilateral market, the communication efficiency and collaborative efficiency between enterprises have been improved, and the supply chain participants have gradually formed a supply chain ecosystem of correlation and interaction, symbiosis and coexistence, which effectively promotes the spillover effect of

communication and coordination, thereby improving the environmental performance of enterprises [27].

4.2. Economic benefits

The implementation of green logistics can help enterprises achieve economic benefits by reducing costs and improving efficiency, as well as increasing brand value and market competitiveness [28].

On the one hand, green logistics is more intelligent, using advanced technology and equipment to improve the efficiency of logistics operations. Traditional logistics is limited by the lack of intelligent scenarios, and it is difficult to achieve an efficient connection between the supply and demand of products and production factors in a short period of time. In this scenario, enterprises usually face the limitations of product flow and capital flow, which affects the economic performance of enterprises [27]. By using intelligent transportation management systems and logistics information platforms, enterprises can better grasp logistics information and manage logistics processes, optimize transportation routes and times [29], and promote the rationalization of transportation structures. Thereby, the energy consumption and transportation costs of commercial and trade enterprises can be greatly reduced, logistics efficiency and accuracy can be improved, and the level of economic performance of enterprises can be improved. On the other hand, as mentioned above, green logistics pays attention to the recycling of resources. For example, the use of degradable packaging materials and the recycling of renewable resources can reduce the waste of resources and waste disposal costs of enterprises. At the same time, green logistics can also reduce inventory costs. By improving the inventory turnover rate, less inventory extrusion and waste can be reduced, thereby reducing the operating costs of enterprises [30].

In addition, green logistics relies on advanced technologies such as the Internet and artificial intelligence to promote the continuous increase of trade opportunities between cities, further expand the market strategic layout, and expand the market scope that enterprises can serve [31], so enterprises can sell more products to a wider market. In the era of increasing emphasis on environmental protection and sustainable development, consumers have higher and higher expectations for the environmental protection image and social responsibility of enterprises, and will be more inclined to choose those enterprises that actively take environmental protection measures. Adopting green logistics measures will help enterprises establish a good brand perception, attract more consumers, gain a wider range of consumer groups, and enhance brand value. A wider target market and a wider range of consumer groups have a direct role in promoting the economic performance of enterprises, helping enterprises to enhance market competitiveness, and laying the foundation for enterprises to obtain long-term economic benefits.

4.3. Social benefits

Enterprises can achieve social benefits by adopting green logistics to improve the industrial environment and urban transportation environment.

First of all, green logistics can improve the working environment and employee welfare of the logistics industry. In the traditional logistics process, problems such as noise and exhaust emissions have a great negative impact on the working environment of logistics practitioners. Adopting green logistics measures such as clean energy vehicles and optimizing distribution routes can reduce noise and pollution, improve the working environment, and provide logistics practitioners with safer and healthier working conditions. At the same time, green logistics requires specialized smart talents, which also increases employment opportunities to a certain extent and promotes economic and social development and stability.

Secondly, green logistics helps to improve the efficiency and convenience of urban transportation. In the traditional logistics process, problems such as congestion and traffic accidents often cause traffic delays and transportation inefficiencies. As mentioned above, through intelligent warehouse management systems and distribution route optimization, green logistics can improve the efficiency of logistics and transportation, shorten transportation time and reduce traffic congestion. This not only reduces the negative impact of transportation on urban transportation, but also improves the response speed and consumer satisfaction of the logistics supply chain.

5. The development challenges of green logistics

5.1. Lack of Further Practice in Green Technology Innovation and Green Management Innovation

5.1.1. Room for Improvement in Green Technology Innovation.

In the past, technological development and related technologies have decisively shaped the development of society [32,33]. Human history is characterized by technological advancements. Therefore, scientists are very concerned about the role and importance of technological development in organizational environmental behavior. From the current development situation of green logistics, modern enterprises' attention to and innovation in green technology are insufficient, resulting in a lack of innovative outcomes that directly affect the construction and optimization of the green logistics system, and also hinder the achievement of sustainable performance and the growth of sustainable advantages for enterprises. The continuous improvement of technology in green logistics, further automation, and intelligence are crucial for leveraging green logistics into a sustainable competitive advantage for enterprises through technological innovation.

Green logistics technology refers to a logistics technology system that can reduce pollution, lower consumption, and improve the ecosystem, consisting of relevant knowledge, capabilities, and material means. Currently, there is still a gap in the development level of green logistics technology in our country. First, our country's technological innovation in biodegradable materials and reusable packaging design has not yet reached a level of widespread application. This limits the application of green packaging in logistics and prevents it from replacing traditional packaging materials on a large scale, thereby reducing environmental pollution. Second, energy-saving and emission-reduction technologies in the logistics transportation link are key to promoting the development of green logistics. However, due to the insufficient research and development and popularization of new energy vehicles and energy-efficient transportation tools, the proportion of green transportation methods in our country's logistics industry remains low. This not only affects logistics costs and efficiency but also limits the overall development of green logistics. Furthermore, the improvement of logistics informatization and intelligence level can effectively enhance logistics efficiency and reduce resource waste. However, our country still needs to strengthen its innovation capabilities in logistics sorting technology, routing and dispatching technology, electronic waybill technology, end distribution technology, logistics informatization technology, and intelligent scheduling systems. Although the level of informatization and intelligence in our country's logistics industry is continuously improving, there are still "bottleneck" technical issues. Many core components of logistics equipment are difficult to produce with existing technologies [34], which leads to a relatively low overall development level of logistics technology in our country.

Researchers in the past have made great efforts to prove that investments in green technology innovation by organizations can improve supply chain performance, and the integration of digital technology into corporate strategy can bring sustainable performance [2]. At the same time, green technology innovation includes new technical processes, innovative green products and services, and

protection of the green environment, making it the best business strategy for enterprises [35]. Some scholars have pointed out that responsible technological innovation is one of the key pillars of sustainability and suggest that empirical research should be conducted to investigate this [36].

5.1.2. Lack of Practice in Green Management Innovation.

Studies have shown that innovation in management processes interacts more with traditional lean and green methods and plays a crucial role in improving performance. Green management refers to the reorganization of existing or the adoption of new management systems, strategies, and policies, and their transformation into environmentally friendly logistics systems to minimize the negative impact of organizational production and management strategies on the environment [4]. Effective green management innovation can promote the rational allocation of resources, achieve energy saving and waste reduction in logistics activities, thereby reducing environmental impact. However, currently, Chinese enterprises lack innovation in supply chain or other operational management fields, and have not closely integrated traditional internal environmental management with green methods, affecting the efficiency of enterprises in achieving sustainable development performance.

Firstly, many logistics enterprises still focus on cost and efficiency, neglecting the importance of green and environmental protection. The lack of green management philosophy in daily operations leads to insufficient green logistics practice and difficulty in forming an effective green logistics management system. Secondly, the development of green logistics requires the joint efforts of all links in the supply chain. However, currently, our country's integration capacity in green supply chain management is not strong, lacking effective collaboration mechanisms and information sharing platforms, which greatly reduces the effectiveness of green logistics implementation. At the same time, the fierce competition in China's logistics industry and the fact that resource information is a competitive advantage for enterprises, due to the lack of leading enterprises, result in information barriers between enterprises in the logistics industry, preventing the integration and sharing of resources [7].

Finally, there is a lack of exploration of innovative green logistics models in our country. With the development of internet technology, green logistics has more implementation paths and models, such as shared logistics and reverse logistics. However, our country's investment in the research and application of these new green logistics models is limited, lacking systematic exploration and practice.

5.2. Lack of Clear Definition of Sustainable Development Performance Indicators

With the emergence of the vision of sustainable development, researchers and organizations have been developing solutions to assess the impact of current corporate sustainable development practices on the natural and social environment [8,37]. As a result, environmental performance indicators have been established to assess aspects such as emissions, pollution, resource consumption, and natural habitat protection [38,39]. Although some indicators, such as carbon emissions and energy consumption levels, are widely used, differences between industries and the lack of uniform evaluation standards make comparisons difficult within and across industries. Social performance indicators aim to assess the impact of sustainable practices on employees, customers, and communities [40,41]. However, the subjectivity and diversity of indicators such as employee satisfaction and community participation also make definition and assessment complex.

Lastly, economic performance indicators aim to assess the impact on financial indicators such as organizational costs, profits, and investments [22,42]. Although corporate economic performance is relatively easy to quantify, how to effectively combine these economic indicators with environmental protection and social responsibility to achieve true sustainable development remains a challenge.

The academic and practical communities are exploring a sustainable development performance indicator system suitable for our country's national conditions. For example, some studies suggest developing sustainable development performance indicators with Chinese characteristics by combining China's cultural background and socio-economic development characteristics. However, due to the lack of consensus and support, these efforts are often difficult to apply and promote on a wider scale. Therefore, establishing a scientific, rational, and unified corporate sustainable development performance evaluation system is one of the key steps to promote sustainable development in enterprises in our country.

5.3. Lack of Government Policies and Regulations Related to Corporate Sustainable Development

Regulation is often considered an effective way to stimulate corporate sustainable development awareness [43]. Some studies have examined the value of regulation in corporate supply chain management. Corporate responsibility constraints are influenced by national laws, regulations, and policies as well as by the enterprise's own policies. The role of national laws, regulations, and related policies has been proven to promote enterprises towards sustainable development [44].

In the long run, green logistics can bring stable development for enterprises. However, local governments have not put forward clear requirements for corporate low-carbon economy, nor have they established a complete professional system, leaving enterprises lacking executable green logistics policy standards. Taking packaging management in green logistics as an example, the governance of packaging in our country is still in disarray, with unclear responsibilities of governing bodies, weak regulation, low promotion and application rates of new technologies and materials, and unstandardized management. How to achieve the development goals of green packaging for express delivery, promote the basic principles of green packaging to the ground, constrain and regulate from the source, and strengthen end-of-pipe management to achieve the whole-process governance of green packaging has become a difficult problem in the green development of our country's packaging industry [7].

Therefore, we strongly recommend that researchers establish theoretical models to study the specific impact of future government management policies on green logistics and corporate sustainable development [36].

6. Suggestions and countermeasures for the development of green logistics

6.1. Technological Innovation and the Construction of Green Logistics Systems

Technology remains the fundamental driving force for social development, and the growing expectations of society have put forward new requirements for enterprises, namely to engage in sustainable technological innovation and to build green logistics systems to fully support the needs of corporate sustainable development and the resolution of social issues in modern society [15].

In economic practice, enterprises should pay more attention to green technology and resources than before. These technologies not only aid in the renewal of green logistics but also help the enterprises themselves to achieve sustainable development performance and benefits, thereby improving the broader environment.

6.1.1. Establishing a Green Logistics Technology Platform.

Enterprises can establish a technology platform that represents the opportunity to use resources and capabilities for green logistics technological innovation. It can serve as a central hub for technological

innovation, information sharing, resource integration, and standard setting, promoting the efficient operation and continuous development of the green logistics system.

Firstly, the green logistics technology platform can gather R&D resources from both within and outside the industry to promote technological innovation in areas such as green packaging, energy-saving and emission-reducing transportation tools, and efficient energy management systems. At the same time, the platform can accelerate the testing, verification, and promotion of new technologies, enabling green logistics solutions to be implemented quickly.

Secondly, by establishing a unified information platform, various logistics participants can exchange data and share information based on it, improving the visibility and transparency of the logistics process, thereby optimizing logistics routes, reducing resource waste, and enhancing overall transportation efficiency.

The green logistics technology platform can also attract participants from multiple aspects, such as government, enterprises, and research institutions. Through resource integration and cooperation, it can collectively address common issues in the development of green logistics, such as standard setting, funding, and policy support, forming a strong force to promote the development of green logistics.

Finally, the green logistics technology platform can provide the industry with a standardized framework and reference, helping enterprises assess their green logistics practices and supporting the government in formulating relevant policies and standards.

6.1.2. Promoting the Digitalization of Supply Chain Technology.

Sharma et al.⁴⁶ studied the digitalization of supply chain networks and concluded that it improves company performance [36]. In another study using blockchain technology and its impact on sustainable development performance, the results showed that we are in the Industrial 4.0 era, where the supply chain focuses on digital innovation and operational transformation [45]. Enterprises using blockchain technology can improve sustainable development performance. Therefore, for future research, it is recommended that enterprises integrate emerging technologies into the green logistics system and explore the value of various different technologies, such as blockchain, 3D printing, and additive manufacturing.

Firstly, enterprises can achieve visualization and intelligent management of the supply chain by introducing advanced information technology and IoT technology. This includes using IoT sensors to monitor parameters such as temperature, humidity, and vibration during the transportation of goods in real-time to ensure that goods are transported under environmentally friendly conditions, reducing loss and waste. At the same time, based on big data analysis and artificial intelligence technology, enterprises can optimize the design and operation of the supply chain, reduce energy consumption, decrease waste emissions, and build a green supply chain.

Secondly, technological innovation can also promote the implementation of green packaging and recycling. Enterprises can develop and adopt more environmentally friendly packaging materials, such as biodegradable and recyclable materials, reducing the use of disposable packaging. At the same time, using smart packaging technology, trading enterprises can achieve lightweight packaging design, reducing resource consumption and waste generation.

Furthermore, enterprises can adopt eco-innovation at various levels of the supply chain to share information and promote decision-making throughout the supply chain, develop collaborative relationships among supply chain members, and help each other achieve the construction of green logistics systems and sustainable development performance. All members of the supply chain need to cooperate to a certain extent, and technological innovation becomes a source of developing collaborative capabilities and more effectively implementing corporate strategies to improve corporate performance [2].

Lastly, in the construction of green supply chains, enterprises can also achieve energy-saving, emission reduction, and carbon neutrality goals through technological innovation. For example, using clean energy to power transportation tools, adopting energy-efficient storage facilities, and introducing low-carbon production processes can reduce energy consumption and greenhouse gas emissions in supply chain operations.

6.2. Improving Relevant Policies and Regulations and Increasing Government Support

For the government, first, there should be a policy guidance and incentive mechanism. The government can guide logistics enterprises to actively promote green development and stimulate enterprises to undertake more environmental protection investment behavior by enacting a series of policies and measures, such as environmental protection policies, tax incentives, and energy-saving and emission reduction subsidies [3]. Second, establish green technology standards and evaluation systems, and jointly establish green benchmark enterprises with industry organizations. The government can set green technology standards and evaluation systems to guide logistics enterprises to use sustainable and environmentally friendly technologies, reduce energy consumption and emission levels, and improve corporate sustainable development performance [3]. Third, strict laws, regulations, and related policies can promote enterprises to prioritize sustainable practices in production and operation, such as energy saving, resource recycling, and environmental protection. In this case, non-compliant enterprises will face more severe penalties and public pressure. Therefore, in countries with strict environmental regulation, enterprises tend to show higher sustainable development performance [46]. This is supported by evidence from different countries. Sweden, as a country with a high level of sustainable development, has implemented a series of policies to encourage corporate sustainable practices, including the use of renewable energy, adherence to strict emission regulations, and taxation of non-renewable energy, resulting in a higher proportion of sustainable enterprises in the country [47]. Germany also attaches great importance to sustainable development and has achieved a high level of corporate sustainable development by setting energy-saving building standards and encouraging enterprises to reduce their carbon footprint [48]. Therefore, the government can enact and implement stricter laws, regulations, and related policies to promote all actors, including enterprises, to practice the concept of sustainable development and pursue sustainable development.

7. Conclusion

The study found that with the rapid development of information technology and the increasing emphasis on the environment, the development of corporate green logistics is an inevitable trend for the future and an important direction for achieving a low-carbon economy and sustainable development for all of society. Green logistics currently plays a crucial role in enhancing corporate sustainable development environmental performance, social responsibility, and economic performance. However, there are also issues such as insufficient green technology and management innovation practices, unclear performance indicators, and a lack of government laws and regulations hindering the further development of green logistics. Therefore, in the future, enterprises should adjust their logistics models with green thinking, take the initiative to assume market responsibility, and make significant efforts in green technology and green management. Governments should enact laws and regulations to clarify performance indicators and encourage the development of green logistics. Only in this way can the convenience and efficiency of green logistics be truly improved and the high-quality development of green logistics be achieved.

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Research on the Development Path of Industrial Internet Eco-Platform in the Context of China's Economic Digitization

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Abstract: The continuous innovation and promotion of digital technology represented by big data, cloud computing and artificial intelligence have accelerated the development of a new round of technological revolution. The new round of technological revolution presents intelligent and networked characteristics, digital economy and digital technology to empower China's economic form to digital transformation, giving rise to a number of new business forms, new models, and bringing new opportunities. However, China is still facing problems such as a large digital divide, digital security threats, difficulties in implementing digital taxes, serious non-tariff barriers, difficulties in the digital transformation of enterprises and a lack of digital talents. Therefore, relevant research on the connotation and characteristics of the digitalisation of China's economy should be strengthened to provide theoretical support for China's economic transformation and high-quality development.

Keywords: Industrial Internet eco-platform, digital economy, high-quality development

1. Introduction

1.1. International factors: the world has not seen a major change in a hundred years

The world is experiencing a major change not seen in a century, which has a profound impact on the digital development of China's economy. International factors are important factors that cannot be ignored in the context of China's economic digitalization development [1].

The in-depth development of social globalization and economic globalization has brought opportunities and challenges to the digitalization of China's economy. The opening up and competition in the global market have intensified the digital development needs of Chinese enterprises, while globalized cooperation and interconnection have provided Chinese enterprises with a broader market and more resources.

Technological innovation and the rapid development of information technology are also important drivers of international factors for the digital development of the Chinese economy [2]. Advances in information technology have accelerated the dissemination and exchange of information and facilitated the integration and optimization of the global industrial chain.

At the same time, the rise of tech giants has changed the global economic landscape and driven the rapid development of the digital economy. In addition, unstable factors such as global trade

wars and financial crises have challenged the digital development of China's economy. The uncertainty and volatility of these factors have had an impact on the digital development of Chinese companies, and the need to strengthen the ability to monitor and respond to the global economy.

In short, international factors play an important role in promoting and constraining the digital development of China's economy, and it is necessary to actively respond to and grasp the opportunities and challenges brought about by changes in the international situation. It is only through international integration and strengthening cooperation and exchanges with other countries that a virtuous cycle of digital development of the Chinese economy can be realized and the international competitiveness of the Chinese economy improved.

1.2. The China factor: building a new development pattern of double-cycling

The connotation and context of China's digitalized economic development is one of the important components of this study. This section will focus on China's new development pattern of building a double cycle.

Constructing a new development pattern of double-cycle refers to a development pattern in which the Chinese general cycle is the main body and the Chinese and international double-cycles are mutually reinforcing [3]. Among them, the China Grand Cycle refers to the Chinese market as the main driver of economic growth, relying on domestic demand [4]. China's international double cycle refers to the two-way interaction between the Chinese market and the international market, driving industrial upgrading and innovative development through the demand of the Chinese market, while relying on the advantages of resources and market scale of the international market.

The background for building a new development pattern of double cycle mainly includes the following aspects. First of all, international factors are one of the important driving forces for building a new development pattern of double-cycle. At present, global development is facing a great change that the world has not seen in a century, protectionism and unilateralism are on the rise, and the international trade and investment environment is facing uncertainties. Against this background, building a new development pattern of double-cycle can reduce dependence on the external environment, improve risk resistance and realize sustainable development.

Secondly, the China factor is also an important support for building a new development pattern of double-cycle [5]. In recent years, China's economic development has shifted from the stage of high-speed growth to the stage of high-quality development, the traditional economic growth momentum has weakened, and the economic structure and power transformation need to be upgraded urgently. The construction of a new development pattern of double-cycle will promote the organic integration of internal and external markets, and improve the self-sufficiency and power of economic development.

The core of the new double-cycle development pattern lies in the construction of a stable and sustainable internal cycle, which will be centered on the growth of residents' incomes, the sustained increase in investment and the further expansion of consumption. By raising the level of residents' income, increasing people's purchasing power, increasing investment, fostering new economic growth points, and promoting consumption upgrading, industrial upgrading and economic development will be realized. At the same time, China's international double cycle supports and promotes each other, and through the introduction of international advanced technology and services, it meets China's market demand and improves the quality and scale of domestic demand.

Overall, building a new development pattern of double-cycle is necessary to adapt to the current situation outside China and to realize high-quality economic development. By building a new development pattern of double-cycle, China will better adapt to the changes in China's external environment, realize sustainable economic development, and promote the digitalization of China's economy in terms of content and development.

2. Study on the connotation of digitization of China's economy

2.1. Connotation of economic digitization

Economic digitization refers to the wide application and deep integration of digital technology in economic life. Compared with the traditional economic model, the connotation of economic digitalization is more comprehensive and diversified.

First of all, economic digitization does not only refer to the application of digital technology in the economy, but also emphasizes the profound change of digital technology on the economic model and business model. The wide application of digital technology has made economic activities more efficient and smarter, and has greatly facilitated industrial innovation and upgrading.

Secondly, the digitalized economy also emphasizes the mobility and shareability of information. Through digital technology, information is no longer limited by space and time, and can be rapidly disseminated and shared. This provides economic participants with greater opportunities and more choices. In a digital economy, individuals, businesses and governments can access and utilize information resources more flexibly, thereby promoting more rapid economic development.

In addition, the digitalization of the economy also emphasizes the profound adjustment and restructuring of the economic structure by digital technology. The application of digital technology not only plays a role in traditional industries, but also brings about new industries and new economic models. Through digital technology, new production methods and business models are born, further promoting economic innovation and development.

In general, the connotation of economic digitalization not only involves the application of digital technology in economic activities, but also emphasizes the profound changes and reconstruction of digital technology on economic models, business models and economic structure. As the core of the digital economy, economic digitization will have a broad and far-reaching impact on economic development and social change.

2.2. New changes in the digitalization of the economy

The completely new transformation of the digitalized economy refers to the fundamental changes and transformation of economic activities and economic systems under the trend of the digital economy. This transformation is mainly reflected in the following aspects.

The development of the digital economy provides a completely new model and mechanism for economic activities. While traditional economic activities mainly rely on physical assets and human resources, digital economy introduces information technology and network technology on this basis, making economic activities more convenient, efficient and comprehensive. Through digital means and platforms, enterprises and individuals are able to carry out information transfer, business cooperation and value creation more conveniently.

The development of the digital economy has led to a profound change in the mode of industrial organization. In the past, traditional industries were mainly centered on enterprises, with relatively independent supply and value chain relationships. In contrast, the development of digital economy connects enterprises with consumers, suppliers and other relevant stakeholders in depth, forming a more open and diversified industrial organization model. In the digital economy, enterprises achieve resource sharing and win-win cooperation through the establishment of an Internet ecological platform, which improves the efficiency and flexibility of industrial organization.

The development of the digital economy has also brought about a brand new change in the economic model and business model. While the traditional economic model mainly focuses on production and exchange, the digital economy pays more attention to the value and utilization of data. In the digital economy, enterprises and individuals achieve a precise grasp of consumer

demand and personalized services through the collection, analysis and use of big data. The digital economy also encourages and supports innovation, providing a favorable environment for the rapid rise of emerging industries and new business forms.

The new changes of the digital economy are also reflected in economic policy and governance. The development of the digital economy requires the government to formulate appropriate policies and norms to guarantee data security and privacy protection, maintain a fair and competitive market environment, and promote the integration and development of the digital economy and the traditional economy. In addition, the brand-new change of the digital economy also requires the relevant departments to increase support for talent training and technological innovation, and improve the development level and strength of the digital economy.

The brand-new change of economic digitization is a major change in economic activities and economic systems under the development trend of the digital economy. This new change is reflected in the mode of economic activity, industrial organization, economic model and governance, providing an important support and driving force for the innovative development and high-quality growth of the economy.

3. New features of China's economic digitization

3.1. Platformization, Scale and Scope of Industrial Organization Models

In recent years, with the rapid development of the digital economy, industrial Internet eco-platforms have gradually become a new force driving economic development. This section will focus on the three aspects of platformization, scaling and scoping of the industrial organization model.

The platformization of industrial Internet eco-platform refers to the transformation of traditional industries into open and shared digital platforms in order to realize the synergy and integration of the industrial chain. By building an open platform, the industrial Internet eco-platform is able to connect suppliers, producers and consumers, share data and resources, accelerate innovation and improve efficiency. This platform-based organizational model can promote the integration and optimization of each link in the industrial chain, achieving efficient resource allocation and cost reduction.

The scale of industrial Internet ecological platform refers to expanding the industrial Internet platform from around enterprises to around the scope of industries and forming the effect of economy of scale. By realizing the scale of operation, the industrial Internet ecological platform can better meet the needs of users, reduce transaction costs, and improve the quality and competitiveness of products or services. Scalability will also bring more data and users, providing more resources and opportunities for the operation and development of the platform.

The platformization, scaling and scoping of industrial Internet eco-platforms is an inevitable development path in the digital development of China's economy. By building an open and shared digital platform, expanding the scale of the platform, and cooperating and innovating across fields, the industrial Internet eco-platform is able to realize the synergy and integration of the industrial chain, improve the efficiency of resource allocation, accelerate innovation and industrial upgrading, and promote China's economy towards digital transformation.

3.2. Digitization of social governance systems

The digitalization of the social governance system is one of the important aspects of China's economic digital development. With the continuous development and application of digital technology, the traditional way of social governance has been difficult to meet the needs of social management in the new era, and digital governance has gradually become a key means to improve the efficiency of social management and the level of service.

The digitization of the social governance system has given the government a more accurate and efficient management capability. Through the application of digital technology, the government can realize the rapid collection, integration and sharing of information, and improve the science and accuracy of decision-making. In the response to emergencies, digital governance enables the government to quickly access real-time data and gain a comprehensive understanding of the occurrence and dynamics of the event, so that it can make quick decisions and take measures to improve the effectiveness of governance. Digital governance can also make use of technical means such as big data and artificial intelligence to achieve an accurate perception of social conditions and public needs, providing a scientific basis for government decision-making.

The digitization of the social governance system is an important aspect of China's economic digital development. Through the application of digital technology, the government is able to enhance the precision and efficiency of governance, closely interact and cooperate with all sectors of society, and expand the channels and means of public participation in governance. The implementation of digital governance will further enhance the quality and level of social management and provide strong support for China's economic development.

3.3. Deep digital integration of the economic system

The deep digital integration of the economic system is an important aspect of the new features of China's economic digitization. With the continuous development and application of digital technology, the boundaries between traditional and digital industries are becoming increasingly blurred, and digital technology is not just an auxiliary tool, but has become an important driving force to promote economic transformation and upgrading. In the context of deep digital integration, traditional industries have realized all-round upgrading of production, management and operation by combining with digital technology.

In the deep digital integration of the economic system, the integration between traditional industries and digital industries has also become a new development trend. Through cooperation and integration with digital industries, traditional industries have realized the complementarity of their respective advantages and the sharing of resources. Through the introduction of digital technology, traditional industries continue to expand the boundaries of their products and services and provide richer and more diversified products and value-added services. The digital industry, on the other hand, applies its technology and platform capability to the traditional industry through cooperation with the traditional industry, and jointly promotes the innovation and development of the industry. The deep integration of traditional industries and digital industries not only strengthens the synergy and integration of industrial chains, but also promotes the upgrading and transformation of industries.

The deep digital integration of the economic system is a new feature of China's economic digitization, which promotes the upgrading and transformation of traditional industries through deep integration with them. Under the development trend of the digital economy, the industrial Internet ecological platform can give full play to the advantages of digital technology and promote the digital transformation and innovative development of traditional industries. The development path of industrial Internet eco-platform should focus on innovation and synergy, actively promote the integration of traditional industries and digital industries, realize the optimization and upgrading of the industrial chain, and provide a new engine and support for the development of the digital economy.

4. Conclusion

This paper examines the domestic and international factors of China's economic digitalisation development. It is found that with the deepening of economic globalisation, the digitalisation of China's economy faces a more intricate and complex environment, and the construction of a new pattern of double-cycle development is an important measure for China to cope with this environmental change. On this basis, the paper defines the conceptual extension and connotation of China's economic digitisation, and finds that the digitisation of China's economy is characterised by platformisation and the mutual promotion of the digitisation of the governance system and the economic system.

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Research on the Development Dilemma and Countermeasures of China's Education Industry from the Perspective of Digital Transformation

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Abstract: Amidst the rapid evolution and broadening adoption of information technology in China, the education sector is undergoing unprecedented transformation. While the digitalization of China's education industry is advancing swiftly, it is encountering various challenges that require ongoing attention and solutions. Promoting educational equality between cities and villages to reduce the difference is a critical component of this transition. The urban-rural education disparity significantly impedes the pace and quality of digital transformation of the education industry in China. Rural regions encounter issues such as inadequate infrastructure, unequal allocation of educational resources, and insufficient digital literacy among teachers. Implementing tutorial systems, establishing Professional Learning Communities (PLCs), and adopting the "three classrooms" model can effectively address these challenges. Collaboration among schools, government entities, and broader society is essential to promote educational equity, advance educational modernization, and cultivate talents tailored for future societal needs. Studying the challenges faced by China's education industry during its digital transformation phase, along with corresponding strategies, is pivotal for developing innovative teaching models and approaches. This endeavor fosters the evolution of educational content and instructional methods, aligning them with the swiftly changing social and economic landscape.

Keywords: Digital Transformation, Education Industry, Digital Education, Educational Equity, China

1. Introduction

1.1. Research Background

As humanity enters the third digital revolution, fresh cohort Internet technologies are utilised extensively in all spheres of life and have grown more sophisticated over time. These advanced technologies are not only driving the comprehensive transformation of society into the digital and intelligent age but also bringing profound changes and innovations in various fields [1]. China is currently leading the globe in the digital transformation of the industrial and commercial sectors, having accomplished extraordinary feats. This achievement not only sets an example for digital

transformation in other fields but also inspires other fields to accelerate the pace of digital transformation. Because of the rapid evolution of information technology and its extensive penetration into various fields of society, China's education industry has gradually come to embrace digital transformation as a necessary development trend. [2]. In order to support the process of educational change and innovation, the digital transformation of education can be understood as using the Internet as the carrier, data resources as the fundamental components, and a deep integration of digital technology and instructional elements in the 5G environment.

1.2. Literature Review

The successful digital transformation of education marks the realization of human-machine integration, enabling both students and teachers to obtain more comprehensive development opportunities [3]. Xi Jinping put forward the guidelines of “promoting the digitisation of education and building a learning society and a learning-oriented country” in the report of the 20th National Congress of the Communist Party of China, with the goal of highlighting how crucial and urgent it is to digitise education in order to create a learning society and a big nation [4]. In the sphere of education, the digital transformation of education has gained popularity. and it is also one of the main directions of the reform of the education industry. In the digital age, the education industry needs to make continuous progress and actively seek new teaching models and methods to adapt to social development [5]. Digital technology is being used in China's educational system more and more lately. Digital education resources such as online learning platforms, digital textbooks, and interactive teaching tools have been widely adopted and have played an important role in China's educational practice. The outbreak of COVID-19 in 2020 has further catalyzed the digitization process in various industries. The pandemic has forced digital reform and innovation in the education system, with schools and universities across the country rapidly transitioning to online learning models to ensure continuity of education during the lockdown. On February 4, 2020, the Ministry of Education issued the Guiding Opinions on the Organization and Management of Online Teaching in Ordinary Colleges and Universities during the epidemic prevention and Control Period, which proposed the implementation of “no suspension of classes” measures [6]. According to data released by the China Internet Network Information Center (CNNIC), the number of users of online education platforms in China has shown a rapid growth trend since the outbreak of the epidemic. According to the 45th Statistical Report on the Development of the Internet in China, by March 2020, there were 423 million online learners in China, up 82% from June 2019. This represents 46.8% of all Internet users in the country [7]. This shows that the outbreak of the epidemic has prompted more students and parents to turn to online education, accelerating the development of the online education market. The convenience, flexibility, and other advantages of online education have been fully reflected during the pandemic. China's education sector is still in its infancy when it comes to digital transformation, and practice and research initiatives in this area have also shown several shortcomings. Li said existing textbooks and textbooks lack a deep and clear explanation of how teachers can make a contribution in the digital transformation of education [2]. Ding and Wu believe that information technology is not only a teaching aid but also a tool for teachers' professional development [8]. As Ding and Wu point out, the main goal of digital education is to help students acquire the critical skills necessary for success in the information era in both their personal and professional life. Digital education aims to promote students' lifelong learning capabilities, empowering them to participate actively in a globalized culture and play an active role in a globalized society [8]. Dong and Yang proposed that in the context of the new era, it is particularly urgent to raise the participants' level of knowledge about technology and proficiency in the classroom. Lacking systematic digital literacy training prevents teachers and students from taking full advantage of complex technological systems and tools [9].

1.3. Research Framework

This paper aims to explore the development dilemmas faced by China's education industry in the process of digital transformation and put forward specific strategies to deal with these dilemmas effectively. This paper hopes to contribute to the goal of building a more equitable and sustainable education ecosystem in China.

2. Case Description

China's social growth has moved into a new age of technology, and the country's educational system is seeing a favourable digital transition. Given the current state of the world, using cutting-edge digital technology to further the digital transformation of education has grown in importance as a sector for educational research. In order to promote the digital development of education, education researchers explore how these technologies can be used to optimize the teaching process, provide high-quality educational resources, and improve educational management and evaluation [8].

In China's education industry in the twenty-first century, digital transformation has emerged as one of the primary national strategies. Over the past two decades, the Chinese government, through the formulation and implementation of a series of policies, programs, and plans, has significantly emphasized the role that digitalization plays in encouraging the equitable growth of education nationwide. The concept of digital transformation is not only deeply rooted in the discourse system in the field of education but also gradually won widespread social recognition, including the active acceptance and support of educators and other stakeholders in education [10].

The development of digital education has seen some success thanks to the significant public funding and human resource investments as well as efficient overall management, particularly in the areas of digital education resources and infrastructure [10]. Driven by new technologies, the infrastructure of digital education has been significantly optimized, with AI computing power and data centre base continuously strengthened. In addition, a digital ecosystem that promotes innovation in education is gradually being established, thus providing strong support for digital transformation in the education sector [11]. With ongoing advancements in digital infrastructure, the widespread use of Internet access, the rich accumulation of digital resources, and the increasing number of intelligent learning platforms and terminal equipment, mobile learning as an innovative learning mode came into being. This model significantly expands the boundaries of learning space, realizes the time-space liberation of learning activities, and provides students with new chances for autonomous learning and easy access to information [12]. As shown in Figure 1, the content related to “digital transformation of education” included in CNKI began to surge in 2019, which not only shows that the digital transformation of education has become a hot spot of The Times under the promotion of relevant policies but also demonstrates how China's digital education revolution is steadily maturing.

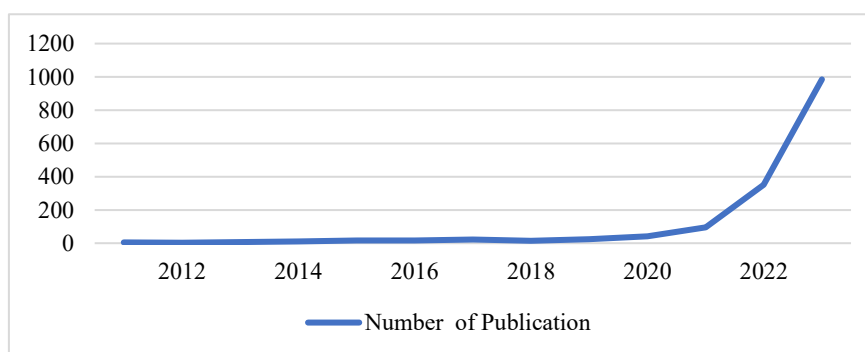


Figure 1: 2011-2023 Publication Volume on Digital Transformation of Education
(Photo credit: Origin)

3. Analysis on the Problem

The digital revolution in the education sector contributes to the achievement of education's modernization objectives, satisfies the demands of social and economic advancement, and fosters the equitable and all-encompassing growth of education [13]. Several outcomes have been attained by China's education sector's digital transformation, but there still exists many difficulties. These dilemmas affect the speed and extent of the digital revolution in China's educational system.

3.1. Insufficient Digital Infrastructure

Insufficient digital infrastructure affects the digital transformation of China's education industry. Digital infrastructure includes network equipment, Internet connection, computer hardware, etc., which provides the basic conditions for the storage, transmission, and access of digital educational resources. These digital infrastructures are relatively abundant in urban areas and may be lacking in rural areas. Inadequate digital infrastructure not only limits the dissemination and use of digital educational resources but also further exacerbates the gap in internet access between cities and villages. Urban areas often have more advanced digital infrastructure, such as broadband Internet, and mobile network coverage is more extensive and stable, which provides convenient conditions for the access and utilization of digital educational resources. In contrast, many rural areas still face slow Internet access, erratic service, or no Internet service at all. The use of educational technology is not practical if the teacher's school lacks a sufficient number of computers or a fast Internet connection [14,15]. Lacking digital infrastructure seriously restricts the dissemination and use of digital educational resources and directly affects the actual availability of digital educational resources [16]. Urban households tend to be better off and able to afford digital devices and Internet services. Due to the relatively poor economic conditions of rural households, it may be difficult to afford to buy computers tablets, and pay for continuous Internet costs, which further exacerbates the limitations of inadequate digital infrastructure on digital education in rural areas. Therefore, the lack of digital infrastructure not only affects the learning and teaching activities of teachers and students in villages but also seriously restricts the digital transformation process of rural education. To solve this problem, the government needs to contribute more money to building digital infrastructure in villages, improve network coverage and service quality in villages, and ensure that teachers and students in all regions can equally enjoy the advantages brought by digital education.

3.2. Uneven Distribution of Educational Resources

One major obstacle to China's education industry's digital transformation is the unequal distribution of educational resources. The unequal distribution of educational resources is caused by the disparity between the economic development of cities and villages. In villages, there are widespread phenomena such as low education investment, uneven distribution of education funds, inadequate teaching management, low teaching levels of teachers, and low classroom teaching efficiency [17]. High-quality educational resources are often concentrated in first-tier cities, while small and medium-sized cities and rural areas are relatively scarce [2]. Education resources usually go more to urban schools. For example, in the allocation of education funds, the government may be more inclined to invest more education funds in urban areas while ignoring the needs of rural areas. This may lead to a lack of financial support for rural schools to build digital education. Government education policies and resource planning may not adequately cover or prioritize the needs of rural areas. Sometimes, digital education development in rural areas is not seen as an urgent policy priority. In promoting the digital transformation of the education sector, policymakers may fail to adequately take into account differences between regions, which may lead to further unequal distribution of digital education resources [16]. Lack of government policy support and guidance in digital education in rural areas,

resulting in insufficient supply of digital education resources. This lack of resources may affect the development and promotion of digital education. In addition to causing concentration and waste of educational resources, the unequal distribution of educational resources widens the achievement gap between cities and villages. The promotion of digital education is often concentrated in areas with better educational resources, which further aggravates the relative backwardness of areas with fewer resources. Schools that lack digital education resources may not be able to provide high-quality digital teaching, which not only limits students' learning opportunities and development potential but also is detrimental to China's education sector's overall growth and digital transformation. As a result, it's critical to support and expand the availability of educational resources in villages, advance the cause of educational parity between cities and villages, and raise educational standards.

3.3. Insufficient Digital Literacy of Teachers

The digital revolution of education in China's industry has encountered some problems due to the low level of digital literacy among teachers. In the context of digital education, the level of digital literacy that educators possess has become problematic. The degree of digital literacy among educators in China directly influences the speed and quality of digital change in the education sector.

The efficient use of digital educational resources by teachers will be influenced by their level of digital literacy, which will ultimately impact the standard and acceptance of digital education.

Teachers that lack digital literacy are unable to fully utilise digital educational resources for their lessons, which has an impact on how well educational materials are used. Some teachers lack basic digital skills and are unable to skillfully use computers, networks, and related software to conduct teaching activities. Some teachers hold a conservative attitude towards emerging digital technology and lack the spirit of trying and exploring, resulting in relatively backward teaching methods and methods. Many educators are not familiar with the principles and methods of digital instructional design and are unable to integrate digital technology into teaching practice effectively. Because teachers lack the ability to digital teaching design, teaching quality can not be effectively improved, and students' learning effect is not good. Urban teachers use electronic devices and digital tools more often in their daily lives and have more frequent contact with modern information technology. It is difficult to use digital educational resources effectively in rural areas because people there typically lack the technical knowledge and skills required, as well as a limited understanding of how to use current information technology [16]. Without effective technical training for teachers, they will not be able to take full advantage of digital technologies. Throughout their careers, they need adequate training to keep their skills up to date [14].

4. Suggestions

Schools, governments, and all sectors of society need to work together to promote equity in urban and rural education.

4.1. Implementation of Tutorial System and Establishment of PLCs

The government should formulate comprehensive policies to reduce educational inequality across the country and ensure that education in rural areas can also receive adequate support and development. These policies should pay attention to rural teachers and establish a more comprehensive education compensation mechanism. Because of the small scale of village schools, the number of teachers is limited, and the teaching activities are relatively independent, so the government can take measures to assist urban schools in supporting rural schools. Mentorship is seen as a professional relationship, usually involving an interaction between an experienced educator and another educator, designed to support the latter's career development. PLCs are Professional Learning Communities. It is a

community of educators who work together to improve teaching practices, research, and collaboration and continuously improve teaching and learning. PLC members typically include teachers, school administrators, education experts, and others involved in education. In the implementation of the tutor system, the government can consider establishing a partnership between urban teachers and rural teachers. The government could set up assistance programs to facilitate teachers in urban schools and provide remote guidance and support to new teachers in rural areas to help rural teachers improve their teaching quality. In terms of setting up PLCs, the government could consider setting up PLCs between rural schools. This PLC can help rural teachers share resources, learn from each other, and make teaching plans together. The government can also encourage urban teachers to participate in the PLC and disseminate the latest educational models and knowledge remotely.

In the context of the more and more widespread use of the Internet, social networks are becoming more and more significant in the sphere of education. which greatly promotes the sharing and communication of educational resources. Through these measures, China has the capacity to raise educational standards across the board, eliminate the education gap between cities and villages, and advance the field of education as a whole. In conclusion, the Chinese government should take comprehensive measures to implement the tutorial system and PLCs to guarantee the equitable allocation of educational resources and advance educational parity throughout the nation [18].

4.2. Promote the Application of “Three Classrooms” with the Group Education Mode

Group running school is a school system in which one famous school and several schools form a school community. The schools have unified coordination and management to guarantee a constant standard of education but are relatively independent and pursue their own characteristics. “Three classes” is a general term for “delivery class”, “famous teacher class” and “famous school network class”, which provides solid backing for the balanced advancement of education. Promoting the application of “three classrooms” in the mode of group education is a crucial strategy for addressing the lack of resources for rural education. Encouraging the use of “delivery classrooms” can successfully address the issue of inadequate opening and poor opening of national curricula in rural schools. This study will help rural schools fully and effectively implement the state-mandated curriculum by setting up specific online courses or synchronizing online teaching to encourage the growth of nationwide education in a balanced manner. Promoting the application of a “famous teacher class” can address the issue of teachers' weak professional growth and teaching abilities. Great teachers inspire other teachers to raise the bar so that more people can access the resources of well-known educators. Encouraging the use of “famous school network classes” can successfully narrow the achievement gap between cities and villages. With top-notch schools serving as the major focus, this study will methodically and thoroughly encourage the sharing of top-notch educational resources to support students' individualised growth through online learning environments, online courses, and other means.

4.3. Promote the Precise Construction of Teachers

By using digital technology, detailed data of teachers in rural areas, such as age distribution, education level, and income, are analyzed and then compared with education level by big data so as to explore the needs for teacher capacity improvement. To raise the general standard of education talent in rural areas, a training plan for rural teachers in line with their professional development needs is formulated through network resources. In addition, through the formulation of preferential policies, such as giving preferential treatment in teacher recruitment, professional title evaluation, further training, living allowances, and construction of turnover dormitories, this study can provide solid teacher support for the precision poverty alleviation work in education, so as to effectively improve the

current situation of rural teachers [17]. Through these measures, teachers can not only improve the quality of education but also enhance their career satisfaction and willingness to stay and further promote educational equity.

By ensuring that every region can equally benefit from digital education, the aforementioned steps can progressively reduce the disparity in education between cities and villages, supporting China's education industry's digital transformation.

5. Conclusion

5.1. Key Findings

In conclusion, the disparity in education between cities and villages has seriously hindered the digital transformation process in China's education industry. Achieving the digital transformation of China's education industry requires promoting equity in nationwide education. Urban areas usually have more financial support and investment. They can more easily promote the construction and renewal of digital education. In contrast, rural areas face problems such as inadequate infrastructure, inadequate allocation of educational resources, and insufficient digital literacy of teachers. Education in some villages is still stuck in the traditional mode and cannot keep up with the pace of the digital age. Teachers and students in these areas cannot fully access and use educational resources and may face problems of poor learning quality and limited opportunities for future development. Addressing the development dilemma of digital transformation in China's education industry requires close cooperation and coordination among schools, the government, and all sectors of society.

5.2. Research Significance

By strengthening infrastructure construction, increasing economic support for rural areas, improving the fairness of resource distribution, formulating more sound strategies and policies, and conducting teacher skills training, this study can lead to long-term national development and the cultivation of more exceptional talent in addition to raising the standard of education. Studying the development dilemmas faced by China's education industry in digital transformation has immense importance for educators, school administrators, and scholars studying educational technology, both in the present and the future. By systematically studying these issues, this study can provide data support and a decision-making basis for policymakers, educational institutions, and relevant stakeholders and promote the healthy development and modernization of China's education industry. This study aims to promote the development of China's education sector and contribute to broader social goals such as promoting social equity and social progress.

5.3. Limitations

This paper mainly adopts the literature analysis method. There is little use of primary data and a large amount of secondary data. To strengthen the article in the future, primary data might be gathered via interviews, questionnaires, and other methods. For example, rural teachers can be directly interviewed to understand their real views on digital education.

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Research on Work Motivation and Innovative Behavior

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Abstract: With the continuous progress of science and technology, the output of employees' innovative behavior in the work scene becomes more and more valuable. However, how to develop employees' innovative behavior is worth thinking about. This study reflects that there is a positive correlation between employee motivation and innovative behavior. The premise of improving employees' innovative behavior is based on giving employees effective external motivation. If employees are motivated by their love of work and willingness to pay for it, then innovative behavior will be greatly improved. Other than that, the leadership style plays an important role. Leaders not only need to encourage innovation through positive incentives and resource support but also need to demonstrate the value of innovation through their own behavior. A leader's openness and commitment to innovation can greatly influence employee behavior and organizational culture. To sum up, through the comprehensive use of a variety of incentive means and culture-shaping strategies, accompanied by the active participation of leaders, the innovative behavior of employees can be effectively cultivated and promoted, thus bringing long-term competitive advantages and development potential to the organization.

Keywords: Innovative behavior, Motivation theory, Human management, Technology

1. Introduction

During the rapid development of global business, the motivation of employees and their contributed innovative behavior becomes the key in supporting organizational success. Therefore, to effectively prompt the two aspects of business, the investigation of the relationship of these two variables becomes highly essential. In current studies, there are evidence that proposes that the relationship between employees' motivation and innovative behavior is post-correlated. This essay will dive deeper into this topic, by analyzing the existed studies in qualitative fields, while applying the use of various types of motivation theory. This paper will also propose effective incentive strategies for employee motivation with barriers and limitations.

2. Work Motivation

2.1. Define the Concept of Work Motivation

Motivation refers to the desire, effort, and passion to achieve something. It is the willingness to complete a task or job with intent and purpose [1]. In other words, motivation occurs when employees

want to do something, rather than what they need to do. Work motivation is a complex concept that can be further break down into two categories, intrinsic motivation, and extrinsic motivation.

According to Amabile, intrinsic motivation refers to the idea that people will be most likely to be motivated when they are expecting the outcomes, which can be very meaningful to their personal growth. To be specific, intrinsic motivation occurs when employees is naturally satisfied with the outcome. By achieving the goal, they can fulfill their self-actualization, which will be further discussed later. On the other hand, extrinsic motivation refers to the behavior of employees that is triggered by the external rewards. In workplace, the most common extrinsic rewards will be money, fame, praise, and promotion. Furthermore, motivation can be related to financial and non-financial rewards, which will be further explained.

2.2. Motivation Theories

According to Skinner, motivation theories are models that aim to understand individuals initiate interest in and persistence activities. In this paper, I will focus on three of these theories; Taylor's Motivation theory, Maslow's Hierarchy of needs, and Herzberg's Two-factor Theory. These theories proposed various perspectives in motivating employees' potential in the work environment.

2.3. Taylor's Motivation Theory

Frederick Winslow Taylor is an engineer and inventor who proposed the "principles of scientific management, so called "Taylor's motivation theory". He assumed that employees are mainly motivated by extrinsic motivation, such as money. The productivity of employees is determined by setting output and targets that are related to payment. His scientist management was highly influential that a lot of famous business applied this theory during 1920s. Companies such as McDonalds are still using the system of scientific management at present. The system suggests the idea that managers set up a target production and output for employees with a differentiated piecework system. Thus, financial rewards such as money are that factor that can motivate employees to achieve a specific goal. When Taylor proposed this theory, he highly focused on the promotion of employee productivity and efficiency. However, this theory is not always recognized by the public. Some firms has been criticizing his theory by saying that it ignores the non-financial rewards that employees might be interested in. The scientific management only focused on efficiency but failed to acknowledge that workers can be innovative independent thinkers . Other than that, a final criticism is that scientific management can entail repetitive and monotonous tasks, thereby leading to job dissatisfaction. (IBO,2022). Although it rewards employees who work hard, but employees might still feel that the financial rewards are insufficient to compensate their persist in job.

2.4. Maslow's Hierarchy of Needs

Abraham Malsow, an American psychologist who focused on mental needs and psychological background of employees, proposed the theory of motivation so called "hierarchy of needs". He suggested that people's needs are separated into different levels, they will be satisfied with their lower needs and gradually progress to the top ones. This hierarchy is divided into five layers, self-actualization, Esteem, love and belonging, safety needs, and physiological needs (in top to down order). Maslow assumed that people are motivated by these needs from the order of low to high. Only after satisfying the most basic physiological needs can people the pursue of higher levels needs, such as self-actualization be served as non-financial rewards.

Employees see recognition from their colleagues as spiritual satisfaction, making praise and recognition a reward. If employees are promoted at work, the expression of their self-worth will also make them feel valuable, thus stimulating their potential. Studies such as by the Minneapolis Gas

Company from 1945 to 1965 show that people cite the need for security as their number one motivator, followed by promotion, job type, and pride in working for the company as three key motivators. Maslow motivation theory combined the scientific use of physiological evidence and constructed a model for motivation, which can be applied in the workplace.

2.5. Herzberg's Two factor Theory

Herzberg two two-factor theory is found by Frederick Herzberg who mainly focused on the study of factors that can cause satisfaction and dissatisfaction in the workplace. He combined the knowledge in sociological and psychological approaches and introduce the "Hygiene factors". Hygiene factors are aspects in the workplace that can cause dissatisfaction, and which must be met to prevent. Factors such as job security, wages, and working conditions can be categories of hygiene factors that might cause dissatisfaction in the workplace. To balance with the hygiene factor, Herzberg also proposed the existence of motivators. Motivators are factors that are opposite to the hygiene factor, which can lead to an increase in job satisfaction.

Factors that can increase job satisfaction can be allowing employees to work for interesting task, opportunities for promotion, personal growth etc. Therefore, Herzberg proposed the key areas to improve employees are job enlargement, job enrichment and job empowerment. By expanding employees' power in controlling, offering more challenging tasks and delegating authority, employees can be motivated by extrinsic incentives. However, to evaluate the theory, it cannot be applied in low skilled and low paid job since job enrichment and enlargement are featured in these jobs. Also, adding workload and complex tasks might not be seen as a motivation to certain employees.

3. Innovative Behaviors

Employees' innovative behavior is initiated by contributing their own opinions into the organization practice [2]. In other words innovative behavior of employees reflects their psychological sensing of the work. Innovative behavior is a learning process, and during this process, extrinsic and intrinsic motivation act as intermediators that enhance employee's recognition of the work, and promote them to generate their best efforts. These intrinsic and extrinsic motivation can be met by referring to the motivation theories that is mentioned in above. Other than intrinsic and extrinsic, there are also other factors that can influence employee's innovative behavior. According to Scott and Bruce's study, Leader-member exchange will have a positive impact on employee innovative behavior [3].

4. Relationship Between Motivation and Innovation

4.1. Intrinsic and Extrinsic Motivation

In Journal of Management Science, it's likely that people that motivated by intrinsic motivation when they perceive their work to be an autonomous task. Therefore, to link with the motivation theories, Taylors' scientist management cannot explain employees intrinsic motivation, since financial reward such as money is an external factor that motivate employees, which demonstrate an example for extrinsic motivation.

In Maslow hierarchy of needs, the needs on the top layers such as self-actualization, Esteem, love and belongings. These needs demonstrate employees' intention in satisfying self-potential, obtaining recognition from co-worker or leaders, and establishing friendship. These needs are an indirect form of motivation. The desire to gain these needs can motivate employees as an extrinsic motivator. For instance, in this case, employees are stimulated to innovate to be recognized and realize their self-worth. To gain love and belonging, employees will be eager for teamwork. In team-based projects, employees are more likely to develop innovative thinking and behavior during group discussions or

opinion-building[4]. This shows how intrinsic motivators play a role in employees innovative behavior development. However, this autonomous work motivation is based on innovative environments. Only when leaders create an environment with a strong innovative atmosphere in the company can the above motivator be effective, making intrinsic motivation an intermediary that stimulates innovation [2]. Therefore, the application of intrinsic motivation is one of key factors that can enhance innovate behavior. Only when employees are immersed in the work they want to do and experience the happiness of work, they are more likely to pay more value for the work and put forward more novel ideas.

4.2. Financial Motivation and Non-financial Motivation

Financial and non-financial motivation are terms related to intrinsic and extrinsic motivation. Financial motivation can be categorized as a term of extrinsic motivation, where employees work for the money instead of their own interest. Is unlikely that they'll enjoy the pleasure that their job provides to them. On the other hand, non-financial motivation are factors that motivate employees internally, such as the gratification of being prompted or being recognized by the managers. This motivator encourages employees to work not only for the money but also for fulfilling their personal interest in the job and maintaining their self-esteem. Offering more chances for promotion or applying for job enlargement, empowerment can be a motivator that rewards employees non financially. Innovator behaviors can occur when employees trying to show their potential ability when they are asking for a promotion [5].

4.3. Uses of Leadership Style

According to Management Science Letters, leadership as a crucial factor in fostering innovative behavior among employees [6]. Different leadership styles, including transformational, transactional, and laissez-faire, influence the extent and way innovation occurs within teams[7]. To evaluate how different leadership style can attributes to innovative behavior; firstly, transactional leadership. Transactional leadership style focused on job performance and motivated employees by rewards and penalties rather than encouraging innovation. In transactional leadership, the relationship between employees and managers are cost benefit exchange, rather than guide and follower [8]. Communication and work at this level of interest will not promote innovation.

Therefore, the hypothesis is stated that transactional leadership negatively impacts employees' innovative work behavior. In contrast to transactional leadership, the Laissez-Faire leadership style is characterized by the lack of direction from the manager. This type of leadership refers to the idea that managers put in their minimal involvement and interaction with employees. This hand-off leadership style provides employees with the maximum opportunity to develop and create ideas to solve problems. This type of leadership style might not be easy to monitor employee's productivity, but it does offers them with the freedom to do what they want and think about more possibilities. At the same time, it is also because of the lack of leadership guidance when they encounter difficulties, so that worker develop habits that can stimulate their own problem-solving ability and provide opportunities for innovation. When employees are more satisfied with their work, the higher their recognition of the organization, the more likely they are to increase their investment in work, thus stimulating more innovative behaviors [9]. Therefore, the application of Laissez-Faire leadership can potentially enhance employees' innovative intentions.

5. Barriers and Difficulties

According to Jinnan Wu, the involvement of technology in the workplace has a negative impact on individual innovation efficiency. Innovative behavior can be define as the behavior that employees

are actively generating thoughts and idea [10]. For instance, AI systems can make decisions for human base on imputed data and patterns. By applying AI under decision making circumstances, employees' opportunities in exploring new methods during the solving of problems might be limited. Other than that, AI can also be used in tasks that involves the generation of creative. If employees become fully dependent on AI during that part of the work, this own creative thinking and problem solving will be diminished. From, "Human resource management journal", it also points out that AI changes the essence of jobs and professions. When AI is involved in the professions that requires high level of creativity, then AI can shift the role of work because it simplifies the job content. Therefore, employees' think it's unnecessary to make innovative contribution which leads to a decrease in innovative behavior.

6. Conclusion

By summarizing the articles about employee motivation and innovation ability from different aspects, it can be concluded that employee motivation is closely related to innovative behavior. The most fundamental way to improve employees' innovative behavior is to improve their work motivation first. In the process of stimulating employees' motivation, there are many kinds of motivations that need to be considered, and each of them has different effects on stimulating innovative behaviors. Motivation encourages them to create creative behavior, because they are more willing to generate innovative ideas in their favorite job's development. Ways to stimulate Intrinsic motivation include adding to the work. non- financial rewards, such as job enlargement, empowerment opportunities. In addition, changing the adjustment of leadership style can also increase the motivation of employees and improve the generation of innovation behavior. If the company can promote a freer leadership style, such as Laissez-Faire leadership style, employees can gain more freedom in decision-making. Therefore, they can come up with novel ideas and solutions independently. Then there are factors that may get in the way at work, such as the use of AI. Employees' reliance on AI leads to less innovative behavior. At the same time, if AI is involved in work that requires a lot of innovation, the nature of the work will change because AI makes it easier. To sum up, the premise of improving the innovative behavior of employees is to improve their motivation and consider the restrictions on the use of AI.

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The Impact of the Russia-Ukraine Conflict on Global Economic Stability and Political Security

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Abstract: The conflict between Russia and Ukraine has emerged as a significant geopolitical tension, with far-reaching implications for global stability and security. This paper intends to study the impact of the war on the world's and regional economic development and political stability, and achieve some findings that may trigger further policy considerations in mitigating challenges and issues imposed by the war. Through literature reviews and comparison analysis, the findings reveal economic, political, and security consequences of the conflict. The disruption of trade flows, economic sanctions, and uncertainty have impacted both Russia and Ukraine, as well as the wider region and the world. Energy security concerns and shifts in military alliances have added to the complexity of the conflict. The expansion of NATO and increased rivalries between Russia and Western countries have further heightened tensions. Based on the findings, the paper concludes that the Russia-Ukraine conflict poses a significant threat to global economic stability and political security. It emphasizes the need for a multilateral approach to address the conflict and promote peace and stability in the region. Ceasefire agreements, humanitarian assistance, and reconstruction efforts are crucial steps towards long-term peace and development. The paper highlights the importance of prioritizing diplomatic solutions over short-term gains from the conflict. In summary, this paper intends to explore the implications of the Russia-Ukraine conflict on global stability and security, with findings that underscore the need for international cooperation and concerted efforts to mitigate the consequences of the conflict and foster a peaceful resolution.

Keywords: Russia-Ukraine War, geo-political landscape, macro-economic challenges

1. Introduction

The Ukraine war that erupted in 2022 with the invasion of Russia has its roots in a complex historical context and a series of events that unfolded over time. Scholars and experts have extensively studied the factors leading up to the conflict, providing insights into its causes and potential consequences.

The outbreak of the Ukraine war has a deep-rooted causes traced back to the dissolution of the Soviet Union in 1991. Ukraine, a former Soviet Republic, gained independence in 1991 and then faced with challenges in establishing its identity, managing its relationship with Russia, and navigating its geopolitical position. The historical ties between Ukraine and Russia, including shared cultural, economic, and political aspects, have shaped the dynamics between the two countries. In

2014, Ukraine experienced the "Euro-Maidan protests" or the "Ukraine crisis." The then-president, Yanukovich, refused to sign a cooperation agreement with the European Union and instead leaned towards Russia. This decision sparked massive protests and political turmoil, eventually leading to Yanukovich's ousting. Subsequently, Russia annexed Crimea following a controversial referendum, sparked tensions between Ukraine and Russia. The subsequent support of Russia to separatists in regions of East Ukraine, like Donetsk and Luhansk, further escalated the conflict. As a multi-ethnic country, Ukraine is characterized with eastern regions predominantly inhabited by Russians who maintain close ties with Russia and desire good relations with their neighbor, whereas, the western regions are primarily composed of Ukrainians who lean towards closer ties with Western Europe, aspiring for Ukraine's integration into the European Union and NATO. And to Russia, the last thing it would like to see is Ukraine joins NATO, as that means NATO troops could enter directly into Russia via Ukraine which is assumed as a biggest threat ever.

Economically speaking, the strategic importance of Ukraine's resources, particularly its energy sector also composed another factor that triggered the war. Ukraine stands as an important transit path for Russian natural gas exports to Europe, and in the meantime, it has its own significant reserves of natural gas. Control over Ukraine would provide Russia with greater leverage in the European energy market and potentially allow it to manipulate gas prices and supplies. Additionally, Ukraine's fertile agricultural land and its position as a major exporter of grains and other agricultural products make it an attractive target for Russia, which seeks to secure food security and control over key agricultural markets. Furthermore, the conflict has also been fueled by economic disparities between the two countries. Ukraine has been striving to align itself with the European Union and pursue economic integration, which has been perceived as a threat by Russia. The prospect of Ukraine's economic growth and potential EU membership has challenged Russia's influence in the region and its economic dominance. These economic factors, combined with political and historical tensions, have contributed to the escalation of the conflict between Russia and Ukraine in 2022.

In responses of the war, major western countries including US and European Union and many European countries has imposed several rounds of various political, economic and financial sanctions against Russia, targeting at key sectors of Russian economy, including finance, energy, aviation, defense and technology. The EU sanctions include restrictions on access to capital markets, bans on arms exports, and asset freezes on individuals and entities involved in the conflict. The US sanctions include similar measures, such as asset freezes and visa bans on Russian officials, as well as restrictions on trade and investment in specific sectors. Other countries, including Canada, Australia, and Japan, have also implemented sanctions against Russia in response to its actions in Ukraine.

2. Economic Impact of the War: Spillover Effect of Macroeconomic

The history of mankind has more than once manifested that military conflicts and wars have always incurred remarkable impact on the local, regional and global economic stability and growth, ranging from trade, economic, investment and financial setbacks, to significant deterioration in supply and cost of production and labor resources. Normally speaking, such consequences could be suffered not only by the involved parties of such conflicts, but also by their trading partners and neighboring countries, and even beyond due to unavoidable spillovers.

After the breakout of the wars, over 40 countries, including the US, UK, EU, and allies, have imposed over 40 severe economic and financial sanctions against Russia, including freezing the assets of Russia's central bank held abroad, restricting its ability to access its overseas reserves; removing major Russian banks from the SWIFT international payment system, crippling their ability to operate globally; banning exports of key technologies like semiconductors, computers, lasers, and telecoms equipment to Russia; imposing export controls on oil refining equipment and other energy sector items; sanctioning hundreds of Russian individuals, including oligarchs, officials, and Putin himself

etc.. Additionally, over 1,000 major companies from various sectors have voluntarily ceased or limited their operations in Russia in response to the war. This corporate exodus has severely disrupted Russia's economy and access to global markets and supply chains [1].

2.1. Shifts in Demand and Supply of Major Commodities

The ongoing conflict between Russia and Ukraine has put significant pressure on global economic growth. Due to the confrontation between the two sides and the implementation of sanctions, global trade has been severely impacted. Many companies' supply chains have been forced to interrupt, leading to a decline in production efficiency and increased costs. At the same time, the surge in commodity prices, particularly food and energy prices, has further exacerbated inflationary pressures, resulting in a noticeable slowdown in global economic growth.

2.1.1. Energy Sector

The embargo on Russian oil exports generated direct impact on the supply side of global oil production, and as a natural consequence, the oil prices of the global market has been immediately driven up. European countries felt the suffer right away, as their oil reliance on Russian supply was quite high. They have to engage in trade with supplementary suppliers, and more importantly, they have to invest heavily to decrease their reliance on Russian oil supplies by diversifying their sourcing, and their energy consumption structure [2].

However, while sourcing of oil can be shifted relatively swiftly, trading of gas is relevantly sticky to infrastructure readiness, thus hampered the capacity for immediate replacement and rechanneling. Europe's dependency on Russian gas imports was quite substantial, and the interruption of such import market, may trigger 40% loss of its gas supplies. Of course, Russia was due for more loss in its export of energy, as EU only took around 8.4% of its total gas export. Countries like China and others also have to suffer from such embargo with rising cost of energy, and also shortage of energy supply. Though in the long run, it may contribute to the development of renewable energies, in the short run, such immediate alter of energy supply chain has incurred greater challenges to the economic stability of the countries in the conflicts, as well as its trading partners and relevant economies.

2.1.2. Food Supply

According to statistics from United Nations, the breakout of Russia-Ukraine war and sequential sanctions and embargos resulted in rising of global hunger, which has been dropping over the past ten years. As a consequence of the on-going war, global hunger is due to exacerbate, which put the lives of 7.6 to 13.1 million people at stake, which would definitely be a serious setback to the United Nations' achievement in the areas of food adequacy, under its UN Sustainable Development Goal 2030 [3]. Being major producers of agricultural crops, the contribution of Russia and Ukraine together to the global wheat trade reached almost 30 per cent [4]. However, due to embargos and also restrictions imposed by war in international trade, the exports of food including wheat, barley, and corn among others, stuck all in Russia and Belarus. As a result, the prices of food essentials have increased very sharply. Direct victims are countries whose food and grains rely heavily on import, such as the Central Asia, Middle East, and North African. The war stripped them of the chance to meet the food requirements since most of their food's supply were from the Ukraine and Russia. The ongoing military conflict also made the international aid in food supply difficult, and minimized the volume of food aid due to hiking international prices. Food shortage and food security issues would then remerge in these regions, which might also trigger social unrest and political risks [5].

2.2. Increased Fiscal Constraints with Increased Fiscal Expenditure

In wartime, countries stuck in the war, neighboring states and other countries that have a strategic relevance with the region, naturally perceive conflicts as an immediate threat and as a result, they expand their defense expenditure. In addition, governments are always willing to borrow much more than usual or raise taxes when possible, aiming at collecting more revenue to support the war effort or more expenditure for effective defense policy, so as to mitigate the perceived sense of risk on security. In both cases, the national debt would grow considerably, due to overspending in military defensive measures, and overborrowing in raising funds. Throughout the postwar decades, debt will continue to rise to raise funds for rehabilitation and reconstruction. Therefore, it is fair to say that geopolitical conflict especially warfare drives high the expenditure of countries in the defense sector, by ways of introducing more debt, or via create or increase tax revenues to fund spending.

In response to the Russia-Ukraine war, several countries, particularly in Europe, have increased their defense expenditure. Germany announced plans to spend over €100 billion on defense in 2022, a substantial increase from previous years [6]. For countries that are geographically closer to Russia and Ukraine, military expenditure expands very quickly without any surprise. Central and Western European countries announced their decisions to substantially increase their spending on military actions, in response to the increasing concerns over national security. For instance, Poland increased its defense budget by around 8% in 2022 [6]. The United States, being the top military aid provider to Ukraine, responsible for nearly two-thirds of global military aid to Ukraine in 2022, has also seen an increase in defense expenditure. Japan increased its defense budget by 20% in 2022 amid the changing security environment. India and China also witnessed rises in their military spending in 2022, though not directly attributed to the Ukraine war [7]. Overall countries in Europe, particularly those closest to the conflict zone, as well as major powers like the US, have significantly ramped up their defense budgets and expenditure in face of increasing security threat created by the Russia-Ukraine war.

As for the Russia-Ukraine conflict, for the EU countries, in addition to increased spending in defense, Governments are spending more and more fiscal revenues on shifting their heavy reliance on energies imported from Russia [2]. Moreover, Due to interruption of trade and supply chain of major commodities by sanctions imposed after the war, many countries are forced to reassess their fiscal priorities and practices, with significant economic implications in the years ahead as they navigate the fallout. In light of energy and food supply disruptions and price hike, many countries started to introduce subsidies, tax cuts, and price caps on energy and food to cushion the impact of rising prices [8].

Such expansionary fiscal policies risk fueling inflationary pressures and increasing debt burdens in the long run. This has strained government budgets and raised fiscal deficits, potentially crowding out other spending priorities.

2.3. Financial Market Disturbance

With the breakout of the war, financial markets of neighboring nations and regions like Europe has witness sharply rising market sentiment of volatility and uncertainty, especially in lieu of spillover effects of war against trade, commodity supplies and overall economic stability. In the countries of close proximity to the war zone, including Poland, Hungary and Romania, the impact on stock markets has been quite negative. Geopolitical risks and uncertainties dampened market prospect and investors' confidence, and restricted capital flows, further affecting global economic stability [9].

Globally speaking, the war has pumped a surge in energy and food prices in the global market, which created ripple effects on inflation rates. The demand and therefore the price of safe-haven assets like gold have been increasing as investors seek for means and ways to mitigate investment

risks and market uncertainties caused by the conflict. As always, people believe that Gold offers better diversification during such volatile period.

In brief, the Russia-Ukraine war has significantly impacted regional and international financial markets through increased volatility, disruptions in energy and commodity markets, and has forced central banks to recalibrate their monetary policies to address inflationary pressures and economic uncertainties.

3. Impact of the War on Geo-politics and Global Security

The war directly intensified not only tensions between the two countries in the war, but also other major relations in the world, given the significant geopolitical importance of Russia and the region, as well as the strategic and economic weights of both sides of the war. As a result, the war initiated some major shifts in international relations especially major bilateral relations of the world, and therefore readjusted the landscape of political alliances and power rivalries, which in turn cast new challenges on the global stability and regional security.

One week after the outbreak of the war in Ukraine, United Nations General Assembly endorsed with a good majority a resolution condemning Russia's aggression. However, there were 35 no votes, including South Africa, Pakistan, and India. In Asia, Governments from Singapore, South Korea, and Japan, rendered quite steadfast support to Ukraine, while Governments from China, India, and Indonesian, as top three economies in Asia, all refused to take a side. This, to a certain degree shows that three new political blocs emerged after this war reflecting a broader geopolitical polarization: those who supporting Russia, those supporting Ukraine, and those of non-aligned [10].

3.1. Proximity Endangers General Security in Europe

The Ukraine war has presented significant political challenges for the EU, requiring it to balance security, economic, and geopolitical considerations in its response. Preserving EU unity and defending Ukraine's sovereignty are among the EU's key interests in navigating this crisis. Additionally, the war has exacerbated divisions within the EU. While most member states have condemned Russia's actions and supported Ukraine, countries like Hungary have taken a more ambiguous stance, creating tensions within the EU. This has made it challenging for the EU to maintain a united front in its response to the conflict [11].

In addition, the Ukraine war has compelled the EU to recalibrate its foreign policy towards Russia, focusing on strengthening security, reducing energy dependence, and maintaining unity within the bloc. The crisis has also highlighted the EU's need for greater strategic flexibility and differentiation in its policymaking to navigate complex geopolitical challenges [12].

3.2. Reinforced Presence and Influence of US in Europe and Ukarian

The Russia-Ukraine war has changed the regional security landscape and ally relationships of the United States in Europe. The U.S support during the war has strengthened its relations with Ukraine and other Eastern European countries, and its important role in Europe as provider of security. With the energy embargo imposed on Russia, the energy supply in Europe has become ever more critical. As an energy-exporting country, the United States helped alleviate this pressure by increasing its energy supplies and exports to Europe and by providing more energy options for European countries. Therefore, it is fair to say that the Russia-Ukraine war has prompted increased reliance of European countries on the U.S. both economically and politically for stability and security, in face of the threat posed by Russia [13].

In addition, the Russia-Ukraine conflict has significantly reshaped the U.S. military's presence and engagement in Europe. In the months following the Russian invasion of Ukraine in February 2023,

the U.S. has deployed additional troops, aircraft, and equipment to countries bordering Ukraine, such as Poland, Romania, and the Baltic states. This includes the deployment of an additional 20,000 U.S. troops to Europe, bringing the total U.S. force presence to over 100,000. The U.S. has also provided substantial military aid and equipment to Ukraine to support its defense against the Russian invasion. As of early 2024, the U.S. has committed over \$50 billion in security assistance to Ukraine, including advanced weapons systems, ammunition, and intelligence support [14].

The expanded military presence of US in Europe induced by the war has made it obviously of European increasing reliance on US for support in regional security and economic stability. Such presence may continue to build up after the war due to persistent concerns over Russian aggression to the East European countries.

3.3. Reconfiguration of Bilateral Relations of China with US and Europe

The sanctions against Russia, especially the cut off of energy supply from Russia has had a serious impact on Chinese economy. The financial and economic sanction, especially the financial sanction on transaction of Russian currency has increased Russian's reliance on China, while China took advantage of this opportunity to push ahead international settlement of its own currency. Besides all the economic implications, the war has also fueled more dangerous tensions between China and the US [15].

Moreover, the war has also strained China's relations with Europe. China's refusal to condemn the Russian invasion and its support for Russia diplomatically has led to intense distrust and disillusionment in Europe. Regarding China-Russia relations, the war has made Russia more dependent on China, strengthening their partnership. However, China is also wary of being too closely associated with Russia and facing secondary sanctions or other consequences.

Overall, the war has significantly reshaped the geopolitical landscape, intensifying great power competition and forcing countries to reconsider economic and diplomatic ties.

3.4. International Actions

After the outbreak of the war, the international community has responded to the war in Ukraine through a range of multilateral actions aimed at condemning Russia's aggression, supporting Ukraine, and addressing the broader geopolitical and economic implications of the conflict.

The United Nations General Assembly has overwhelmingly condemned Russia's invasion of Ukraine and called for the immediate withdrawal of Russian forces. The UN Security Council has also held numerous emergency meetings to discuss the situation in Ukraine.

In response to Russia's actions, NATO has suspended all practical civilian and military cooperation with Russia since 2014. Russia has also suspended its diplomatic mission to NATO and required NATO to close its offices in Moscow. [16] Moreover, NATO countries have strengthened their political and military ties, resulting in a significant increase in their sense of presence and influence in the global geopolitical landscape. NATO's expansion to the east has made substantial progress. After decades of staying away from military alliances, Finland and neighboring Sweden have all joined NATO. While Ukraine has not formally joined NATO, it has effectively become the "vanguard" in the battle between NATO and Russia [16].

Prior to the Russia-Ukraine war, countries such as Finland, Sweden, Austria, Switzerland, and Ireland maintained a neutral stance. However, following the outbreak of the war, Finland and Sweden abandoned their neutrality and joined NATO. Austria, Switzerland, Ireland, and other countries reevaluated their neutral principles. While these countries did not directly abandon their neutral status legally, they provided assistance to Ukraine or imposed sanctions on Russia.

The International Monetary Fund and World Bank have provided financial support to Ukraine to help mitigate the economic impact of the war. They have also warned of the global economic consequences of the conflict [16].

4. Conclusion

In conclusion, the Ukraine war has significant economic and political implications for all countries being directly or indirectly involved, especially for major global.

Economically, the conflict has disrupted trade flows and foreign direct investment, leading to a decline in economic activity and business opportunities. The energy sector has been particularly affected, with disruptions in gas supplies causing increased energy prices and concerns about energy security in Europe and beyond. Currency and financial markets have experienced fluctuations, leading to fiscal revenue challenges and economic downslide. These economic impacts have not only affected the countries directly involved and surrounding, but have also had ripple effects on the global economy.

Politically, the implications of the Ukraine war go beyond the immediate region, with far-reaching consequences for global politics and the international order. The conflict has intensified geopolitical tensions between Russia and Western countries, and affected Russia's bilateral relations with every country, and also many major bilateral relations in the world, including US and Europe, US China, and China and Russia. This has resulted in shifts in regional alliances and power dynamics, with concerns about territorial integrity and potential spillover effects to neighboring countries. The conflict has created a sense of instability and uncertainty, changing the world political landscape. The expansion of NATO and the strengthening of Western influence in the region have raised concerns for Russia, leading to further tensions and rivalries.

The conflict has challenged the established norms of state behavior and raised questions about the principles of international law, and highlighted the importance of multilateral approaches and cooperation in addressing conflicts and promoting stability. A multilateral approach, focusing on ceasefire, peace agreements, and humanitarian and reconstruction assistance, is crucial to address the conflict and promote long-term peace and development.

To mitigate the economic and political implications of the Ukraine war, it is also essential for major countries and international organizations to work together to find diplomatic solutions and promote dialogue. Prioritizing long-term peace and development over short-term gains from the war is crucial for achieving stability in the region and beyond. This requires a commitment to upholding international law, respecting territorial integrity, and fostering cooperation among nations.

In conclusion, the Ukraine war has demonstrated the interconnectedness of the global political and economic landscape. Once again, this reminds the world of the importance of diplomacy, cooperation, and multilateralism in addressing conflicts and securing stability. The paper tries to do a comprehensive reviews of both economic and political impact of the war in major countries and players, with the intension to carry out a preliminary analysis on the risks and challenges brought about by the Ukraine war to the global economic development and political stability. The study finds that economic challenges are intertwined with political risks, and no country is isolated from others in the world. A war between two single countries in the current global village will have direct or rippling effect on economies and nations far away geologically from the warfield. With exacerbating economic situations, all people suffers.

By understanding the economic and political implications of the Ukraine war, hopefully the paper could provoke some thinking of policy makers of major political players in making decisions on peace-keeping and peace-breaking efforts, as the impact could be unmeasurable or unthinkable, since the world today is so inter-connected. Peaceful solution to difference shall always be more prioritized and preferred than sanctions, or military actions.

When the paper was written, US parliament has just passed a bill of offering another more than 60 billion military assistance to Ukraine. In the meantime, the persistently high interest rates of US dollars as a mean to mitigate high inflation risks has imposed additional challenges to other economies. Due to lack of reference resources, and the dynamic nature of the subject, the paper fails to bring these profound factors into the analysis. It is hoped that it can serve as a preliminary start for a more deep dive study on the subject.

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Global Supply Chain Information Sharing Platforms: Challenges, Opportunities, and Trends

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Abstract: With the deepening process of globalization, the rapid development of information technology and the diversification of logistics methods, supply chain management faces increasingly complex challenges. This study explores the future development trends, challenges and opportunities of information sharing platforms in global supply chains. In global supply chains, information sharing platforms are of great significance. It facilitates real-time data exchange and collaboration among supply chain segments and help improve supply chain transparency, flexibility and efficiency. However, global supply chain information sharing faces many challenges, including problems in information security, technical standards, cultural differences, and laws and regulations. In response to these challenges, this paper proposes future directions for developing a global supply chain information sharing platform, including digitization, automation, cross-platform cross-border collaboration, data security and privacy protection, application of new technologies, and flexibility and adaptability. This study provides useful insights and guidance for future global supply chain management by exploring the global supply chain information sharing platform.

Keywords: Information Sharing, Supply Chain, Information Sharing Platform

1. Introduction

The advent of globalization, advances in information technology and diversification of logistics methods have led to a more complex landscape for supply chain management. Traditional supply chain management faces several challenges, including information asymmetry, logistics delays and inventory backlogs. The criticality of information in the supply chain is reflected in the interaction of the material, information and capital chains, whose smooth communication and management can maximize profits. Consequently, in-depth research on global supply chain coordination has identified information sharing as a key strategy for improving supply chain efficiency and flexibility [1].

In the early days of supply chain information sharing, the focus was on large enterprises and the operation of internal systems. However, as the complexity of supply chains increased, the need for inter-enterprise coordination became apparent. A supply chain information-sharing platform has emerged to enhance communication and collaboration. The platform integrates the information systems of each participant to facilitate real-time sharing and exchange of upstream and downstream information. This enables each supply chain participant, such as producers, suppliers, and logistics companies, to obtain accurate information promptly, optimize production planning, inventory

management, logistics and transportation, and reduce costs and operational risks. The advancement of big data analysis and artificial intelligence technology has enabled the supply chain information-sharing platform to provide forecasting and decision-making support through big data analysis, further optimizing operational efficiency and cost control. Consequently, constructing a supply chain information-sharing platform represents a significant measure to address future supply chain management challenges and promote collaborative development and optimization.

2. Global Supply Chains and Information-Sharing Platforms

The term “supply chain” describes the entire process of a product, from the production of raw materials to the end user. This process involves multiple links and participants. An information-sharing platform based on current big data and information processing technologies facilitates information exchange and cooperation among participants [2].

In a global supply chain, an information-sharing platform can facilitate the sharing and analysis of real-time data between different regions, enterprises, and links in the supply chain. This enables participants to coordinate better and manage supply chain activities. The platform can also provide supply chain visualization, forecasting capability and inventory management. In other words, the information-sharing platform represents a crucial instrument for coordinating and optimizing global supply chains. Through its visualization and real-time information sharing, it enables the participants in each supply chain link to respond more effectively to market changes, reduce costs, and improve efficiency, thereby achieving supply chain optimization and collaborative development [3].

The origins of information-sharing research can be traced back to Srinivasan’s study on the role of EDI technology on suppliers’ shipping performance in a just-in-time environment [4]. Lee et al. studied information distortion in supply chains and introduced the concept of the bullwhip effect [5, 6]. The practical application of information sharing and the bullwhip effect has led to information sharing as a key area of research in the global supply chain coordination field. Information sharing is a fundamental aspect of supply chain management, providing the foundation for implementing efficient and cost-effective supply chain management strategies. The availability of global supply chain information enables enterprises to respond to market changes more agilely, thereby maintaining their competitive advantage.

Enhance supply chain visibility and transparency. The real-time sharing of information on order status, inventory level, transport progress, and other relevant data can facilitate a more comprehensive understanding of the operation of the entire supply chain. This understanding can be beneficial in addressing the challenges associated with information asymmetry and information lag in information transmission. Furthermore, enhanced visibility and transparency within the supply chain can be achieved through real-time information sharing.

The system facilitates coordination of all parties involved in the supply chain, thereby improving the efficiency of the supply chain. By sharing information, all parties in the supply chain can see the situation of other participants, thus enabling them to coordinate and cooperate more effectively. This, in turn, enhances the connection between each party, helps to adjust the production plan, inventory levels and logistics routes promptly, and enables them to respond to various changes quickly. This, in turn, improves the efficiency of the supply chain and reduces the wastage of resources and costs.

They are facilitating effective forecasting and accelerating the decision-making process. Information sharing enables decision-makers to judge market trends and demand based on real-time data, allowing enterprises to react faster to capture changes and market competition dynamics, make timely adjustments to cope with market changes and risks, and reduce risks and uncertainties.

Optimize inventory management. Information sharing can assist companies in more accurately forecasting demand and avoiding inventory backlogs or stock-outs. Furthermore, inventory planning

can be optimized to minimize inventory costs and capital usage. This reduces inventory costs, reduces inventory risk, and improves inventory turnover.

Reduce supply chain risk. By sharing information, enterprises can make more informed decisions regarding the various risks in the supply chain. This includes supplier issues, logistics delays, and market fluctuations. By doing so, enterprises can reduce risks and improve the stability and reliability of the supply chain.

Enhance partnership. Information sharing can facilitate collaboration and communication between enterprises and their suppliers, customers, and partners. This can lead to closer partnerships, enabling enterprises to collectively address market challenges and seize opportunities.

3. Challenges in Implementation of Global Supply Chain Information Sharing Platforms

The primary challenge in contemporary global supply chain management stems from the information asymmetry that arises from globalization characteristics. This results in the critical information of each link being unable to flow through the chain promptly and effectively [7]. In practice, numerous enterprises have initiated efforts to construct their information-sharing platforms, such as the SMART system developed by Walmart [8]. Nevertheless, the self-constructed information sharing platform needs to be more distant from the entire industry, including advancing global supply chain information. Therefore, the biggest difficulties in the practice of global supply chain information sharing platforms are in two aspects: the acquisition of supply chain information and data analysis, as well as the differences in culture and law.

3.1. Acquisition and Analysis of Supply Chain Information

The construction of a shared information platform on a global scale will inevitably involve the transmission and storage of data between different countries. Consequently, there is a risk that data may be subject to unauthorized access, tampering or leakage during the transmission, storage and processing stages. Furthermore, there is a possibility that data may be misused or that personal privacy and sensitive information may be infringed.

Technical standards and operational interoperability. Different regions and enterprises' differing technical standards and systems present significant challenges to the effective coordination and operation of supply chain information-sharing platforms. The incompatibility of various systems hinders information sharing, as they need help communicating and exchanging data effectively. Furthermore, the differing data formats and standards among different participants further complicate the technical integration of these systems. The establishment of data standards is essential for the construction of the platform.

Furthermore, the active promotion of the adoption of unified data standards by all parties is crucial to ensure data consistency and interoperability. Additionally, using middleware, API integration and other technologies is vital for data exchange and integration between different systems. These processes present significant challenges.

Information quality is variable. Because of the involvement of multiple links and participants, the quality and accuracy of information will be affected. Furthermore, at the data and information uploading stage, the standard and content of information uploaded by each party are also uneven. Consequently, ensuring the accuracy and reliability of information is crucial to the operation of the supply chain. However, achieving this takes work.

3.2. The Existence of Differences in Cultural Laws

The nature of their competitive relationships influences the willingness of participants in the supply chain to cooperate. These relationships significantly impact participants' willingness to share

information and upload data. Therefore, it is necessary to build mutual trust and cooperation and develop appropriate policies and mechanisms for information sharing.

Cultural and legal differences: The degree of consideration and openness of data security and the laws on data protection varies from country to country. Consequently, it is necessary to ensure legal compliance with the data-sharing process. Colleagues in GSCs involve multiple national cultures and languages. Effective communication and understanding are key factors affecting the smooth running of information sharing. Addressing these differences requires additional time and resources, which makes facilitating data sharing in GSCs even more complex.

4. Outlook for Global Supply Chain Information Sharing Platforms

The construction of a supply chain information-sharing platform is under continuous exploration, with various ideas being put forward. Some of these approaches are based on SOA theory and system guidance for constructing a sharing platform; some are based on multi-agent construction of information sharing [9].

The preceding observations can be seen in the construction of the trend, which involves the application of computers, information and, Internet of Things (IoT) technologies and other related technologies to the construction of the supply chain information-sharing platform. Based on the observations above, the future trend should be towards digitization, automation, sustainability and adaptability, advanced technology, and a cooperative model to build the sharing platform above. Platform among enterprises within the supply chain [10], some are based on NET technology design of equipment supply chain information sharing platform [11], and some are based on the Internet of Things (IoT) technology construction of a visual supply chain information sharing platform [12].

Digitalization and automation. The utilization of artificial intelligence, the Internet of Things, big data, and other technologies to facilitate real-time monitoring and management of the supply chain, the appropriate liberation of labor costs, and the capacity to make more intelligent choices.

Cross-border cooperation and the construction of an ecosystem of the supply chain. The sharing of supply chain information can facilitate cross-border cooperation. The financial system can facilitate decision-makers in extracting and judging financial market information more conveniently. The media system can facilitate market decision-makers in judging the direction of publicity and marketing. Meanwhile, with the cooperation of cross-border systems, a more open and flexible supply chain ecosystem can be built to achieve the sharing and optimal allocation of resources.

It is imperative to strengthen data security and privacy protection. As data leakage and privacy issues receive increasing attention, adopting advanced encryption and authentication technologies is inevitable to ensure data security. The utilization of big data analysis and forecasting technology, as well as the rapid processing of fundamental information and collation into a data report, has facilitated more accurate real-time decision-making support in the future. Upgrading information is necessary, as it can assist enterprises in responding to market changes and supply chain risks in a volatile market.

The application of blockchain technology will facilitate the improvement of transparency and traceability in the sharing of supply chain information, which can also result in a reduction of operating costs and an enhancement of supply chain trust. Furthermore, blockchain technology is emerging as a pivotal component of Industry 4 in the context of the evolving digital supply chain. The decentralized, verifiable, and immutable nature of blockchain technology, among other attributes, enables enhanced transparency, real-time information sharing, and supply chain coordination for enterprises. This, in turn, facilitates operational efficiency gains through anticipation and optimization [13].

To enhance flexibility and adaptability, it is necessary for the supply chain information sharing platform to be more flexible and adaptable, i.e., to be able to adjust to the ever-changing market and technological environment quickly. The supply chain strategy and structure must be capable of self-

updating, and the system must be able to provide timely feedback on its own performance to meet the varying business needs and facilitate the updating and optimization of the system.

5. Conclusion

The integration of the market is leading to an increase in the diversity of logistics requirements, with a concomitant rise in the number of problems to be solved and aspects to be optimized in the operation and practice of the platform supply chain information sharing. This necessitates further advancements in the platform supply chain information sharing direction. Considering these considerations, this study have proposed a vision for the future supply chain information sharing platform, which would be more digital and automated, capable of cross-platform cross-border collaboration and establishing a supply chain ecosystem. It would also have more comprehensive information and privacy protection policies and technologies and utilize new technologies in the development of the supply chain, with greater flexibility and adaptability. Nevertheless, constructing a more convenient supply chain information sharing platform is confronted with two significant challenges: difficulty accessing information and the necessity of comprehending and cooperating about humanities and laws.

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The Impact of Changes in China's Population Structure on Consumption Patterns

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Abstract: Consumer spending is the key engine driving economic growth in China. However, in recent years, the overall consumption pattern in China has been affected by domestic epidemics, leading to an increase in unemployment rates among residents and a decrease in consumer willingness. As a result, the annual changes in final consumption expenditure have tended to stabilize, with almost no upward trend. Consequently, numerous studies have emerged based on the current consumption situation in China, providing recommendations to promote consumption. This paper, using data from the World Bank and China's National Statistical Yearbook, conducts research on the impact of demographic changes on consumption structure and proposes relevant suggestions to boost consumption in China. Researching the development of China's population structure reveals several notable trends. These include a decrease in the working-age population accompanied by a significant aging trend, improvements in population quality due to enhanced human capital, and a noticeable trend towards urbanization and increased population mobility. Therefore, this paper provides a series of recommendations, encourages national policies and corporate innovations that promote consumption, and offers solutions to potential issues arising from changes in population structure.

Keywords: consumption structure, population structure, data analysis.

1. Introduction

Consumer spending is the primary driving force behind economic growth in China. However, in recent years, Chinese consumption has been affected by COVID-19, leading to a decrease in residents' willingness to consume. Consequently, the annual changes in final consumption expenditure have tended to stabilize, indicating that the contribution of consumption to economic growth has not significantly increased. Therefore, promoting consumption and enhancing the quality of goods and services consumed is crucial and holds research significance.

Consumption structure refers to the proportion of consumer spending on various goods and services relative to their total consumption expenditure, reflecting the types of consumption and consumer choices [1]. Categories of consumption included in China's National Statistical Yearbook primarily cover food, clothing, housing, transportation, communication, education, culture, entertainment, and healthcare. Among these, expenditures on food, clothing, and housing can be classified as basic consumption since they represent people's basic living standards. By contrast,

expenditures on transportation, communication, culture, and entertainment that enhance quality of life are categorized as higher-level consumption.

Population structure encompasses age distribution, urban-rural distribution, industrial structure, cultural levels, and other social structures [2]. In recent years, China's population composition has shown trends of increasing aging, widespread improvements in cultural levels, and continuous urbanization. These changes indirectly or directly impact China's consumption structure [3].

Based on the background provided above, this paper explores the impact of these three types of population structure changes on China's consumption structure using relevant statistical data from the National Bureau of Statistics and the World Bank. By analyzing the changing trends in population structure, the current consumption patterns among different population groups, and the underlying causes, consumption patterns for various demographic segments can be identified. Also, this analysis aims to understand how trends in population changes impact consumption choices and proposes relevant recommendations to promote consumption in China based on these trends.

2. Analysis on the Problems

2.1. The Impact of China's Age Structure Changes on Consumption

According to the Population Census Bulletin issued by the National Bureau of Statistics, the age composition of the population can be roughly divided into three stages: 0-14 years old, 15-64 years old, and 65 years old and above, representing children, adults, and seniors, respectively (children and seniors are non-working-age populations that need to be supported by the working-age population) [4].

Different age groups influence people's consumption behaviors and choices. According to the results of the seventh population census, the proportion of the population aged 0-15 years old in China is approximately 17.8%, the working-age population (15-64 years old) accounts for about 68.6%, and the population aged 65 years and above accounts for approximately 13.5%, surpassing the global aging standard (where the population aged 65 years and above accounts for 7%) [5].

The children's economy, focusing on children aged 0-15 as the main consumers, includes expenditures on children's products, toys, entertainment, education, and healthcare. Additionally, with the increasing competition in education and employment in China, parents will pay more attention to education, leading to an increase in the proportion of expenditure on urban education and training [6].

For the population aged 16-64, consumption structure varies significantly due to age and income levels. Typically, as income levels rise, consumption levels also increase. However, due to increased demand, the quantity and quality of goods purchased increase, leading to higher liabilities (such as mortgages, car loans, etc.). Furthermore, with higher incomes, people start to plan their finances, increase savings. According to World Bank data, China's savings rate was around 43.9% in 2019, rising to 46.5% in 2022, with forecasts of further growth [7].

The income sources for the elderly decrease, and as they age, their demand for conventional consumption decreases (e.g., compared to middle-aged individuals, the elderly reduce their pursuit of fashion trends and focus more on durable clothing, leading to reduced clothing expenditure). Additionally, influenced by tradition, the older generation of Chinese tends to be frugal, resulting in lower consumption demand among seniors. However, the demand for healthcare and nursing among the elderly increases with age.

In summary, different age groups influence people's consumption choices. The children's economy primarily includes expenditures on children's products, toys, and entertainment. With improved living standards and intensified competition, future major consumption categories are expected to focus on extracurricular education and training. The consumption structure of young adults varies significantly

due to age, culture, and geographical backgrounds. However, influenced by Chinese traditions, increased income may lead to higher savings rates and reduced consumption. For the elderly, conventional consumption demand will decrease, while healthcare and wellness-related demands will continue to increase.

2.2. The Impact of Changes in Education Level on Consumption

According to the Seventh National Population Census Bulletin issued by the National Bureau of Statistics, from 2010 to 2020, China's average years of education increased from 9.08 years to 9.91 years. Among the national population, there were 37,750,200 illiterate individuals (aged 15 and above). In comparison to the Sixth National Population Census in 2010, there was a reduction of 16,906,373 illiterate individuals. The illiteracy rate decreased from 4.08% to 2.67%, a decline of 1.41 percentage points. In tier-one cities like Beijing and Shanghai, the average years of education are nearly over 10 years [5].

Generally, groups with higher levels of education also tend to have higher income levels. Higher education provides a wider range of employment options and easier access to high-paying job opportunities, such as professional technical positions and management roles, which often come with higher incomes. For instance, according to the 2023 Beijing Statistical Yearbook, residents in cities with the highest levels of education have an average disposable income of 77,415 yuan, significantly higher than the national average income level of 36,883.3 yuan [3]. Higher income levels imply higher consumption levels. This is due to several reasons: firstly, higher income allows people to choose a higher quality of life, especially in categories with significant price differences such as food and clothing. Secondly, higher-income individuals not only fulfill basic needs but also seek various services or experiences such as travel and extreme sports, which come with higher expenses. Thirdly, high-income groups may be influenced by consumption habits or social circles, opting for luxury goods and participating in high-end activities to enhance status and showcase identity. For example, in Beijing, due to varying income levels, the consumption levels far exceed the national average. In 2022, the national average was 31,718 yuan, while Beijing's average consumption level was 70,592 yuan [3].

In summary, China's education level is steadily improving, which may indicate higher income levels. Higher income levels result in higher consumption levels because people's lifestyles and pursuit of services and experiences increase with income.

2.3. The Impact of Urban-rural Population Changes on Consumption

According to the National Statistical Yearbook, the proportion of rural population has been decreasing annually, while the urban population has been increasing, reflecting China's urbanization trend.

Based on data from the China National Statistical Yearbook, analyzing the impact of changes in China's population structure on consumption patterns.

There are significant differences in consumption habits between urban and rural residents. As per the China National Statistical Yearbook, rural residents generally consume fewer durable goods compared to urban residents, indicating a higher consumption level among urban residents. However, there are specific goods such as motorcycles, electric bikes, and mobile phones where rural consumption exceeds urban consumption. This difference could stem from economic or environmental factors. For instance, motorcycles and electric bikes are more affordable compared to cars. Additionally, the rural lifestyle tends to be simpler and traditional, with more rugged terrain, making motorcycles and electric bikes more practical than cars in those areas. In terms of food consumption, overall, rural residents consume more grain (i.e., raw grains) than urban residents

(164.6 kg compared to 116.2 kg) [3]. In other categories such as meat and vegetables, rural consumption is lower than urban consumption. This disparity is partly due to the needs of rural residents who engage in agricultural work and require higher carbohydrate and energy intake to sustain their daily physical exertion.

Specifically regarding meat consumption, rural residents consume more pork than urban residents, with rural pork consumption in 2022 at 28.1 kg compared to urban consumption at 26.0 kg. However, their consumption of beef and lamb is less than that of urban residents. Moreover, demand for various food items is increasing for both urban and rural residents. However, the growth in urban demand for pork is gradually decreasing (The consumption in 2020 was 19.0 kilograms, in 2021 it was 25.1 kilograms, and in 2022 it was 26.0 kilograms), while rural demand for pork is increasing (The consumption was 17.4 kilograms in 2020, 25.4 kilograms in 2021, and 28.1 kilograms in 2022) [3]. This could be due to urban residents' emphasis on health factors, leading to a higher demand for vegetables, beef, and lamb, which are rich in dietary fiber, high-quality protein, and have lower fat content. Another factor could be the affordability of pork for rural residents.

In summary, urbanization will impact China's consumption trends. There will be increased demand for durable goods, and the demand for high-priced durable goods may rise. Additionally, there will be changes in food consumption choices, with an increased demand for high-quality and high-priced food items.

3. Suggestions

3.1. Responding to the Aging Trend Recommendations

Given the increasing aging trend and the larger market for products related to the elderly, governments can invest in technology innovations that benefit the lives and development of seniors [8]. For example, Smart home technology can be leveraged to enable seniors to live healthier and more comfortable lives at home. This includes utilizing medical health monitoring devices to help seniors track health indicators, promptly identify potential illnesses, and enhance their safety. Additionally, telemedicine services can be used for remote consultations through video calls and online consultations to ensure seniors receive timely medical care.

Additionally, new service industries tailored to the needs of the elderly can be developed by businesses. This includes health management, social interaction, and healthcare services. For instance, businesses can promote health guidance and management to ensure seniors maintain a healthy lifestyle. They can also organize community activities tailored for seniors to address their psychological well-being and help them find companionship. Furthermore, businesses can offer home care services to assist seniors in their daily activities, reducing the burden and stress on their children. Moreover, businesses should heavily invest in developing products suitable for seniors, focusing on leisure, entertainment, and health, such as food and clothing, to attract senior consumers and stimulate the development of the aging market economy [8].

3.2. Addressing the Trend of Increasing Education Levels

The rise in cultural levels to some extent impacts the average income level. Therefore, China needs to continue improving people's education levels on one hand. On the other hand, it also needs to provide corresponding consumer goods in response to the income increase trend.

For the improvement in China's average cultural level, the following recommendations are proposed: focus on improving the quality of education in lower-income areas, allocate more education subsidies, especially in rural areas, to narrow the national education quality gap. Government can expand the scale of education by increasing the number of higher education institutions or developing vocational and technical education to boost employment and raise income levels [9]. For the market

of higher-income individuals, businesses and platforms can make the following changes: due to the rise in income levels, people are not satisfied with meeting basic needs only; their pursuits become more diversified. Businesses need to provide personalized services and products. For example, firms can offer customized clothing, home furnishings, and food services and products to meet customers' pursuit of personalized needs.

Businesses can also opt to create high-quality consumption experiences, such as offering refined and creative dining experiences, unique and luxurious travel experiences, and thrilling extreme sports experiences [10]. Additionally, online service platforms should provide suitable goods and services based on different consumption levels. For instance, Digital shopping platforms can display food calorie information, meeting people's demand for healthy diet.

3.3. Addressing the Urbanization Trend

As mentioned earlier, rural consumption levels are lower than urban consumption levels. Therefore, while adapting to urbanization, there is also a need to develop the rural consumption market to stimulate consumption.

Given the issues with rural environments mentioned earlier, it is recommended to first revamp rural infrastructure, such as road conditions. Improving roads not only enhances rural transportation convenience but also facilitates the connection between urban and rural areas, promoting goods circulation. Additionally, the construction of facilities like courier points, convenience stores, and large supermarkets is crucial to enhance the convenience and accessibility of goods and services for consumers [11]. By increasing sales points, the traditional self-sufficiency consumption pattern in rural areas can be changed, guiding residents to participate more in urban market consumption, online shopping, and inter-farm trade.

Infrastructure construction helps reduce the costs of product sales and promotion, expanding the sales area for online consumption [12]. For example, constructing more courier points and convenience stores can make goods more conveniently delivered to rural residents, reducing logistics costs and lowering product prices.

Moreover, rural residents often prioritize price factors when purchasing goods. Therefore, businesses should focus on developing cost-effective products to meet the needs of rural residents. The government can directly reduce the cost of goods through subsidies or invest in technological research and development to improve product quality and reduce production costs.

4. Conclusion

This paper is based on relevant statistical data from the National Bureau of Statistics and the World Bank. It explores the impact of demographic changes in age structure, urban-rural distribution, and educational levels on the evolution of consumption patterns. The conclusion is that children aged 0-15 can drive consumption in children's products, toys, entertainment, etc., and the future main consumption category should focus on extracurricular education and training. The consumption levels of young adults aged 16-64 vary significantly due to different backgrounds. With rising incomes in the future, people may purchase more durable goods, but this could also lead to an increase in savings rates. China's aging population, on the other hand, may reduce conventional consumption demands but will continue to see increasing demands in healthcare and other areas. China's educational level is steadily increasing, leading to higher income levels and, consequently, higher consumption levels. Higher-income groups seek higher quality lifestyles and service experiences.

Urban residents tend to consume high-priced durable goods, while rural residents, influenced by their living environment and consumption habits, prioritize affordable goods. Additionally, there are differences in food consumption choices between urban and rural residents; urban residents prioritize

healthy and high-quality food, while rural residents are more concerned about food prices and meeting basic needs.

This paper also proposes solutions to the above issues from the perspectives of both businesses and the government, aiming to optimize and promote consumption in China. For the aging population, the government can invest in technological innovations beneficial to the elderly's lives and development, while businesses can develop new services and products tailored to elderly needs. Regarding educational levels, the government should continue to promote educational equality and raise national educational standards. Meanwhile, businesses and sales platforms should prepare for the rising trend in China's average cultural level by offering personalized services. To promote rural consumption, improving rural infrastructure is crucial, and the government can reduce product costs through subsidies, control prices, and meet rural residents' needs.

While this paper analyzes three major demographic structures affecting consumption, there are also several issues. Firstly, the analysis is not comprehensive as it does not address other demographic categories such as gender structure and industry structure, nor does it evaluate their potential impacts. Moreover, relying solely on data from the National Bureau of Statistics for analysis may not ensure data reliability through comparison with different sources. Additionally, the correlation between argumentation and conclusions also requires further examination. Finally, the feasibility of the suggestions proposed needs to be rigorously assessed.

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Research on the Marketization Development of Traditional Chinese Culture

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Abstract: Traditional culture usually has a long history and deep root, and it represents the spiritual symbols and cultural characteristics of a country or region. As China's economy continues to develop, the status and role of traditional culture in Chinese society has attracted much attention. The marketisation of Chinese traditional culture has also become an important issue in China today. This thesis aims to explore the current situation, real cases and challenges of the development of Chinese traditional culture in the process of marketisation. The challenges of the marketisation of traditional culture are explored through case studies on the development, inheritance and integration of traditional culture with modern business models under the conditions of market economy. It is found that the popularity of traditional cultural products in the market has gradually increased and the chain of cultural industry has become increasingly complete. At the same time, people of different generations have different degrees of acceptance of traditional cultural industries, and inheritance and development are facing dramatic collisions. This study concludes that Chinese traditional culture faces both opportunities and challenges in the process of market-oriented development. Chinese people should grasp the balance between inheritance and innovation, and use the power of the new era to promote the treasures left behind by their forefathers.

Keywords: Traditional culture, marketisation, promotion, conflict.

1. Introduction

Traditional Chinese culture has a long history and is the essence of the Chinese nation's civilisation accumulated over thousands of years. Traditional culture is not only a form of expression in art, literature and music, but also encompasses all aspects of morality and ethics, values and ways of thinking. It carries the historical memory of the Chinese people and shapes the national character and spirit of the country. However, with the development of modern society, society also needs traditional culture to join the marketisation process. Traditional culture faces many challenges and opportunities in the context of marketisation.

The background and significance of the market-oriented development of traditional culture lie in injecting new vigour and development momentum into traditional culture. As a symbol of the country's soft power and cultural self-confidence, traditional culture has an important economic and social value. Through marketisation, traditional culture can be better promoted and its influence and

dissemination enhanced. At the same time, marketisation also provides new paths and opportunities for the inheritance and development of traditional culture.

Firstly, the protection and transmission of traditional cultural heritage requires financial support and technological innovation. Marketisation can provide a source of funding for the protection of traditional culture and promote the continuous development of technology. Secondly, marketisation can stimulate people's interest and enthusiasm in traditional culture. Through the power of the market, traditional culture can be productised and industrialised to make it more in line with the needs and aesthetics of modern people, thus attracting more people to participate in it. In addition, marketisation also helps the international exchange and dissemination of traditional culture. Through the means of marketisation, Chinese traditional culture can be pushed to the world stage and the international influence of Chinese culture can be enhanced.

Therefore, it is of great significance to study the development of traditional culture marketisation. The purpose of this paper is to discuss in depth the current situation, problems and prospects of the development of traditional culture marketisation. By combing and analysing relevant literature and studying case studies, this article will analyse the marketization of traditional culture from multiple perspectives. The article will focus on the impact of marketisation on traditional culture in terms of challenges, opportunities, market demand, industrial chain and policy support.

The goal of the study is to provide reference and suggestions for the development of traditional culture marketisation. Through in-depth analyses of the current situation and problems, we can find out the advantages and disadvantages of the marketisation of traditional culture, and find ways and means to solve the problems. At the same time, we can also explore how to make better use of marketisation to protect and inherit traditional culture and promote its development and innovation. Ultimately, this paper hopes that by studying the importance and objectives of the marketisation of traditional culture, it will provide useful reference and guidance for relevant departments and individuals, and promote the prosperity and inheritance of Chinese traditional culture [1][2].

2. Concepts and Characteristics of the Marketization of Traditional Culture

2.1. The Definition of Traditional Culture and Marketization

In terms of the main body of cultural creation, traditional Chinese culture includes the Chinese nation, which has accumulated over thousands of years, as well as individuals and groups who have a deep sense of identity and responsibility for the transmission of traditional Chinese culture. In terms of the content of cultural creation, traditional Chinese culture includes the essence of ancient Chinese thought, literature and art, historical traditions, values, moral norms, religious beliefs, customs and habits, and other rich connotations.

Marketisation, as a complex economic concept, has two main meanings. First, it refers to the establishment of a state-regulated market economy and the resulting formation of a unified market operating mechanism and market system. Secondly, marketisation can also be understood as a reform process to achieve the replacement of the two-track transitional system with a market economy system in the short term. In general, marketisation is to take market demand as the guide, and to achieve the full and rational allocation of resources by means of the survival of the fittest through competition, so as to achieve the goal of maximising efficiency.

Using the power of the market to disseminate and promote traditional Chinese culture can more effectively bring into play the role of cultural industries in passing on and promoting outstanding traditional Chinese culture. For example, the integration of traditional cultural elements into digital cultural industries through digital technology can both meet the needs of modern consumers and help to protect and spread traditional culture.

Chinese traditional culture is rich in profound philosophical thoughts and life wisdom, and introducing it into the market can undoubtedly provide important spiritual support for modern society. Especially for the younger generation of consumers, the values and lifestyles embedded in Chinese traditional culture can play a positive leading role.

2.2. Characteristics of the Marketisation of Traditional Culture

Excellent traditional culture is fundamental to the inheritance and development of a country and a people, and if it is lost, it is tantamount to severing the spiritual lifeline. Traditional Chinese culture was created and handed down by all Chinese nationalities, and it is compatible with contemporary culture and in harmony with modern society. Among them, "harmony" is the core value of traditional Chinese culture, which is not only of great value to the Chinese people but also has an important influence on the development of other peoples in the world. Although traditional Chinese culture is deeply rooted in China, its scope of application and value is not limited to China. The marketisation of traditional Chinese culture will allow more people to be exposed to its values.

2.3. Advantages in the Process of Promoting Traditional Culture

In order to achieve innovative development, traditional culture should not be isolated or excluded from modern culture, but should be integrated and integrated with it. Traditional culture and modern culture are not opposing poles [3]. Oriented by the marketisation of culture, we must deal with the relationship between cultural undertakings and cultural industries. Cultural undertakings are public welfare, and their fundamental task is to provide basic public cultural services for the people, popularise cultural knowledge, spread advanced culture, provide spiritual food, reflect humanistic care, and meet the basic cultural needs of the people. Prosperity of cultural undertakings requires the government to take the lead and encourage social participation. On the other hand, the cultural industry has a mission, and its fundamental task is to prosper the cultural market and satisfy the multifaceted, multilevel and diversified spiritual and cultural needs of the people.

Traditional culture needs to be established and improve the cultural industry chain. The current hot tourism culture, animation culture, e-sports culture and so on can be an important element for us to improve the cultural industry chain. [4]. This requires that in the process of developing the cultural industry, we should be oriented to the marketisation of traditional culture, focusing on the production of cultural products that can satisfy the ideological and spiritual needs of consumers, but also must always put social benefits in the first place, and correctly deal with the relationship between economic benefits and social benefits. Promoting traditional cultural industries to speed up the process of cultural marketisation is a necessary way to enhance the competitiveness of cultural industries. Through this approach, we can enhance the soft power of the cultural industry, promote its healthy, orderly, and rapid development, and achieve the best unity of artistic, ideological, entertainment, and market-oriented cultural products.

3. Challenges of the Marketisation of Traditional Culture

3.1. Conflict between Cultural Identity and Commercialisation

There is a contradiction between tradition and innovation in the marketisation process of traditional culture. Traditional culture usually has a long history and deep heritage, and it represents the spiritual symbols and cultural characteristics of a country or region. However, in the process of marketisation, traditional culture often needs to be combined with the needs and aesthetic concepts of modern society, and undergo a certain degree of innovation and change. This triggers a contradiction between tradition

and innovation, in which the inheritance of traditional culture has to be ensured on the one hand, and the market and consumer demands have to be met on the other.

With the continuous progress of science and technology, the ways of passing on and disseminating traditional culture have also undergone great changes. For example, the application of digital technology has made it possible for traditional culture to be disseminated through new media forms such as self-media and streaming media, which undoubtedly provides new opportunities for the popularisation and development of traditional culture. However, technological innovations may also bring about problems, such as over-commercialisation and erroneous dissemination, which may have a negative impact on the values and connotations of traditional culture.

In the process of marketization of traditional culture, market chaos is also a major problem. Because of the unique charm and commercial value of traditional culture, some businesses and individuals may resort to improper means of commercialisation, such as false publicity and vulgar performances. These improper means not only harm the interests of consumers, but also damage the image and dignity of traditional culture.

The contradiction between inheritance and promotion exists in the marketisation process of traditional culture: the inheritance and promotion of traditional culture is an important task in the marketisation process. However, due to the influence of commercialisation, some traditional cultural items may suffer from problems such as succession gap and loss of skills. In addition, the promotion of traditional culture requires a certain amount of social and economic support, but in a market economy, traditional culture often faces problems such as uneven distribution of resources and loss of talent, which also creates difficulties and challenges for transmission and promotion.

3.2. Balance between Market-oriented Business and Cultural Preservation

There is a significant difference between the audience of traditional culture and the audience of emerging cultural and creative industries, for example, middle-aged and elderly people like Beijing opera and health care, while young people like eye-catching creative products. Because of their different consumption preferences, many people are prone to form a solidified concept - traditional cultural industries can not attract young people, emerging cultural and creative industries can not attract middle-aged and old people.

The audience of traditional cultural industries is gradually decreasing, especially young people's interest in traditional culture is weakening, which leads to the limitation of the development of traditional cultural industries. The rapid development of emerging cultural and creative industries has attracted the attention and consumption of a large number of young people, which puts the traditional cultural industries in a disadvantageous position in the market competition. Traditional cultural industries need to innovate and develop continuously to adapt to the changes in market demand, otherwise they will face the risk of being eliminated.

3.3. Means of Protecting and Inheriting Traditional Culture While Developing the Market

Strengthening traditional cultural education, raising awareness and understanding of traditional culture, and fostering interest in and love of traditional culture among the younger generation. Combine traditional culture with modern technology to develop innovative and attractive cultural products and services to meet the needs of consumers of different ages. The government and enterprises should increase investment in and support for traditional cultural industries, and promote the transformation, upgrading, and innovative development of traditional cultural industries. Establish a perfect policy system for cultural industries and provide a favourable policy environment and market conditions for the development of traditional cultural industries. Encourage private forces

to participate in the protection and inheritance of traditional culture, and give full play to the positive role of all sectors of society to jointly promote the prosperity and development of traditional culture.

In promoting traditional culture with Chinese characteristics such as Chinese cuisine, Chinese medicine and health care, Peking Opera art, calligraphy and Chinese painting to consumers, many enterprises have tried to combine traditional cultural industries with emerging cultural and creative industries, but most of them have only adopted a single form. For example, they only focus on rampant marketing, and sell some poorly made emerging products with traditional elements included. Such traditional culture seems to be moving towards emerging culture, but in fact, it has already deviated from the original cultural ideas and social background. Some of them are plagiarized, but can not copy the essence. Some impose new concepts on traditional elements, making consumers aesthetically fatigued. These behaviors lead to consumers losing confidence in the development of traditional cultural industries. The demand for traditional Chinese cultural industry is high, but the degree of industrial clustering is low and chaos is frequent.

3.4. Impact of market-based Operations on Traditional Culture

The over-concentration of demand for cultural industries has led to the rapid development of some traditional cultural industries, while the development of other areas has lagged behind. The low degree of industrial clustering means that cultural industries have a weak ability to integrate resources, making it difficult to form scale effects and competitive advantages. This may lead to an over-reliance on market demand in some traditional cultural industries and a lack of long-term development planning and strategic layout.

4. Practices and Cases of Marketisation of Traditional Culture

4.1. Marketisation of Cultural Goods and Services

With economic development and globalisation, traditional cultural products and services are gradually being marketed to meet the needs of modern consumers [5][6]. Taking Yao Jianping's Su embroidery works as an example, she combines Su embroidery with current events and market preferences, and embroiders its representative elements and stories in her works, which not only meets the modern aesthetic demand but also brings new vitality to Su embroidery itself. This innovative way of expression attracts more people to pay attention to the culture of Su embroidery and drives the inheritance of Su embroidery culture. In addition, traditional festival activities and cultural exhibitions held around the world are also constantly seeking ways to market themselves in order to attract more tourists to participate.

4.2. Marketisation of Cultural Activities and Event Planning

In addition to the exploration of the marketisation of traditional cultural products and services, traditional festival activities and cultural exhibitions have also been innovative in their planning and organisation. For example, the sale of cultural artefacts and the development of cultural tourism are actively exploring the path of marketisation [7]. Taking the Intangible cultural heritage feast to celebrate the reunion as an example, the Sichuan Provincial Department of Culture and Tourism hosted the activity of "Enjoy Sichuan Non-Heritage for the New Year", which aimed to let tourists experience the charm of non-heritage culture while tasting food. In addition, the Xi'an Datang Nocturnal City Scenic Spot provides visitors with a consumer scene full of traditional cultural atmosphere by creating a Tang-themed Yuan universe that blends history with reality. [8]. Henan's large-scale cultural tourism projects are "innovative" expressions of Henan's traditional cultural

image through diversified creative forms, content expression and publicity channels, co-branding with Henan Province, and accelerating Henan's economic development.

5. Opportunities for the Marketisation of Traditional Culture

5.1. Development of Cultural and Creative Industries

As an emerging industry in the context of economic globalisation, cultural and creative industries are increasingly becoming strategic industries and pillar industries in countries around the world. China has been increasing its support through policy planning, project construction, financial support, exhibition and promotion, talent training and other aspects, and the cultural and creative industries have shown a new situation of vigorous development.

With the top-level design of the cultural industry and a series of supportive policies in place, ethnic regions have issued documents and formulated programmes to vigorously promote the development of cultural and creative industries. Currently, the creation of ethnic cultural and creative products has become a trend. Under this trend, a large number of cultural and creative enterprises have emerged in the market. These cultural and creative enterprises are achieving a combination of product aesthetics and practicality, as well as a coexistence of tradition and fashion. This effectively promotes the inheritance and protection of ethnic culture, as well as the innovative integration of ethnic culture [9]. A new national trend has started in China on a large scale, and many products that promote and carry traditional Chinese culture are becoming more and more popular. Wearing and using traditional cultural products have become the trend and pride of Chinese people.

China's cultural industry is an important industry with an economic form, which is an important economic foundation for China's future cultural development. Globally, in countries such as the United States and the United Kingdom, creative industries and the creative economy occupy a very important position in the national economy.

5.2. Traditional Cultural Branding

Chinese traditional culture has a long and profound history, however, traditional cultural brands that can truly bring huge economic benefits are extremely rare. The reason for this is the lack of a branding chain for China's cultural industry and the lack of the ability to transform cultural content into economic benefits. Facts show that China's excellent classical theatre, masterpieces, architecture and clothing styles have been adapted by some foreign enterprises and have made great profits, but few Chinese enterprises have followed suit, and China lacks a traditional cultural product brand with great influence and popularity.

6. Conclusion

After an in-depth study of the development of the marketisation of traditional culture in China, we can see its current situation and the challenges it faces. The traditional culture market has flourished in recent years, showing a trend of diversification and plurality. On the one hand, traditional culture has been disseminated and promoted through various forms, such as theatre, music and other art forms. On the other hand, traditional culture has also been combined with modern technology, and a series of innovative products and services have emerged. In addition, the market value of traditional culture is gradually being valued, and the positive impact brought about by traditional culture is being discovered.

Looking ahead at the future trends in the development of the marketisation of traditional culture, the following directions of development can be discerned. Firstly, traditional culture will pay more attention to innovation and integration. Traditional culture needs to keep pace with the times and

attract the attention of young people by combining with modern elements. Secondly, the marketisation of traditional culture will become more international. With the acceleration of globalisation, Chinese traditional culture will have more opportunities to go out of the country and communicate and interact with cultures around the world. Finally, the marketisation of traditional culture will face stricter regulation and protection. The government will need to formulate relevant policies to regulate the market order and prevent the erroneous transmission and dissemination of traditional culture.

The following recommendations can be made for policymakers and practitioners. First, the government should increase its support for the marketisation of traditional culture by providing more policy and financial support. Secondly, practitioners should focus on product quality and innovation to improve the market competitiveness of traditional culture and create China's own big cultural brands. At the same time, it is also crucial to strengthen the training of talents and cultivate more professionals with traditional cultural literacy and market operation ability. Finally, the government and practitioners should strengthen cooperation to jointly promote the development of traditional culture marketisation.

In summary, the development of the marketisation of traditional Chinese culture has achieved remarkable results after years of effort. However, there are still some problems and challenges. In future development continue to adhere to the principle of giving equal importance to innovation and protection, promote benign interaction between traditional culture and modern society, and make greater contributions to the inheritance and development of traditional Chinese culture.

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Synergizing Enterprise Digital Governance and Green Development: Opportunities and Challenges

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Abstract: With the in-depth development of global informatization and industrialization, the collaborative development of enterprise digital governance and green has become an important issue faced by enterprises today. Digital governance can improve the operational efficiency of enterprises, while green collaborative development can help enterprises achieve sustainable development. The two complement each other and jointly promote the long-term development of enterprises. This paper will analyze the current situation, challenges, and development trends of the collaborative development of enterprise digital governance and green and present some insights and thoughts. Only by strengthening the mutual promotion of digital governance and green collaborative development can the sustainable development of enterprises be achieved. In the future, with the in-depth development of informatization and industrialization, this topic will be more important. This study hope that more enterprises and research institutions will pay attention to this issue, jointly promote the progress of digital governance and green coordinated development and contribute to green and high-quality economic and social development.

Keywords: Enterprise Digitization, Greening, Collaborative Development

1. Introduction

With the rapid development of science and technology, digital transformation has become an important way for enterprises to continue to develop. Enterprise digital transformation not only represents the upgrade of technology but also the innovation of enterprise operation mode and the change of thinking mode. Its far-reaching significance is reflected in the following aspects.

Digital governance can greatly improve the operational efficiency of enterprises. Traditional operating models are often limited by time and space. At the same time, digital transformation can realize real-time data collection, analysis and processing by introducing advanced information systems to optimize production processes, reduce resource waste, and quickly respond to market changes. This not only reduces enterprises' operating costs but also improves enterprises' market competitiveness [1].

Digital governance helps enterprises achieve precision marketing. Through the mining and analysis of a large amount of data, enterprises can more accurately understand the needs and preferences of consumers to develop personalized marketing strategies. This data-driven marketing approach improves the success rate of marketing campaigns and enhances customer trust and loyalty to the company [2].

Digital governance can drive enterprise innovation [3, 4]. In the digital transformation process, enterprises will be exposed to many cutting-edge technologies and ideas, which provide continuous power for enterprises to innovate. By introducing new technologies and models, enterprises can develop more competitive products and services to stand out in the fierce market competition.

Digital governance also helps companies build more flexible organizational structures. Traditional corporate structures are often hierarchical and slow to make decisions, while digital transformation promotes the flattening and decentralization of corporate structures. This new organizational structure can speed decision-making, improve execution efficiency, and stimulate employees to innovate [5].

Digital governance is the key to sustainable development of enterprises [6, 7]. With increasingly tight resources and the environment, enterprises need to reduce energy consumption and emissions through digital transformation to achieve green production. At the same time, digital transformation can promote the harmonious coexistence between enterprises, society, and the environment, laying a solid foundation for the long-term development of enterprises.

To sum up, the significance of enterprise digital governance lies in upgrading technology, improving efficiency and promoting enterprises' innovative development and sustainable development. Only enterprises that actively embrace digital transformation in this digital era can be invincible in the fierce market competition.

2. The Status Quo and Challenges of Enterprise Digital Governance

Enterprise digital governance has become a hot topic in today's business field. With the rapid development of science and technology, more and more enterprises are beginning to realize the importance of digital transformation and actively seek ways to transform. However, in this process, enterprises also face many challenges.

Enterprise digital governance needs to invest a lot of capital and technical support. The research and development and application of digital technology require a large capital investment, including hardware equipment, software development, network security and other aspects of investment. At the same time, enterprises also need a professional technical team to support implementing and maintaining digital transformation. This can be a huge burden for some small and medium-sized enterprises.

Enterprise digital governance needs to face the challenges of data security and privacy protection. With the increase in digitization, business data and user information have become more important and sensitive. How to ensure data security and privacy.

Enterprise digital governance requires technical support, active participation, privacy protection, and employee cooperation. Secondly, the management system mismatch is also a problem that enterprises need to solve. Digital and green transformation requires enterprises to have the ability to coordinate and manage across departments and also requires enterprises to improve the corresponding management system. In addition, insufficient policy support and low market acceptance are also challenges that enterprises need to face.

As a future-oriented strategy, digital transformation is a systematic and comprehensive process. Digital technology is an important factor driving enterprise digital transformation, and data resources are the core. Enterprise digital transformation involves re-designing core business processes, adjusting organizational structure, innovating business models and other aspects [8].

3. Challenges and Opportunities of Green Coordinated Development

Green coordinated development means enterprises pay attention to environmental protection and sustainable development while pursuing economic benefits. With the improvement of environmental protection awareness, green collaborative development has become an inevitable trend of enterprise

development. However, green coordinated development also faces many challenges. First, enterprises need to invest a lot of funds and resources in research development and applying environmental protection technology, which undoubtedly increases their costs. Secondly, green collaborative development requires cooperation between enterprises and all sectors of society, and how to establish an effective cooperation mechanism has become the key. However, green synergy also brings many opportunities. First, the environmental protection industry has huge potential, and enterprises can expand the market space through green collaborative development. Secondly, green coordinated development helps enterprises establish a good social image and improve competitiveness.

4. The relationship between digital governance and green development

The synergistic development of digital governance and greening is mutually reinforcing. First, digital governance provides technical and data support for green collaborative development. Through technological means such as big data and artificial intelligence, enterprises can better understand market demand and environmental changes and formulate more scientific development strategies. Secondly, green collaborative development helps enhance enterprises' environmental awareness and sustainable development ability, thus promoting the improvement of the level of digital governance. In practice, enterprises can realize the optimal allocation of resources and the intelligent production process through digital governance and then promote the realization of green collaborative development [9].

With the rapid development of the digital economy, using digital advantages to help enterprises green transformation has become an inevitable trend under the background of dual carbon [10].

Under increasingly fierce global economic competition, digitalization and greening have become two major trends of global economic and social transformation [11]. Corporate digital governance and greening go hand in hand, and this has gradually become the consensus of today's social development. With the rapid development of science and technology, digitalization has become an important means for enterprises to enhance competitiveness, improve efficiency and achieve sustainable development. At the same time, global environmental problems are becoming increasingly serious, and greening has become a social responsibility and development direction that enterprises must undertake.

Digital governance can help enterprises achieve process optimization, rational allocation of resources, and intelligent decision-making, as well as improve their operational efficiency and innovation ability. Through digital technology, enterprises can realize the collection, analysis and utilization of data to more accurately grasp the market demand and consumer behavior and provide more accurate strategic planning and marketing strategies for enterprises. In addition, digital transformation can also help enterprises realize new business models such as telecommuting and virtualization operations, reduce enterprise costs and improve resource utilization efficiency. The synergy of digitalization and greening can better promote common prosperity within the enterprise [12].

However, digital governance is not a panacea and cannot solve every problem. While pursuing efficiency and convenience, enterprises also need to pay attention to sustainable development and environmental protection. As a sustainable development mode, green emphasizes resource conservation, environmental friendliness and ecological balance, which is an inevitable choice for enterprises to achieve long-term development.

Digital governance and greening go hand in hand, bringing double advantages to enterprises. On the one hand, digital governance can improve enterprises' production and resource utilization efficiency and provide strong support for the realization of green. On the other hand, greening can guide enterprises to pay attention to environmental protection and sustainable development in digital transformation and avoid excessive pursuit of economic interests while ignoring environmental issues.

Therefore, in digital governance, enterprises should fully consider the need for green and realize the coordination of the two. This can not only improve the competitiveness and efficiency of enterprises but also make a positive contribution to environmental protection and sustainable development. With the progress of science and technology and the development of society, digital transformation and green synergy will become an important trend and direction of enterprise development.

5. Insight on The Synergy Between Enterprise Digital Governance and Greening

With the rapid development of the global economy, enterprises are facing more and more challenges, the most prominent of which is improving efficiency while reducing energy consumption and environmental pollution. Therefore, the collaborative development of digitalization and greening has become an inevitable choice for enterprises.

The coordinated development of digitalization and greening can bring win-win economic benefits to enterprises. The application of digital technology can greatly improve enterprises' production and management efficiency and reduce operating costs. Green transformation can help enterprises reduce energy consumption and environmental pollution and reduce their environmental costs.

The coordinated development of digitalization and greening is also important for enterprises to improve their competitiveness. With the continuous improvement of global environmental awareness, more and more consumers have begun to pay attention to the environmental behavior of enterprises. Therefore, if enterprises can make breakthroughs in digitization and greening, they can gain more market share and consumer recognition and improve their competitiveness.

In the coordinated development of digitalization and greening, enterprises also need to pay attention to developing new technologies to integrate digitalization and greening. These new technologies can not only improve enterprises' production efficiency and environmental protection level but also foster a new ecology of green digital industries and help achieve the goal of carbon neutrality. For example, by using digital technologies such as big data and cloud computing, enterprises can better analyze and manage their own energy consumption and environmental pollution to formulate more scientific and reasonable environmental protection programs. At the same time, companies can also use these digital technologies to promote green products and services and increase consumer awareness and engagement [13].

6. Conclusion

In summary, the synergistic development of enterprise digital governance and green development is an inevitable choice for long-term enterprise development. Digital governance can improve enterprises' productivity, management efficiency, and innovation ability and provide strong support for sustainable development. In contrast, green development emphasizes resource protection, environmental friendliness and ecological balance and is an important way for enterprises to achieve long-term development. Digital governance and green development complement each other and can bring dual advantages to enterprises, enhance competitiveness, reduce costs, and gain more market share and consumer recognition.

However, this study also has some limitations. Firstly, due to space and time constraints, this study fails to provide in-depth analyses of digital governance and green development implementation processes. Second, this study is mainly based on literature review and theoretical analyses and lacks empirical data support, so the reliability of the conclusions needs to be further verified. In addition, this study only focuses on applying digital governance and green development at the enterprise level. It needs to fully consider the impact of factors such as industrial structure and social environment on digital governance and green development.

Future research can combine ecosystem theory and complexity science methods to study the dynamic evolution process and complexity mechanism of digital governance and green development and explore the intrinsic connection and interaction mechanism of digital governance and green development. Future research could also analyze the policy measures and implementation effects of digital governance and green development in different countries and regions through horizontal comparisons and longitudinal tracking studies to provide references and lessons for digital governance and green development on a global scale.

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Analysis of the Sustainable Role of Higher Education in the Economy

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Abstract: Higher education injects impetus into the sustainable development of the economy by improving the structural and functional order of the education system. From the perspective of economics, the higher salary level of higher education graduates not only indicates the improvement of personal value, but also directly reflects the added value of education. The purpose of this paper is to explore the current state of higher education development in Asian countries and to provide an in-depth analysis of how it can promote economic growth through three main pathways. The value-added evaluation mechanism of higher education encompasses the entire educational process, and its core function is to diagnose, improve and monitor the quality of education to ensure that the ultimate goal of education is to achieve quality, equity and sustainable development. Therefore, the government should expand and deepen the scope and depth of the implementation of the higher education revitalization plan in an orderly manner, continuously improve the compatibility of the plan with the current situation of local development, and continuously improve the support system for the higher education revitalization plan to promote economic growth. This will help optimize the allocation of higher education resources, narrow the economic development gap, and achieve shared prosperity.

Keywords: Higher education, Economy, Sustainable development, Value-added evaluation

1. Introduction

The evolution of higher education in Asia, though initially delayed in the global democratization process, has seen remarkable growth, outpacing the global trend. From 1970 to 2020, Asia's tertiary gross enrolment ratio increased over sevenfold, reaching 42.12 percent, significantly exceeding the global increase. This upsurge establishes Asia as a pivotal force of global higher education development on a global scale throughout the 21st century. Additionally, the proportion of Asian countries in the popularization stage is rising globally, reflecting transformative shifts in higher education paradigms [1]. As universal higher education becomes a reality, the interplay between higher education, economy, and society in Asia undergoes profound changes, influenced by various external factors, shaping new developmental trends.

Analyzing the interconnection between higher education and its role in driving the digital transformation of businesses, and exploring the foundational mechanisms that support this relationship, contributes significantly to the theoretical understanding of how higher education can

empower economic and social advancement. This analysis offers crucial perspectives for university executives and regional authorities, which are instrumental in shaping strategic policies. These policies are designed to optimize the societal contributions of universities and to catalyze economic modernization efforts. Higher education is instrumental in propelling the digital evolution of businesses, a function of the synergistic impact of resource pooling, innovation in digital technology, and effective risk management practices. The aggregation of resources strengthens the regional support systems essential for facilitating corporate digital initiatives, while the innovation in digital technology boosts companies' R&D investments, thus enhancing their capacity for digital innovation. Concurrently, the mitigation of risks provides solutions and digital instruments to streamline corporate digital operations and to reduce associated uncertainties.

2. The Overall Development of Higher Education

Martin Trow's theoretical framework describes in detail the three stages of the development of higher education: elite education, universalization, and universalization. Asia's leading countries have made significant contributions to the global adoption of higher education. In Asia, there are 48 countries. Martin Trow's theory of the popularization of higher education delineates the developmental stages of higher education within nations. These stages encompass the elite stage (enrollment rate below 15%), the popularization stage (gross enrollment rate between 15% and 50%), and the universal stage (enrollment rate exceeding 50%). Furthermore, the popularization stage is subdivided into early (enrollment rate of 50% to 60%), middle (enrollment rate of 60% to 80%), and later stages (enrollment rate surpassing 80%). Collectively, prominent Asian countries have played pivotal roles in the global progression towards universal access to higher education (table 1).

Table 1: Higher education enrolment in Asian countries [2]

Stage of development		Country and its gross enrollment rate
Eliacy phase (6)		Lao Qi (13.48), Shu Po Sai (14.74), Afghanistan (10.56). Pakistan (12.22), Nepal (13.46), Yemen (10.15)
Popular Stage (26)		East Timor-Leste (17.75), Indonesia (18.82), Vietnam (28.64), Brunei (31.99), Philippines (35.48), Indonesia (36.31), Malaysia (43.06), Thailand (49.29), North Korea Fresh (26.83), Bhutan (1645), Sri Lanka (2161), Bangladesh (22.83), India Skin (29.44). Maldives (34.12), Iraq Control Group (16.16), Qatar (20.79), Lebanon Baron (26,26), Jordan (33,56), Azerbaijan (35.25), Syria (43,05), and Pakistanstan (43.1), Oman (45.48), Turkmenistan (15.61), Uzbekistan (15.92), Tagukstan (31.26), Kyrgyzstan (46.45)
Popularize The stage (16)	Initial (4)	China (58.42), Iran (58.22), Armenia (5082), and the United Arab Emirates (53.72)
	Medium term (8)	Japan (64.1), Mongolia (68.75), Bahrain (60.32), Israel (60.33), Kuwait (61.13), Georgia (66.69). Saudi Arabia, Rabo (70.63), Kazakhstan (70.68)

2.1. The Current State of Higher Education in Asian

Asia is poised to maintain its status as the foremost region for growth in higher education, boasting significant developmental potential. Over the next two decades, Asia is anticipated to sustain its dominance in the global higher education landscape, particularly in terms of student demographics. According to the United Nations' World Population Prospects 2022 report, Asia's population growth is half of the 1 billion increase in the global population, a growth that has pushed the total global population to 8 billion in 2022 [3]. Presently, Asia hosts the two most populous regions, with East and South-East Asia accounting for 2.3 billion individuals, constituting approximately 29% of the global populace, while Central and South Asia house 2.1 billion people, representing around 26% of the global population [4]. Indeed, Asia stands as the most densely populated region globally, encompassing approximately 59.2% of the world's populace. Forecasts suggest that by the year 2050, more than fifty percent of the global population increase will be predominantly located within eight nations, among which are India, Pakistan, and the Philippines. As such, Asia is poised to embark upon an era of Asianization, which encompasses higher education, rendering it one of the most vibrant regions with unparalleled growth prospects [5].

The development of higher education closely intertwines with economic and social advancement. Over the preceding two decades, and expectedly for the foreseeable future, Asia has garnered recognition as one of the swiftest-growing regions globally. Data released by the World Bank underscores this trend, revealing that in 2020, Asia's GDP surged to 32.7 trillion US dollars, representing 38.72% of the global total and positioning the continent at the forefront among all continents. As the global industrial chain undergoes its fifth round of adjustment, certain labor-intensive industries are migrating from China's eastern coastal areas to its central and western regions, as well as to Southeast Asia and Africa. Southeast Asia is rapidly emerging as the new "factory of the world," thereby furnishing a fresh resource base and fostering conducive conditions for the advancement of higher education in the region [2].

Demographic shifts across select Asian nations are poised to significantly impact the trajectory of higher education development. Such changes exhibit considerable disparity across regions within Asia. On one hand, certain countries confront the imminent challenge of dwindling student populations in higher education. For instance, nations like Japan and South Korea have already grappled with negative population growth, coupled with a deceleration in gross enrolment ratios following the attainment of universal tertiary education. These countries can address the issue of student scarcity by vigorously enhancing fertility rates and actively broadening the pool of non-traditional student sources [3].

Conversely, nations characterized by slower tertiary education progression confront the imperative of enhancing the quality of their populace. According to the 2022 World Population Prospects report by the United Nations, India is expected to overtake China as the country with the largest population globally by 2023, and is anticipated to reach a population size of 1.7 billion by the year 2050. However, India contends with structural deficiencies in its population composition, alongside challenges in social security and healthcare provision [5]. To optimally harness the demographic dividend, India necessitates comprehensive social security measures encompassing education and employment support.

3. The Primary Role of Higher Education in the Economy

3.1. Resource Agglomeration Effect

Higher education and regional development play crucial roles in fostering human capital, facilitating innovation, and driving the digital transformation of enterprises by providing essential resources and

cultivating talent. In reality, the digital transformation of enterprises often faces challenges such as insufficient information technology foundation, shortage of professional talents, and uncertainty of transformation, which makes it easy for enterprises to fall into the dilemma of unwillingness, inability, and dare not transform [6]. According to the theory of local development, the development of regional education contributes to the spatial agglomeration of high-quality resources such as high-quality talents and scientific research institutions [7]. Within the digital economy context, enhancing the quality of human capital is instrumental in fostering the growth and concentration of the regional information technology services sector, thereby offering foundational support for digital endeavors in the region. In addition, higher education has cultivated a large number of innovative and entrepreneurial talents, promoted the concentrated development of new ventures, enhanced competition and cooperation between enterprises, and promoted the digital transformation of enterprises [8].

The development of higher education first provides agglomeration support for digital infrastructure and digital technology services, and lays the groundwork for the digital conversion of businesses. As an important organization of knowledge innovation and technological change, colleges and universities have opened majors related to the digital field, promoted the deep integration of industry, university and research and digital technology innovation, cultivated digital talents in the new era, and promoted the rapid expansion for the regional sectors of software and information technology services [9]. At the same time, the development of the information technology service industry has provided enterprises with technical support such as big data analysis and data mining, and promoted the transformation of enterprises to automation and intelligence. The development of higher education has also given practitioners the ability to continue learning, improved the overall service quality of the regional digital technology service market, and provided high-quality services for the iterative update of cutting-edge digital technologies, thereby accelerating the process of digital transformation of enterprises [7].

Secondly, the development of university education has enhanced the activity of innovation and entrepreneurship in the region, and enhanced the competition and communication between innovation subjects within the region. Unlike the compulsory and secondary education stages, which emphasize the transfer of knowledge, higher education aims to develop students' innovative thinking and ability to innovate [10]. As the advancement of higher education's high-quality development progresses, the influence of innovation and entrepreneurship education on fostering entrepreneurial skills among college students and stimulating regional entrepreneurial activities has become more pronounced. This is particularly evident through the knowledge spillover from such educational initiatives and the inspirational impact of successful "star student" entrepreneurs. The increase in regional innovation and entrepreneurship activity means that a large number of new start-ups have entered the market, intensifying market competition, and incentivizing enterprises to use new digital technologies to achieve dual changes in production and management digitalization to meet the differentiated needs of customers and increase their profits and market share. Furthermore, the aggregation of enterprises facilitates not only the mobility of talent and the transfer of knowledge but also enhances inter-industry collaboration and communication among businesses. This aggregation accelerates the spread of digital technology insights and capitalizes on the technological spillover effects stemming from digital transformation. Consequently, it bolsters the peer influence in the digital transformation of enterprises and encourages local businesses to adopt digital transformation initiatives [11].

3.2. The Effect of Digital Technology Innovation

Digital technology innovation capability is the key technical foundation for enterprise digital transformation. As one of the important sources of technological progress and innovation, higher education encourages enterprises to actively participate in digital technology innovation activities and

promote their digital transformation through knowledge spillovers. The advancement of higher education has been instrumental in elevating the caliber of human capital within regions, thereby creating opportunities for businesses to secure a substantial pool of digital professionals. This, in turn, has resulted in a swift aggregation of skilled individuals with expertise in digital technology and practical experience within corporate settings [8]. Highly educated human capital usually has stronger technological innovation and learning capabilities, which helps to stimulate enterprises to increase investment in digital technology innovation and research and development. At the same time, the introduction of digital talents can provide enterprises with digital transformation path planning, break the deadlock of "will not turn", and encourage enterprises to actively carry out digital practices [7]. Conversely, the progress in higher education has bolstered the capacity of businesses for innovation in digital technology. Universities, serving as pivotal catalysts for the evolution and advancement of state-of-the-art digital technology, have enhanced their research and social service capabilities. This enhancement has broadened the resource horizons available to enterprises, thus optimizing their potential for transformation [9]. Through the construction of digital disciplines, colleges and universities provide enterprises with employees and contractors with digital capabilities, improve the innovation ability and application level of digital technology of enterprises, and provide intellectual capital and digital technology guidance for enterprises through diversified cooperation methods such as school-enterprise cooperation and industry-university-research cooperation, so as to further promote the innovation of digital technology of enterprises.

3.3. Smoothing Risk Effect

Increasing the average level of education of the local workforce can accelerate the matching of companies with digital talent and the acquisition of digital technologies, thereby increasing the risk appetite of enterprises. The improvement of regional higher education level reduces the resource constraints of enterprises through the resource agglomeration effect, makes enterprises more willing to take the initiative to carry out digital transformation in a relatively relaxed external environment, and alleviates the resistance to digital practices with high uncertainty. At the same time, universities have improved the accuracy of risk assessment of enterprises' digital activities through think tanks and big data analysis, so that enterprises can show stronger initiative in the face of digital activities with reduced uncertainty and high returns [10]. As a typical risk-taking practice, a company's willingness to digitally transform depends on its knowledge base. Highly educated employees, often with a wealth of information technology knowledge and a broader perspective, are a key investment factor in cutting-edge technology innovation and can motivate companies to engage in transformational practices. In addition, more educated employees can provide higher quality information to the organization, reduce errors, and contribute to good internal controls, which in turn increases the organization's proactive risk-taking [12].

Research on the academic logic of talent mobility has explored the spatial distribution characteristics and dynamic trends of top talents, indicating clear local spatial stickiness in talent mobility. This leads to the formation of a "bow-shaped" pattern along the southeastern coast and the Yangtze River, with regions of advantage exhibiting greater overall stickiness, facilitating the formation of talent hubs. The scale, frequency, and duration of mobility among top talents in Chinese universities are significantly influenced by regional economic and social development, demonstrating pronounced asymmetric interactions. Effective high-quality economic development notably promotes the mobility of scientific and technological talents, whereas ineffective mobility negatively impacts regional economic development [7]. In pertinent scholarly research, a focus has been directed towards the geographical patterns, magnitude, and tendencies of talent migration. Examinations of the extent and direction of high-caliber talent's movement have underscored the presence of a "central and western regions' crisis" and "challenges in the northeast." Furthermore, the differential innovation

environment spatially explains the regional disparities in talent aggregation, necessitating varied regions to enhance their innovation environments [13]. Regarding talent distribution and mobility characteristics, while top talents from universities generally exhibit a "center-periphery" distribution, different regions demonstrate distinct talent mobility patterns.

In the long run, according to the theory of economic convergence in neoclassical economics, the free flow of factors of production promotes the convergence of economic disparities, because it equalizes factor returns [9]. A benign interaction pattern of population growth is formed between large, medium and small cities, so that the development of large cities is conducive to the per capita GDP growth of medium-sized cities through the return effect, which fully reflects the power of spatial factors and the idea of spatial equilibrium. Historically, the investigation into the equilibrium of higher education across different regions has predominantly concentrated on achieving an absolute balance in the scale of regional higher education. This approach has placed significant emphasis on the role of governmental administrative interventions to facilitate an equitable distribution of higher education resources. However, according to the perspective of spatial agglomeration and spillover, the spatial agglomeration of top talents in universities in the region will promote the continuous narrowing of the gap between colleges and universities through knowledge spillover, so as to promote the convergence process of regional higher education development through first differentiation and then convergence. In addition, if the goal of equilibrium is understood as the uniform distribution of higher education resources and achieved through administrative intervention, it may lead to the internal conflict between agglomeration, efficiency and equilibrium, which violates the external laws of higher education and reduces efficiency. Therefore, in order to break this "triangular paradox", it is necessary to combine spatial elements, rethink the connotation of equilibrium, change the meaning of the uniform distribution of higher education resources to the degree of per capita resource enjoyment, and realize the balanced development of regional higher education in the process of spatial agglomeration by promoting the free flow of higher education resource elements [10,13].

4. The decentralized Higher Education Model

The modern university system originated in continental Europe and then emerged in the United States [14]. The global expansion and circulation of commercial capital, human resources, cultural symbols, etc., has led to the migration of the "Western model" of higher education to different cultural contexts. Therefore, the higher education models of various countries have inevitably become "foreign products", embedded in the internal requirements stipulated by the "Western model", and formed a field structure of "center-periphery" of higher education. The discursive power generated by this field structure limits the imagination of non-Western countries about globalization and its related fields, leading countries to use Western countries' understanding of higher education as a reference for formulating specific regulations and policies. However, the internationalization practices of universities in various countries are still affected by the regulatory framework of the nation-states in which they are located, especially in the rich forms of internationalization practices in higher education in non-Western countries. This trend of polymorphism does not obviously contradict the traditional practice model centered on the West, and even shows certain complementary characteristics. In the wave of creating world-class universities, the rise of Asian universities has made a new interpretation of the meaning of the globalization of higher education [15]. As stated by Jones, E. As more countries and institutions around the world participate in the development of higher education, the concept of internationalization of higher education should be reconsidered, i.e., internationalization should no longer be seen as a Westernized, predominantly "Anglo-Saxon" paradigm in which English is the language of academic communication [11]. In the face of the spillover of changes in global political, economic and cultural conditions to China, the polymorphic

characteristics of the internationalization practice of higher education will be further expanded, and the path dependence of higher education internationalization on the West will be broken [16].

5. Suggestions

5.1. Build a Perfect Talent Training System at Different Levels

First of all, it is necessary to change the concept of educational development, establish a correct outlook on talents, build a perfect talent training model and system at different levels, and promote the professional development of various types of colleges and universities, so as to meet the diversified and multi-level higher education needs of the people under the active development of society. Subsequently, emphasis should be placed on the national education strategy, with a focus on nurturing individuals with innovative and high-tech skills. Concurrently, to meet societal demands, there should be an enhanced effort to develop talents oriented towards social application and to bolster vocational education. It is crucial to closely align the advancement of higher education with the enhancement of employment opportunities and the robust growth of the social economy, thereby maintaining a consistent and stable progression in higher education. Furthermore, delineating the criteria for personnel training is essential, necessitating thorough research into these standards to devise appropriate talent development programs.

5.2. Optimize the Regional Layout Structure to Meet the Different Needs

First of all, it is necessary to integrate and optimize the regional layout structure to meet the needs of different national and regional development level strategies, and focus on promoting the development of higher education in the central and western regions [12]. Secondly, people should refine and improve the professional structure of higher education disciplines, and while focusing on the development of basic discipline education, people should accelerate the cultivation of talents in short supply in other professional fields, promote the harmonious development of basic disciplines and other disciplines, and enhance China's independent innovation ability. In the torrent of today's times, economic development has always been the primary indicator of comparison between countries. However, economic development is not an isolated action in a single area, but a manifestation of the country's overall comprehensive national strength. The rivalry in the domain of overall national power is inherently linked to the contest within the realm of science and technology. Conversely, the contest in the scientific and technological sectors is mirrored in the competition for skilled professionals. The development of high-quality and high-quality talents is inseparable from the vigorous development of higher education [17].

5.3. Build a Normalized Mechanism for the Resources

In order to break the localism and "block" segmentation, it is necessary to build a normalized mechanism for the free flow of higher education resources. There is spatial heterogeneity in the agglomeration effect of top talents among universities, and there are different gradient patterns. Enhancing the scholarly interaction among leading professionals across various organizations and hastening the amalgamation of higher education assets across different locales can significantly augment the spatial clustering and intellectual diffusion impacts of premier talent [14]. Constructing a normalized mechanism for the free flow of higher education resource elements and breaking the original regional higher education development model of allocating resources through administrative means can overcome the structural contradiction of misallocation of resources, duplication of disciplines and imbalance of regional higher education, release huge benefits, improve space, get rid of the scale trap, and inject new impetus into the development of China's higher education [17].

Ultimately, leveraging the spatial spillover effects of higher education clustering, the advancement of regional higher education should aim to transition from a state of concentration to one of balanced distribution

6. Conclusion

In the contemporary era, China's economic and societal progress is advancing rapidly, with the global competition in comprehensive national power intensifying. Education stands as a pivotal foundation for national advancement, and its evolution is crucial for bolstering a nation's competitive edge. The Chinese educational system has experienced modernization and digitalization, capitalizing on its demographic strengths. It employs a data-driven approach to establish the largest higher education platform globally, fostering the growth of China's higher education sector through innovative strategies and elevating the caliber of talent cultivation.

First of all, the modernization and reform of China's higher education is reflected in the expansion of the scale of education and the improvement of education quality. With the rapid development of the economy, the demand for higher education in China is growing, which has prompted the Chinese higher education system to continuously expand in size to meet the society's demand for talents. At the same time, China's higher education is also constantly improving the quality of education, through the introduction of international advanced educational concepts and teaching methods, to improve the internationalization level of education, and to cultivate high-quality talents with an international perspective.

Secondly, the intelligent reform of China's higher education is reflected in the innovation and application of educational technology. With the rapid development of information technology, China's higher education actively adopts modern information technology, such as the Internet, big data, artificial intelligence, etc., to improve the efficiency and quality of education. For example, through online education platforms, students can learn anytime and anywhere, and teachers can teach and manage more effectively; Through big data analysis, people can more accurately understand students' learning and provide personalized education services for students.

Thirdly, the innovative approach within China's higher education is manifested in the transformation of educational philosophies and the advancement of pedagogical frameworks. The focus of China's higher education institutions has expanded beyond merely imparting knowledge to include a pronounced emphasis on the development of students' innovative and practical skills. By integrating innovation and entrepreneurship into the curriculum and reinforcing it with experiential learning, students are not only inspired with an entrepreneurial mindset and enhanced practical competencies but also equipped with the skills necessary to address real-world challenges effectively. At the same time, China's higher education is also exploring diversified education models, such as the combination of industry, academia and research, international education, etc., to meet the diverse needs of society for talents.

Finally, in the process of cultivating talents, China's higher education not only pays attention to the cultivation of professional skills, but also pays attention to the improvement of students' ideological and political quality. Through strengthening ideological and political education, students should be trained to have a sense of social responsibility and historical mission, so that they can become high-quality talents with both professional skills and good ideological character. In this way, the talent system of China's higher education can grasp the direction politically and provide talent guarantee for China's sustainable development.

In short, the modernization, intellectualization and innovative reform of China's higher education have not only improved the scale and quality of education, but also cultivated high-quality talents with innovative spirit and practical ability, making important contributions to China's economic development and social progress. Looking ahead, China's higher education sector is poised to further

intensify its reform initiatives, foster innovation, and enhance development, thereby offering robust support for the fulfillment of the Chinese aspiration for the great rejuvenation of the Chinese nation, known as the "Chinese Dream."

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A Financial Analysis and Valuation of Apple Inc.

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Abstract: In 2024, Apple Inc., a globally recognized technology company, faced a series of challenges in China, resulting in a poor share price performance compared to the broader market. Despite strong financial indicators elsewhere, the company's latest quarterly report, released in February, revealed disappointing results in China. While Apple achieved sales growth in all regions except Greater China, where sales fell by nearly 13% from the same period last year. The impact of these events on Apple cannot be ignored. Apple's weaker-than-expected performance in China may suggest that the company's competitiveness in this key market is being challenged. This article provides an in-depth analysis of Apple's financial performance over the past three years, comparing it to its peers to draw conclusions about the risks associated with the company's growth. Through this examination, it aims to shed light on the potential implications of Apple's struggles in the Chinese market for its overall trajectory and competitiveness.

Keywords: Apple Inc., Financial Performance, Valuation, Risk Assessment

1. Introduction

Apple is a globally recognized technology company headquartered in Cupertino, California. Founded in 1976, Apple was originally a company co-founded by Steve Jobs, Steve Wozniak and Ronald Wayne. Today, Apple Inc. has become one of the most valuable companies in the world, known for its innovative products and services.

Apple Inc. operates in the electronics, software, and Internet services industries. Its product line includes iPhone smartphones, iPad tablets, Mac computers, Apple Watch smartwatches, and a variety of accessories and services. It also owns its own operating systems, iOS and macOS, as well as a cloud storage service, iCloud. Apple is favored by consumers for its distinctive design style, high-quality products, and robust ecosystem.

Apple's market is mainly centered around the world, with a large number of loyal users especially in regions such as the United States, Europe and China. Apple's target market is primarily high-end consumers who are willing to pay higher prices for quality and brand names. Apple has attracted a large number of users and maintained its leading position in the market through continuous innovation and improvement of product performance [1].

Apple's revenue comes mainly from the iPhone and services businesses. iPhone, one of Apple's best-selling products, accounts for the majority of the company's revenue. In addition, Apple generates significant revenue from its App Store, Apple Music and other service businesses. Apple's

solid financial position and high market capitalization demonstrates its strength in the technology industry.

2. Performance Valuation

2.1. Liquidity

Table 1: Liquidity ratios of Apple and its competitors.

	Microsoft	NVIDIA	Apple
Current ratio	1.77	4.17	0.99
Quick ratio	1.75	3.67	0.94
Cash ratio	0.33	0.68	0.21

Source: Wind database

In the field of finance and treasury, liquidity is the ability of an enterprise or individual to convert its assets into cash quickly. Liquidity risk is the difficulty a business may face in servicing its short-term obligations or emergency needs [2].

The current ratios of the three companies are shown in Table 1. The current ratio is a measure of the relationship between a business's current assets and current liabilities, reflecting its ability to service its short-term debt. According to the data provided, Microsoft's current ratio is 1.77, NVIDIA's current ratio is 4.17, and Apple's current ratio is 0.99. Based on the values of the current ratios, NVIDIA has the best liquidity, followed by Microsoft, and lastly Apple. NVIDIA's current ratio is much higher than 1, indicating that it has enough liquid assets to pay off short-term debt, and Apple's current ratio is slightly below 1, which may indicate some risk in paying off its short-term debt.

The quick ratio is a stricter liquidity metric that excludes inventories, which may not be easily and quickly converted to cash. According to the data provided, Microsoft's quick ratio is 1.75, NVIDIA's is 3.67, and Apple's is 0.94. Based on the values of the quick ratios, NVIDIA is again ranked first, followed by Microsoft, and lastly Apple. NVIDIA's quick ratio indicates that even if it does not take inventory into account, it still enough currents assets to pay off its short-term debt, while Apple's quick ratio is slightly lower, which could mean that it is less able to pay off its short-term debt without the support of its inventory.

The cash ratio is the relationship between a company's cash and its current liabilities and reflects whether the company has enough cash reserves to pay off its short-term debt. Based on the data provided, Microsoft has a cash ratio of 0.33, NVIDIA has a cash ratio of 0.68, and Apple has a cash ratio of 0.21. Based on the values of the cash ratios, NVIDIA is still ranked number one, followed by Microsoft, and lastly Apple. NVIDIA's cash ratios indicate that it has relatively high cash reserves, it can more easily cope with short-term debt servicing needs, while Apple's cash ratio is the lowest, which could mean that it may need to rely on other current assets when servicing its short-term debt.

Considering the current ratio, quick ratio and cash ratio together: NVIDIA has the lowest liquidity risk, followed by Microsoft, and finally Apple. NVIDIA has a clear advantage in coping with short-term debt servicing needs, while Apple may need to pay more attention to the management of its cash reserves and liquid assets in order to minimize liquidity risk.

2.2. Solvency

Table 2: Solvency ratios of Apple and its competitors.

	Microsoft	NVIDIA	Apple
Total debt ratio	49.95%	34.61%	82.37%

Table 2: (continued).

Long term debt ratio	24.66%	18.44%	41.16%
Time interested earned	44.65	131.59	30.3296

Source: Wind database

Solvency is an assessment of a company's ability to repay its debts on time. In financial analysis, total debt ratio, long-term debt ratio and interest coverage multiple are important indicators to assess a company's solvency [3].

Total debt ratios of these three companies are shown in Table 2. Microsoft's total debt ratio is 49.95%, NVIDIA's is 34.61%, and Apple's is 82.37%. A higher total debt ratio means that a company is using more debt capital and its solvency may be affected. In this regard, NVIDIA has the lowest total debt ratio, followed by Microsoft, while Apple has the highest. Therefore, in terms of total debt ratio, NVIDIA has the strongest solvency and Apple has the weakest solvency.

The long-term debt ratio is also an important indicator for assessing a company's solvency. Microsoft's long-term debt ratio is 24.66%, NVIDIA's is 18.44%, and Apple's is 41.16%. The long-term debt ratio reflects a company's long-term debt as a proportion of its total capital. In this regard, NVIDIA has the lowest long-term debt ratio, Microsoft is next and Apple comes last. Therefore, in terms of long-term debt ratio, NVIDIA still has the strongest solvency and Apple has the weakest solvency.

Interest coverage multiple is also one of the important indicators to assess a company's solvency. Microsoft's interest coverage multiple is 44.65, NVIDIA's is 131.59, and Apple's is 30.3296. A higher interest coverage multiple means that the company has more profits available to pay interest expenses, thus reducing debt service risk. In this regard, NVIDIA has the highest interest coverage multiple, Microsoft is next and Apple comes last. Thus, in terms of interest coverage multiples, NVIDIA remains the strongest solvent and Apple the weakest.

NVIDIA is the most solvent of the three companies, with Microsoft second and Apple last. Although Apple is a company with a huge market capitalization, its high total and long-term debt ratios, as well as its relatively low interest coverage multiple, expose it to greater risk in terms of solvency. In contrast, NVIDIA excels in financial health, with its lower debt ratios and high interest coverage multiples providing it with stronger debt-servicing capabilities.

2.3. Profitability

Table 3: Profitability ratios of Apple and its competitors.

	Microsoft	NVIDIA	Apple
Profit margin	34.17%	48.85%	25.31%
Operating margin	41.76%	54.12%	29.82%
Asset turnover	58.09%	147.93%	108.65%

Source: Wind database

Profit margin, operating margin and asset turnover are important metrics used to measure a company's profitability and operational efficiency [4].

The profit margins of these three companies are shown in Table 3. According to the data provided, Microsoft's profit margin is 34.17%, NVIDIA's is 48.85%, and Apple's is 25.31%. Profit margin is the ratio of a company's net profit realized from the sale of products or services to its total revenue. From this perspective, NVIDIA has the highest profit margin, followed by Microsoft, while Apple

has the lowest. This shows that NVIDIA is the best performer in terms of realizing net profits, followed by Microsoft, while Apple is relatively weak in terms of profitability.

According to the data provided, Microsoft's operating margin is 41.76%, NVIDIA's is 54.12%, and Apple's is 29.82%. Operating margin is the ratio of operating profit realized by a company after selling products or services to total revenue. From this perspective, NVIDIA has the highest operating margin, followed by Microsoft, while Apple has the lowest operating margin. This shows that NVIDIA performed the best in terms of realizing an operating profit, followed by Microsoft, while Apple's operating profitability was relatively weak.

According to the data provided, Microsoft's Asset Turnover is 58.09%, NVIDIA is 147.93%, and Apple is 108.65%. Asset turnover ratio is the ratio of a company's sales revenue to its average total assets over a given period of time. From this perspective, NVIDIA has the highest asset turnover followed by Apple while Microsoft has the lowest asset turnover. This shows that NVIDIA performs the best in terms of efficiently utilizing its assets, followed by Apple, while Microsoft has a relatively low asset turnover.

NVIDIA is the best performer in terms of profitability and operational efficiency, followed by Microsoft, while Apple's performance is relatively weak. Specifically, NVIDIA has the highest profit margin and operating profit margin, as well as the highest asset turnover ratio, suggesting that NVIDIA is the most profitable of the three companies. Microsoft has the next best performance in terms of profit margin and operating profit margin, but has a lower asset turnover ratio, suggesting that there is some room for improvement in its asset utilization efficiency. Whereas Apple's profit margin and operating margin are both low, asset turnover, although high, is still a relatively average overall performance.

3. Valuation

On April 4, 2024, one of Apple's latest regulatory filings showed that the company's CEO Tim Cook sold 196,400 shares this week, cashing out more than \$33 million (roughly Rs. 240 million).

While Cook's reduction was in the plans, Apple has been in the negative news lately, and the company's stock price has underperformed the broader market indices by a wide margin. 2024 Apple has suffered from several negative news stories in China, which has led to the stock price under performing and underperforming the broader market. In the first quarter of this year, Apple's stock price fell 10.82%, far behind the S&P 500's 10.16% rise [5].

According to the latest quarterly report released in February, Apple's performance in China was lower than expected, despite the company's key financial indicators performing well. During the quarter, Apple's revenue in Greater China amounted to \$20.82 billion (about 150.6 billion yuan), far below analysts' expectations of \$23.5 billion (about 169.99 billion yuan). Apple said all regions except Greater China, where sales were down nearly 13 percent from a year ago, achieved sales growth. Subsequently, Apple began a price cut promotion for its main product, the iPhone series, in China [6].

The impact of this series of events on Apple cannot be ignored. First, China is one of the world's largest smartphone markets, and Apple's performance in that market directly affects the company's overall performance [7]. Apple's less-than-expected performance in China could mean that the company's competitiveness in this key market is being challenged, and that it needs to further adjust its strategy to cope with market changes [8].

Second, Apple's declining sales and price cut promotions in China may have a negative impact on the company's overall profitability. While price cut promotions can help increase the market share of a product, they can also lower the average selling price of the product, thus affecting the company's profitability [9]. Apple needs to find a suitable strategy in balancing sales volume and profitability in order to maintain a stable level of profitability [10].

4. Conclusion

The paper delves into the multifaceted landscape of business development risks, elucidating how various factors intertwine to shape and influence the financial stability of enterprises.

Externally, the macro environment of enterprise financial management emerges as a pivotal determinant of risk exposure. This environment, characterized by its complexity and dynamism, encompasses economic, legal, market, social, cultural, and resource dimensions. The intricate interplay of these factors underscores the challenges faced by enterprises, as they grapple with unforeseeable changes and adaptability constraints. While the macro environment may present opportunities, it equally poses threats, rendering financial management a delicate balancing act fraught with uncertainties. Furthermore, policy fluctuations can instigate financing risks, particularly for small and medium-sized enterprises (SMEs). Changes in economic or financial policies wield significant repercussions on SMEs' production, market dynamics, and avenues for financing, amplifying the volatility inherent in their operations. The level of interest rates and foreign exchange rates further compounds financial risks. Whether fixed or floating, interest rates wield considerable influence on debt servicing burdens, potentially exacerbating financial strain for enterprises. Similarly, enterprises engaged in foreign currency financing face exposure to exchange rate fluctuations, which can disrupt income streams and compound financial vulnerabilities. Inadequate access to bank financing channels exacerbates financing risks, constraining enterprises' capital procurement options. SMEs, in particular, grapple with tepid loan disbursement enthusiasm from banks due to systemic shortcomings and policy constraints, exacerbating their financial fragility.

Internally, systemic deficiencies contribute to heightened risk exposure. A prevailing lack of risk awareness among financial personnel engenders a complacent mindset, obscuring the inherent objectivity of financial risks. Moreover, suboptimal financial decision-making processes undermine enterprises' ability to discern and mitigate risks effectively, culminating in misguided investments and unrealized returns. Ineffective inventory and accounts receivable management mechanisms compound financial vulnerabilities. Bloated inventory levels not only incur management costs but also impede capital liquidity and expose enterprises to market price fluctuations. Likewise, lax accounts receivable practices compromise liquidity by prolonging debtor repayment cycles and exacerbating bad debt losses, underscoring the criticality of prudent credit assessment and collection strategies. Moreover, deficient internal control systems further heighten risk exposure by impeding effective fund utilization oversight. Enterprises grappling with lax internal controls face heightened vulnerability to financial mismanagement, underscoring the imperative of robust control frameworks to safeguard against malfeasance and misallocation of financial resources. Lastly, an imbalanced capital structure compounds financial risks, particularly for state-owned enterprises (SOEs) prone to excessive leverage. Overreliance on debt financing engenders heightened debt-to-capital ratios, amplifying the repercussions of liquidity shortages and imperiling debt repayment obligations. Consequently, enterprises confront heightened vulnerability to financial distress and operational disruptions.

In summary, the intricate web of external and internal factors delineates the landscape of business development risks. Enterprises must navigate these complexities with acumen, fortifying their financial management frameworks to mitigate vulnerabilities and bolster resilience in the face of an inherently volatile operating environment.

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Macro Indicators and Housing Prices in the U.S.

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Abstract: This study examines the influence of macroeconomic indicators—U.S. GDP, tax rates, population, and interest rates—on housing prices across the United States, utilizing data from 1982 to 2018 sourced from the Federal Reserve Economic Data (FRED). Employing a comprehensive analytical framework, including multiple linear regression, time series analysis, and a mixed-effects model, the research identifies GDP and tax rates as significant factors affecting housing prices. GDP positively correlates with housing prices, whereas higher tax rates have a negative impact. The study highlights the importance of accounting for regional variations through mixed-effects modeling, which captures the diverse impacts of economic indicators across different states. This approach offers nuanced understandings to the real estate market's dynamics, emphasizing the role of economic growth and fiscal policies. The findings aid policymakers in understanding the economic forces shaping housing markets and suggest further research avenues, particularly in incorporating recent global economic events like the COVID-19 pandemic.

Keywords: Macroeconomics, Real Estate, U.S, Econometrics

1. Introduction

This paper examines the effect of U.S. GDP, tax rates, population, and interest rates on housing prices in the United States. The selection of the research question is informed by two primary considerations. Firstly, housing prices serve as a crucial economic indicator, reflecting the health of the real estate market and its correlation with the overall economic condition. Variations in housing prices can indicate broader economic trends such as growth, recession, or inflation. For instance, the subprime mortgage crisis and the subsequent burst of the 2008 housing bubble precipitated a significant economic downturn, severely affecting living conditions [1]. Consequently, the profound impact of housing prices on the economy motivates this inquiry. Secondly, the issue of housing prices is intimately connected to housing affordability. As a forthcoming graduate entering the workforce, the reality of housing costs and affordability is increasingly pertinent. Additionally, for many individuals and families, housing constitutes a substantial portion of their expenditures. Analysis of housing prices is essential, enabling more informed decisions regarding living arrangements, including whether to buy or rent [2-6].

2. Previous Research

The Bank for International Settlements' research paper, "Interest rates and house prices in the United States and around the world", suggests that there's a significant relationship between interest rates

and housing prices in the U.S., with short-term interest rates playing a notable role in influencing house prices. The impact of these rates on housing prices unfolds gradually over several years, reflecting substantial inertia in the housing market. This means that changes in interest rates do not immediately translate into significant shifts in housing prices. Specifically, the study estimates that a 1% decline in U.S. short-term interest rates causes house prices to increase by 5% after three years. Although the effect is more modest than some theoretical models suggest, it still represents a considerable impact. Additionally, it's crucial to note that U.S. interest rates also have spillover effects on global housing markets, highlighting the interconnected nature of financial markets. These findings underscore the crucial role of monetary policy, particularly the management and regulation of short-term interest rates, in influencing housing prices in the U.S., and suggest that policymakers need to consider the delayed effects of interest rate adjustments when planning monetary interventions [7].

Investopedia's research paper, "4 Key Factors That Drive the Real Estate Market", illustrates that real estate is a major component of wealth in the U.S., where the homeownership rate stood at 66% in early 2023. The market's attractiveness is affected by four key factors: demographics, interest rates, the economy, and government policies. Demographic shifts, like the aging of baby boomers, significantly shape real estate trends and demand for different types of properties. Interest rates directly affect real estate affordability and market demand; lower rates decrease mortgage costs and boost demand, driving prices up, while higher rates do the opposite. The overall economic health, indicated by GDP, employment data, and other economic indicators, also impacts the real estate market, with different property types affected differently by economic cycles. Lastly, government policies such as tax incentives can temporarily increase demand. For instance, the U.S. government's first-time homebuyer's tax credit in 2009 significantly spurred home sales, illustrating the impact of policy on real estate demand. Understanding these factors can help investors make informed decisions in the real estate market [8].

3. Description of Dataset

The dataset used in this research was sourced from the Federal Reserve Economic Data (FRED), an extensive repository maintained by the Federal Reserve Bank of St. Louis. This database provides a comprehensive collection of economic data gathered from multiple sources.

The macroeconomic variables compiled for this study include the average sales price of houses sold (the dependent variable), U.S. GDP, tax rates at both the higher and lower bounds, population, and the 10-year real interest rate (all independent variables). The decision to collect both upper and lower tax rate bounds was driven by the hypothesis that individuals with higher incomes may exhibit different sensitivities to changes in housing prices compared to those with lower incomes.

Data were collected for the period from 1982 to 2018, intentionally omitting the years affected by the COVID-19 pandemic due to its extraordinary economic impact. This timeframe allows for the analysis of housing price trends under more typical economic conditions.

To better understand the dynamics of housing price changes, a logarithmic transformation was applied to all data points. This transformation focuses on the rate of change in housing prices, emphasizing periods of rapid increase or decrease. Notably, housing prices showed a consistent upward trend from 1982 until 2018, with an exception in 2008, when prices declined sharply due to the subprime mortgage crisis.

4. Empirical Strategy and Models

The empirical strategy is designed to analyze the influence of macroeconomic factors on housing prices using statistical models and tests that ensure the results to be significant and reliable. The

primary analytical tool employed is multiple linear regression ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon$; β_0 is the intercept; β_1 to β_k are the parameter estimates; ϵ is the error term), which will enable the examination of how independent variables such as U.S. GDP, tax rates, population, and interest rates relate to the dependent variable—housing prices. This approach will facilitate the assessment of direct correlations and the magnitude of their impact.

In addition to regression analysis, the Phillips-Perron test will be utilized to check for the presence of unit roots in the time series data, ensuring that the results are not compromised by non-stationarity, which could lead to spurious regression results. The Variance Inflation Factor (VIF) test will also be operated to test multicollinearity among the independent variables, safeguarding the integrity of the regression coefficients by confirming that each variable provides unique information.

Furthermore, the analysis will incorporate a mixed-effects model ($y_{ij} = \beta_0 + \beta_1 X_{ij} + u_j + e_{ij}$; i and j represents the i -th observation in the j -th group; the dependent variable is the house price index, the independent variables are tax rates, GDP, population, and interest rates) to account for potential random effects across different states or regions within the U.S. This model is particularly useful for handling data that may exhibit group-specific variability, which is common in economic data collected across diverse geographic areas. The inclusion of mixed-effects modeling allows for more accurate inferences by acknowledging and adjusting for these variations, thereby enhancing the overall analysis [9].

Together, these methodologies form a comprehensive empirical strategy that underpins the research objective of this paper, providing a thorough investigation into the factors influencing housing prices in the United States.

5. Results

5.1. Multiple Linear Regression

A linear regression was conducted on the dependent variable, housing prices, against all the independent variables. The results, presented in Table 1, reveal that changes in GDP and tax rates are statistically significant, while changes in population and real interest rates are not statistically significant. To be specific, when GDP increases by 1%, housing prices increase by 1.2%. Conversely, a 1% increase in the higher bound of tax rates results in a 0.25% decrease in housing prices, and a 1% increase in the lower bound of tax rates leads to a 0.22% decrease in housing prices.

Table 1: Linear Regression Results

VARIABLES	(1) ln_housing_price
ln_GDP	1.2184 (0.0001)
ln_tax_high	-0.2504 (0.0056)
ln_tax_low	-0.2243 (0.0019)
ln_pop	-2.0579 (0.152)
ln_real_interest	0.0285 (0.1080)
Constant	28.305

Table 1: (continued).

	(0.0669)
Observations	37
R-squared	0.988

However, the presence of a large constant in the regression output suggests a significant unexplained proportion within the model. Moreover, this constant is statistically insignificant under a 95% confidence interval. Consequently, a time series analysis was initiated to investigate whether time serves as a contributing factor to these dynamics.

5.2. Time Series Analysis

The stationarity of the dependent variable (change in housing price) was assessed using the Phillips-Perron test. The initial results indicated that the dependent variable is not stationary, as the test statistics did not exceed the critical values and the p-value (0.4859) exceeded the 0.05 threshold (see Table 2).

To address this issue, the dependent variable was transformed by taking the first difference. A subsequent Phillips-Perron test on this differenced variable confirmed stationarity, evidenced by test statistics that were more negative than the critical values and a p-value (0.0019) below 0.05.

Table 2: Phillips–Perron Test

Phillips–Perron test for unit root	Number of obs = 36			
Variable: ln_housing_price	Newey–West lags = 3			
H0: Random walk without drift, d = 0				
	Dickey–Fuller			
	Test statistic	critical value 1%	critical value 5%	critical value 10%
Z(rho)	-1.469	-17.948	-12.852	-10.420
Z(t)	-1.595	-3.675	-2.969	-2.617
p-value for Z(t)	0.4859			
Phillips–Perron test for unit root	Number of obs = 35			
Variable: diff ln_housin~e	Newey–West lags = 3			
H0: Random walk without drift, d = 0	Dickey–Fuller			
	Test statistic	critical value 1%	critical value 5%	critical value 10%
Z(rho)	-22.778	-17.880	-12.820	-10.400
Z(t)	-3.916	-3.682	-2.972	-2.618
p-value for Z(t)	0.0019			

This differencing process was then applied to each independent variable to ensure consistency in stationarity across the dataset. It was confirmed that all differenced variables exhibited test statistics more negative than the critical values, and the p-values were less than 0.05, indicating that they too were stationary.

5.3. Regression with Stationary Variables

After eliminating the effect of time, a linear regression was conducted using the stationary variables. Surprisingly, it was found that all coefficients of the independent variables are not statistically significant except for GDP (see Table 3).

Table 3: Linear Regression with stationary variables

VARIABLES	(1) diff_ln_housing_price
diff_ln_GDP	1.1369 (0.0044)
diff_ln_tax_high	-0.140 (0.187)
diff_ln_tax_low	-0.0046 (0.963)
diff_ln_pop	-4.084 (0.394)
diff_ln_real_interest	0.0185 (0.234)
Constant	0.0244 (0.616)
Observations	36
R-squared	0.356

This unexpected outcome prompted an investigation into potential collinearity among the independent variables. Consequently, a Variance Inflation Factor (VIF) test was conducted to determine the extent of correlation among the variables. This test is crucial for diagnosing multicollinearity, which can obscure the individual effects of predictors in a regression model.

5.4. Test for Collinearity

Table 4: VIF Test

Variable	VIF	1/VIF
diff_ln_ta~h	1.28	0.7826
diff_ln_ta~w	1.18	0.8455
diff_ln_pop	1.13	0.8863
diff_ln_GDP	1.04	0.9594
diff_ln_re~t	1.03	0.9682
Mean VIF	1.13	

The results presented in Table 4 illustrate that the VIF values for the independent variables are relatively low, averaging around 1. This indicates that the level of correlation among the variables is within acceptable limits, suggesting that multicollinearity is not a significant concern in this analysis.

Given the low VIF values and the non-significance of the coefficients in the linear regression model, further investigation may be needed to explore other potential reasons for the lack of significance.

5.5. Preliminary Conclusion

Despite initial analyses failing to confirm the hypothesized relationships, it became apparent that housing prices might respond differently across geographic locations. For instance, the dynamics of housing price changes in New York City are likely distinct from those in Ann Arbor. To address this geographic variability, the panel data method was employed, leveraging data variation across different states and time periods.

Additional data were collected for four U.S. states—Maryland, New York, Texas, and Mississippi—covering the years from 1982 to 2018. These states were selected based on their economic standings as identified in Dr. Ted Jones’ paper, "The Richest (and Poorest) States in America." Maryland represents one of the wealthiest states, while New York and Texas have median income levels, and Mississippi ranks among the poorest [10]. This selection provides a diverse and representative sample of the U.S. economic spectrum, which is crucial for examining the nuanced impacts of economic variables on housing prices across different economic contexts.

By using panel data analysis, this study aims to capture both temporal and spatial variations in housing prices, potentially offering more precise insights into how economic factors influence housing markets at the state level.

5.6. Panel Data Analysis

Recognizing that different states may have unique characteristics influencing housing prices—such as varied regulatory environments, cultural attitudes towards property ownership, and geographic desirability—a Mixed Effects Model was selected to capture these diverse impacts more accurately. This model is particularly useful for addressing unobserved heterogeneity among states, which might otherwise skew the analysis.

In the Mixed Effects Model, each state is allowed to have its own baseline level (intercept) for housing prices, accommodating the idiosyncratic factors unique to each state. This random intercept approach accounts for the unseen variables that can affect housing prices. The term "random" refers to the model's treatment of these intercepts: rather than assigning a fixed value, they are estimated from the data, assumed to be distributed around a central mean applicable across all states.

This modeling strategy enhances the robustness of the analysis by permitting variations between states while still drawing general conclusions about the influence of economic factors on housing prices. Such an approach is crucial for understanding the complex dynamics of real estate markets across different geographic and socio-economic contexts.

Table 5: Mixed-effects Model Regression

Performing gradient-based optimization:						
Iteration 0:	Log likelihood	82.5615				
Iteration 1:	Log likelihood	82.5615				
Computing standard errors:						

Table 5: (continued).

Mixed-effects ML regression	Number of obs = 148					
Group variable: state	Number of groups = 4	Obs per group:	min = 37	avg = 37.0	max = 37	Wald chi2(5) = 1283.43
Log likelihood	82.5615		Prob > chi2	0.0000		
ln_House_Price_Index	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
ln_GDP	0.9011	0.3390	2.66	0.008	0.2365	1.5656
ln_tax_high	-0.2566	0.1025	-2.50	0.012	-0.4576	-0.0556
ln_tax_low	-0.4295	0.0809	-5.31	0.000	-0.5881	-0.2710
ln_pop	-1.2602	1.7051	-0.74	0.460	-4.6023	2.0817
ln_real_interest	0.0244	0.0210	1.16	0.246	-0.0168	0.0656
_cons	14.9865	18.1562	0.83	0.409	-20.5989	50.5720
Random-effects parameters	Estimate	Std. err.	[95% conf. interval]			
state: Identity						
sd(_cons)	0.3149	0.1118	0.1570	0.6317		
sd(Residual)	0.1287	0.0075	0.1147	0.1445		
LR test vs. linear model: chibar2(01) = 266.02 Prob >= chibar2 = 0.0000						

Table 5 performed a mixed-effects model regression that focused on analyzing the impact of various economic factors on the house price index, using data grouped by state. The model includes GDP, higher tax rate bounds, lower tax rate bounds, population, and real interest rate as predictors. The results show a statistically significant positive association between GDP and the house price index (coefficient = 0.901187, $p = 0.008$), indicating that increases in GDP are associated with increases in house prices. Both the higher tax rate (coefficient = -0.2566408, $p = 0.012$) and the lower tax rate (coefficient = -0.4295706, $p = 0.000$) are negatively associated with the house price index, suggesting that higher tax rates are linked to lower house prices. However, population and real interest rates did not show a statistically significant impact on house prices (p -values of 0.460 and 0.246, respectively). The random effects parameters indicate variation in the house price index across states, with a standard deviation for the intercepts across states of 0.314945. The Wald chi-squared statistic of 1283.43 with a p -value of 0.0000 confirms the model fits the data significantly well, justifying the inclusion of random effects to capture unobserved heterogeneity across states. The findings suggest that economic factors like GDP and tax rates play significant roles in influencing house prices across different regions.

6. Conclusion

This research paper has explored the effect of U.S. GDP, tax rates, population, and interest rates on housing prices in the U.S. and across various states. The selection of these variables was based on their critical roles as economic indicators and their potential impacts on the real estate market, which

is a major component of the national economy. The empirical analysis utilized multiple linear regression, time series analysis, and a mixed-effects model to rigorously test the hypothesized relationships.

The findings indicate that GDP and tax rates have statistically significant impacts on housing prices, affirming part of the initial hypothesis. Specifically, an increase in GDP tends to increase housing prices, which aligns with the general economic theory that a stronger economy boosts real estate values. Conversely, higher tax rates are associated with lower housing prices, suggesting that fiscal policy can influence the affordability and attractiveness of real estate investments. These results were consistent across the mixed-effects model, which also highlighted the importance of considering regional differences when analyzing economic impacts on housing markets. The use of a mixed-effects model was particularly enlightening, as it allowed for the accommodation of unobserved heterogeneity across states. This method provided a better understanding of the dynamics at play and emphasized the complexity of the real estate market, which is influenced by a myriad of factors that can vary significantly from one region to another.

The study's significance is its contribution to the understanding of how macroeconomic variables affect housing prices in different economic and regional contexts. The insights gained can aid policymakers in crafting strategies that consider both national economic indicators and regional specifics to effectively manage the real estate market. Furthermore, the methodology and findings can work as a reference for further studies that seek to find similar relationships in other sectors or regions. While this study has provided valuable insights, it is not without limitations. One significant limitation is the scope of economic indicators analyzed. Including additional variables such as consumer confidence, employment rates, or international economic trends could potentially yield a more comprehensive understanding of what drives housing prices. Moreover, the dataset used, covering the period from 1982 to 2018, excludes the latest economic events such as the COVID-19 pandemic, which could have provided further insights into the resilience and dynamics of the housing market under extraordinary circumstances. The study's reliance on available data from only four states, while practical, may also limit the generalizability of the findings. A larger dataset encompassing more states or even international data could enhance the robustness and applicability of the results to different economic contexts.

In conclusion, this paper examines the complex connection between economic indicators and housing prices, enhanced by a sophisticated analytical approach that incorporates regional variations. While the study achieves its objectives by identifying key economic factors affecting housing prices, it also opens avenues for further research to build on these findings and explore additional variables. The limitations noted are a catalyst for future research to expand the scope and depth of understanding in this vital area of economic study.

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ESG's Global Dissemination and Impact: A Cross-Cultural Perspective

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Abstract: This study explores the global dissemination and impact of ESG (Environmental, Social, and Governance) from a cross-cultural perspective. By comparing practices and feedback across different cultural backgrounds, the study reveals the similarities and differences in ESG concepts among various countries and regions. It finds that cultural factors significantly influence the implementation and acceptance of ESG, with diverse attitudes and behaviors towards ESG across cultures. The dissemination of ESG is constrained by cultural differences, leading to varying degrees of emphasis and methods in ESG practices, which in turn produce different impacts and outcomes. This research delves into the mechanisms and pathways of ESG dissemination in a cross-cultural context, providing crucial references for multinational enterprises in formulating ESG strategies and policies. By analyzing and comparing ESG practices and effects across different cultural backgrounds, the study offers new insights and methods for promoting the global dissemination and implementation of ESG principles.

Keywords: ESG, Global Dissemination, Cross-Cultural Perspective, Sustainable Development

1. Introduction

1.1. Research Background

ESG (Environmental, Social, and Governance) has become a critical indicator for corporate sustainable development, gaining increasing attention globally. With the acceleration of globalization, multinational companies and investors are increasingly focusing on corporate social responsibility and environmental impact. ESG has become a vital criterion for evaluating corporate performance and risk.

Globally, ESG research holds significant importance. ESG factors not only affect corporate economic performance but also have profound impacts on global environmental and social issues. Studying the dissemination and impact of ESG can help businesses and governments better understand and address global challenges, promoting sustainable development.

A cross-cultural perspective is crucial for ESG research. The vast differences in cultures, legal systems, and social values across countries and regions significantly influence the perception and practice of ESG. Through cross-cultural comparisons, we can identify how ESG manifests and

operates in different cultural contexts, providing a more comprehensive and in-depth view of global ESG research.

The global dissemination and impact of ESG have become a research hotspot, carrying significant importance. In-depth studies on ESG from a cross-cultural perspective will contribute to effective guidance and support for sustainable development and the globalization process.

1.2. Research Objectives

This study aims to explore the global dissemination and impact of ESG by analyzing the understanding and application of ESG concepts across different cultural backgrounds from a cross-cultural perspective [1]. We will examine the dissemination pathways and impact mechanisms of ESG in various cultural environments, investigating the current practices of ESG worldwide and their effects on corporate operations and management in different cultural contexts [2]. Through this cross-cultural perspective on ESG, we aim to provide valuable insights and recommendations for multinational enterprises and international organizations, promoting the global dissemination and practice of ESG principles and advancing the process of global sustainable development [3]. The significance of this study lies in deepening the cross-cultural understanding of ESG, facilitating global ESG practices and cooperation, and contributing to the construction of a sustainable future.

2. Characteristics of ESG in Different Cultural Contexts

2.1. Understanding the ESG Concept

ESG stands for Environmental, Social, and Governance, representing crucial indicators and evaluation systems for corporate sustainable development. The environmental aspect focuses on the impact of corporate production processes on the natural environment and the implementation of environmental protection measures. The social aspect concerns the care and support for stakeholders such as employees, consumers, and communities. Governance emphasizes the rationality, transparency, and responsibility of corporate internal management mechanisms and decision-making processes.

The core idea of ESG is that businesses should pursue economic benefits while also considering their responsibilities towards the environment and society. By implementing ESG management, companies can reduce environmental risks, enhance social reputation, increase investor and consumer trust, and achieve sustainable development. Consequently, ESG has become a globally recognized topic, impacting not only businesses but also investors, governments, and the public. In a cross-cultural perspective, while different countries and regions may have varying focuses and approaches to ESG, the common goal is to steer businesses towards more sustainable development.

2.2. ESG Dissemination and Impact in Western Countries

The dissemination and impact of ESG in Western countries have been growing significantly. Western nations have always maintained high awareness and standards regarding environmental, social, and governance issues, leading to widespread recognition and promotion of ESG principles. Institutional investors and large enterprises have begun incorporating ESG standards into their investment and operational decisions, which is crucial for promoting corporate social responsibility and sustainable development.

In Western countries, the dissemination of ESG occurs primarily through financial institutions, media, and academia. Financial institutions encourage companies to transparently disclose ESG information, providing investors with more risk assessment and stock selection criteria. Media coverage also plays a role in promoting the widespread acceptance and dissemination of ESG

principles in society. Academic research and education offer vital support for the in-depth understanding and practice of ESG.

Western culture emphasizes corporate social responsibility and long-term sustainable development. The public in these countries highly values environmental protection, social justice, and corporate governance, making ESG principles more readily accepted and supported. ESG has become a crucial guiding principle for corporate development in Western cultures, poised to significantly impact future economic and social progress.

2.3. ESG Dissemination and Impact in Asian Countries

The dissemination of ESG in Asian countries exhibits some unique characteristics. In countries like China and Japan, the ESG concept is receiving increasing attention and importance [4]. Asian cultures have long valued corporate social responsibility and environmental protection, facilitating the acceptance and implementation of ESG principles.

However, compared to Western countries, there are differences in how Asian countries understand and apply ESG [5]. While Western countries focus more on the social and environmental impacts of corporations and the improvement of governance mechanisms, Asian countries view ESG more as a means for stable corporate operations and sustainable development. In practice, Asian countries emphasize balancing long-term benefits with short-term profits, highlighting corporate social responsibility and long-term development plans [6].

Despite these differences, the global dissemination of ESG is an irreversible trend. As ESG principles become more ingrained, they are expected to play an increasingly positive role worldwide, encouraging businesses to focus more on social responsibility and achieve sustainable development.

3. The Impact of ESG on Cross-Cultural Communication

3.1. Cross-Cultural Communication Theory

Cross-cultural communication theory posits that cultural differences are unavoidable challenges in cross-cultural exchanges, with varying values and belief systems potentially leading to misunderstandings and conflicts. As a universal and shared value, ESG can serve as a bridge for cross-cultural communication, fostering mutual understanding and cooperation among different cultures. By promoting sustainable development in environmental, social, and governance aspects, ESG can create consensus on common goals and interests across cultures, facilitating the integration and development of cross-cultural communication.

The dissemination of ESG can help businesses better adapt to the needs and expectations of different cultures, encouraging cross-cultural cooperation and mutual development. In the globalization process, the spread of ESG is not only an intrinsic requirement for sustainable corporate development but also a critical foundation for cross-cultural exchanges and cooperation. By introducing ESG values, different cultures can establish more open and inclusive dialogue and cooperation platforms, achieving common prosperity and sustainable development goals.

As a global value, ESG's dissemination and impact will positively influence cross-cultural communication. It can promote mutual understanding and integration among different cultures and advance global sustainable development, contributing to the construction of a more harmonious and collectively prosperous world.

3.2. Analysis of ESG Mechanisms in Cross-Cultural Communication

In different cultural contexts, the dissemination mechanisms and influencing factors of ESG (Environmental, Social, and Governance) exhibit diverse characteristics. The emphasis on environmental, social responsibility, and corporate governance varies among cultures, affecting the acceptance and dissemination effectiveness of ESG principles within those cultures. Legal, policy, and regulatory frameworks in different cultural contexts also impact the promotion and implementation of ESG, which in turn influences its application and practice in cross-cultural communication.

In cross-cultural exchanges, the values and principles embodied by ESG can manifest differently due to varying cultural perceptions. Mutual respect, listening, and harmonizing different cultural perspectives on ESG are key to fostering cross-cultural communication and cooperation. By engaging in cross-cultural collaboration projects that advocate for sustainable development through ESG principles, we can guide the exchange and consensus-building among different cultures, promoting a global understanding and practice of ESG.

Therefore, it is essential to deeply explore the essence and principles of ESG within different cultural contexts and investigate its global dissemination and impact. This approach can effectively advance the application and development of ESG in cross-cultural communication, further promoting global sustainable development. The cross-cultural dissemination and communication of ESG principles will provide new momentum and perspectives for global cooperation and development.

4. ESG Practice Cases Worldwide

4.1. Case Analysis in Europe and the United States

Europe and the United States have rich experience in ESG practices, with one of the most representative cases being the Danish company Novo Nordisk. Novo Nordisk is a global leader in the pharmaceutical industry, committed to achieving sustainable development in healthcare. The company integrates ESG principles into its corporate culture by setting clear ESG strategies and goals. For example, Novo Nordisk has made significant achievements in reducing carbon emissions, enhancing employee well-being, and promoting social inclusivity, earning widespread acclaim.

Another notable case is the American electric vehicle manufacturer Tesla. Tesla has embraced sustainable development as its core principle from the outset, driving the development of the electric vehicle market through innovative technologies and solutions. Tesla actively promotes environmental concepts in its products and fulfills its social responsibilities in supply chain management, employee compensation, and community development.

4.2. Case Analysis in Asia

In Asia, Japan is considered a leader in ESG practices. Japanese companies generally emphasize environmental, social, and corporate governance, actively promoting sustainable development in their practices. For instance, Toyota Motor Corporation has been dedicated to improving vehicle fuel efficiency and reducing emissions, continuously advancing sustainable development in the global automotive industry.

However, ESG practices in Asia also face some limitations. On one hand, in some developing countries, there is a lack of strong environmental awareness and social responsibility among companies, resulting in slow progress in ESG practices. On the other hand, some Asian companies exhibit short-term behavior in their ESG practices, focusing on short-term economic benefits while neglecting long-term environmental and social impacts [7].

Therefore, ESG practices in Asia present both positive aspects and numerous challenges and issues to be addressed. By deeply exploring ESG practice cases in Asia, understanding their effects and limitations, we can better compare ESG practice characteristics across different regions and promote the global dissemination and sharing of ESG principles.

5. Conclusion and Outlook

As an important indicator of corporate sustainable development, ESG is gaining increasing attention globally. Studying the dissemination and impact of ESG can help businesses and governments better understand and address global challenges, promoting the realization of sustainable development. Research on ESG from a cross-cultural perspective is significant, as it provides a more comprehensive and in-depth view of global ESG research by comparing ESG performance and roles across different cultural backgrounds. The global dissemination and impact of ESG have become research hotspots, and studies from a cross-cultural perspective will offer valuable insights and recommendations for multinational enterprises and international organizations, promoting the global dissemination and practice of ESG principles and advancing the process of global sustainable development.

ESG, as a universal and shared value, can serve as a bridge for cross-cultural communication, fostering mutual understanding and cooperation among different cultures. By introducing ESG values, cultures can establish more open and inclusive dialogue and cooperation platforms, achieving common prosperity and sustainable development goals. The dissemination mechanisms and influencing factors of ESG exhibit diverse characteristics in different cultural contexts. Only by deeply exploring the essence and principles of ESG can we effectively promote its application and development in cross-cultural communication, further advancing global sustainable development. By studying and advocating for the sustainable development of ESG principles, we can enhance cross-cultural exchange and consensus, contributing to the construction of a more harmonious and collaboratively developing world. Globally, the dissemination and practice of ESG will provide new momentum and perspectives for global cross-cultural cooperation and development, encouraging businesses to focus more on social responsibility and achieve sustainable development.

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The Unclear Positioning Strategy: Useful Unclear Positioning in the Market

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Abstract: Unclear positioning is often seen as a flaw in marketing strategies, yet it can be beneficial for products like watches, cars, and luxury items that serve both practical and status-symbol functions. These products can be positioned ambiguously to appear as high-end offerings. This article examines the utility of unclear positioning by addressing four key areas: (1) the specific aspects of a product's positioning that can remain ambiguous, (2) the types of products that can benefit from unclear positioning, (3) the consumer psychology underlying unclear positioning, and (4) the potential application of unclear positioning strategies in emerging markets. This research provides valuable insights for companies in developing effective market positioning strategies, utilizing case studies and statistical analysis to demonstrate the efficacy of unclear positioning. This article shows product with high quality and mix attribution, come from companies with the already had regional and brand image can be benefit from the unclear positioning, since consumers are drawn to products that help them obscure their social status, offering them a sense of higher psychological ownership and happiness.

Keywords: Positioning Strategy, Unclear Positioning, consumer behavior, case analysis, social class.

1. Introduction

Consumers have long been exposed to a consumerist society, products from different sources are available, and the average disposable income has shown a great increase. So consumers may not be satisfied with normal goods and will want to increase their social class by buying high-end products, for example, watches, cars and luxuries. However, most of them are much more expensive for normal people to afford, so they will want to figure out things that look like luxury or high-end products. And this offers a good opportunity for marketing, especially for products like watches and cars, which can be used as both a tool and an ornament to show social class. They can use an unclear positioning strategy to make a terminal product in a high-end product. The rationale of the chosen subject has no contradictions because brand positioning should be addressed not only as a marketing issue but as an important general economic and even social task for the company [1]. The economic environment influences the shopping trends of consumers, and the unclear positioning strategy is a result of the marketing scheme created by it. This can satisfy the vanity of the crowd with a lower cost, which is a win-win for both companies and consumers. Not every product can use the unclear position, there

are four requirements for those products: (1) High quality. (2) already had brand recognition. (3) Mix attribute. (4) already had a regional image.

This article aims to discuss the use of unclear positioning in: (1) the specific aspects of a product's positioning that can remain ambiguous, (2) the types of products that can benefit from unclear positioning, (3) the consumer psychology underlying unclear positioning, and (4) the potential application of unclear positioning strategies in emerging markets. This paper provides a new marketing strategy.

2. Already had brand recognition and image

2.1. Already had regional image

Country-of-origin information with other multi-uses in the consumer decision-making process. Thorelli et al.'s research indicates that warranty and country-of-origin cues do have significant effects on perceived product quality [2]. So the image of a certain region will influence a product's image. People tend to value Japan's products as well, and clothes in France are fashion. Germany was rated higher than the United States. England, Japan, and the United States shared second place. The same study revealed that Japan was rated closely behind the United States when considering service, delivery, and performance. The participants in this study further ranked Japan as providing superior goods at the lowest price [2]. These images may be based on historical reasons or certain countries' policies and natural environments. Using the already existing image of a region or country can be efficient to attract consumers, by adding related information about trustworthy and highly recognized countries. Adding English to the package of domestic goods, adding Japanese to the camera, and adding the resource of the ingredient, like milk from New Zealand. Through language or resource showing, consumers will think of the product as more high-end, and ignore the fact that the products are only terminal goods. As shown in Figure 1, some of the main cognitive (green) and socio-affective (orange) factors that can facilitate the formation of false beliefs when individuals are exposed to misinformation. Not all factors will always be relevant, but multiple factors often contribute to false beliefs [3].

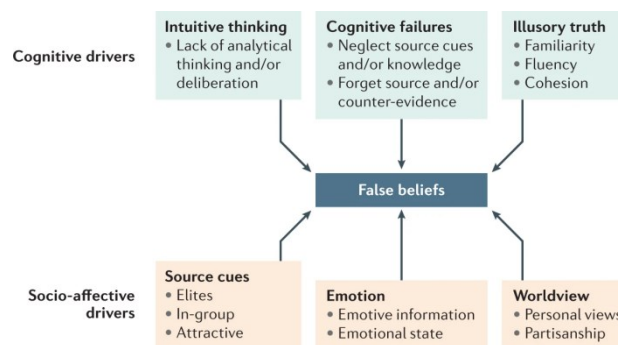


Figure 1: Drivers of false beliefs [3].

2.2. Already had brand recognition and image.

Brand awareness affects brand loyalty, and brand loyalty affects repurchase intention [4]. High brand recognition and image are needed, and the image of the brand needs to contain innovation, high quality and top companies. It does not matter in which industry they gain a high reputation. The trust of consumers and the fixed image of the brand are the important parts. With a high reputation, unclearing the product position will be easy, since some people already attribute those brands as high-end brands.

3. The requirement of the products

3.1. High quality

To increase sales domestically and perhaps in most postindustrial countries abroad, it will be essential for companies to recognize that consumers expect quality goods and have developed well-formulated perceptions concerning the ability of some nations to produce them [5]. The quality of products plays a crucial role. High quality is fundamental for a product to maintain its position. Without high quality, consumers will not choose to buy them and the difference between true products and high-end products will increase, making it a huge gap that cannot be explained by marketing schemes.

3.2. Mix attributes

The mix attributes require the product to be used as a simple tool, and at the same time, it can approve the social class, for example: watches, cars and luxuries. For a watch, it can be used as a tool to remind people of the time, but there is also a luxury brand in it, making it a good way to prove your social class. Just as mentioned before, consumers are not satisfied with normal goods and will want to increase their social class by buying high-end products, but most of them are too expensive to afford. As a result, those high-quality watches with an unclear position will gain priority, since consumers can buy a “high-end” product at the price of terminal goods.

4. Case study of increase positioning

4.1. Apple watch

In the watch market, the pricing strategy of the Apple Watch is remarkable, with its price range (approximately \$200 to \$1000) covering most of the mid-to-high-end market. The price segmentation in the watch market is very pronounced: basic watches are merely for telling time, priced very low (\$40-\$100); mid-to-low-end decorative watches (\$100-\$200); mid-to-high-end watches (over \$1500); and ultra-high-end watches have virtually unlimited prices. From high-end watches onward, a watch is not just a tool for telling time or decoration, but a symbol of social status. Consequently, the market severely lacks mid-range watches, and the pricing of the Apple Watch fills this gap, almost monopolizing the entire mid-range watch market. Besides, Apple Watch also catches the trend of the electronic watch, which is the most popular type of watch.

Another impressive aspect is the blurred positioning of the Apple Watch. It is hard to classify it strictly as either a mid-range or a mid-to-high-end watch. This blurred positioning allows the Apple Watch to differentiate itself significantly from other smartwatches (which, in fact, mostly fall into the mid-to-low-end category). The primary market demographic for the Apple Watch is people under 30, but its user base spans various social strata. Many high-society individuals use the Apple Watch, which makes lower-society individuals aspire to blur their social status by purchasing an Apple Watch. Their mentality can be summarized as follows: the Apple Watch is priced relatively high, and coupled with Apple's high-end brand image, just owning an Apple Watch can display a portion of their financial capability. However, since many upper-class individuals also purchase it, the brand's positioning is blurred into the mid-to-high-end range, allowing consumers to buy a mid-to-high-end watch at a mid-range price, and conveniently obscure their social status—what's not to like?

Finally, the collaboration between Apple Watch and Hermès further blurs its positioning as a mid-range watch, leading more people to perceive it as a mid-to-high-end watch, and some even consider it a high-end watch. The purpose of this collaboration is not about sales but about blurring the product's positioning. This marketing tactic is truly ingenious. The Apple Watch has successfully

utilized brand effects and consumer psychology to create a perfect pricing and marketing strategy, making it a paragon.

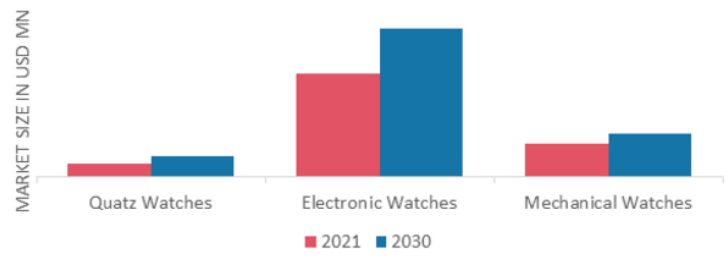


Figure 2: Watch Market by category 2021& 2030 (USD Million) [6]

4.2. Coach

Coach successfully blurs the line between luxury and high-end brands through its clever market positioning strategy. Coach's products are priced relatively high (approximately \$300 to \$1000), but lower than top luxury brands like Louis Vuitton and Chanel. This pricing strategy attracts consumers who desire a luxury experience but have a limited budget. By offering high-quality, classic designs, Coach positions itself as a high-value, high-end brand. This blurred market positioning strategy not only enhances the brand's overall image but also expands its influence in the mid-to-high-end market.

4.3. Consumer psychology

Consumers feel happier when they have higher psychological ownership over an item after consumption. Furthermore, consumers anticipate greater happiness from a product before consumption due to increased psychological ownership through customization. This effect is mediated by the satisfaction of basic psychological needs [7]. Consumers prefer foreign brands when their socially oriented motives are made salient. This stems from domestic brands better manifesting self-focused intangible attributes, whereas foreign brands are superior in other-focused intangible attributes [8]. Consumers feel happier when they buy things that are unclear to their social class, since they gain a higher level of psychological ownership, and are sometimes attracted by the brand culture.

5. Conclusion

Unclear positioning, often seen as a marketing fault, can be advantageous for products like watches, cars, and luxury items that serve both practical and status-symbol functions. This essay explores how unclear positioning can transform a terminal product into a high-end one by examining key aspects of positioning, suitable products, consumer psychology, and its application in emerging markets.

Unclear positioning leverages regional images, brand recognition, high quality, and mixed attributes to transform terminal products into perceived high-end goods. This strategy satisfies consumer vanity at a lower cost, benefiting both companies and consumers. The nuanced global strategy, as suggested by Hamel and Prahalad, is essential for success in international markets, with unclear positioning being a key component.

Watches, especially, exhibit this duality effectively. The Apple Watch spans a price range covering mid-to-high-end markets, filling a gap in the mid-range watch market. Its blurred positioning appeals to a wide demographic, including both high and low societal strata, thereby elevating its perceived status. Collaborations with luxury brands like Hermès further enhance this effect, making the Apple Watch appear more high-end. Similarly, Coach blurs the line between luxury and high-end brands with its pricing and high-quality products, appealing to consumers seeking a luxury experience at a

relatively lower cost. This strategy enhances Coach's brand image and expands its influence in the mid-to-high-end market.

Consumer psychology plays a crucial role in the success of unclear positioning. Consumers are drawn to products that help them obscure their social status, offering them a sense of higher psychological ownership and happiness. Foreign brands, often seen as superior in intangible attributes, cater to this desire, making them attractive options for consumers aiming to elevate their social standing. A nuanced global strategy, as suggested by Hamel and Prahalad [9], is essential for success in international markets, with unclear positioning being a key component. This approach satisfies consumer vanity at a lower cost, benefiting both companies and consumers.

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Measurement and Evaluation on Tourism Economic Network Characteristics of China Four Major Urban Agglomerations

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Abstract: Studying the characteristics and driving mechanisms of tourism economic development in urban agglomerations is significant for promoting high-quality development of the tourism industry. This article explores the spatial structure and differences of the tourism economy within the Yangtze River Delta, the Guangdong-Hong Kong-Macao Greater Bay Area, the Beijing-Tianjin-Hebei urban agglomeration, and the Chengdu-Chongqing economic circle by using the tourism-modified gravity model and social network analysis methods. Meanwhile, the tourism economic index and tourism supply capacity index are constructed to explore the dislocation of supply and demand in the central cities of each urban agglomeration. Finally, from the perspective of regional economic integration development, suggestions are put forward for further improving the tourism economic network.

Keywords: four major urban agglomerations, tourism-modified gravity model, social network analysis, tourism economy, supply-demand dislocation

1. Introduction

The tourism industry is a strategic pillar of the national economy. Against the backdrop of economic globalization and regional economic integration, regional economic cooperation and development have become the main themes of China's tourism economy. In China's regional development landscape, the Yangtze River Delta urban agglomeration, the Guangdong-Hong Kong-Macao Greater Bay Area, the Beijing-Tianjin-Hebei urban agglomeration, and the Chengdu-Chongqing economic circle are the four main growth poles driving China's economic development. These regions, which together account for half of the nation's GDP, boast rich tourism resources, strong industrial bases, vast consumer markets, advantageous geographical locations, and convenient transportation. This provides a solid foundation for tourism development. However, with the continuous evolution of the interaction between regional economies and tourism, the integration process within urban agglomerations is uneven, and the development of the tourism economy shows a complex spatial correlation structure.

In recent years, scholars at home and abroad have mostly used social network analysis to study the spatial correlation structure of the tourism economy, focusing on aspects such as the evolution of the

spatial structure of the tourism economy, spatial differences, and influencing factors. From a research perspective, the focus is generally on urban agglomerations, comprehensive urban belts, and provincial tourism spatial structures. For instance, researchers like Guangming Xiao et al. [1-4] have studied the evolution of the tourism spatial pattern in the Pearl River Delta, Yangtze River Delta, the middle reaches of the Yangtze River urban agglomeration, and the 12 provinces in the western region. In terms of research content, there is a focus on the dynamic evolution of the tourism spatial structure [5], the characteristics of the spatial correlation network of tourism economic development between Chinese provinces [6], and the mechanisms of spatio-temporal evolution of tourism economic connection patterns [7]. Regarding theoretical models, structural hole theory, core-periphery theory, gravity models, two-dimensional combined matrix methods, and spatial misalignment evaluation models are primarily used. Researchers like Deguang Liu et al. [8-10] have analyzed issues such as the evolution of the urban economic development and tourism economic structure, the intensity of regional tourism economic connections, and the influencing factors of tourism space.

Existing studies have paid more attention to the models themselves and have not fully integrated the new requirements proposed by the country in recent years for optimizing the overall spatial layout of the tourism industry or the new plans proposed by regions for economic development strategies and industrial layout structures. They have not adequately considered the basic conditions, development levels, and functional positioning of different cities to propose strategic paths for promoting the coordinated development of the tourism industry. This paper draws on the research results and experiences of many scholars, combines the issues of tourism economic development discovered through comparisons between and within urban agglomerations, and proposes ideas for promoting tourism economic development at various levels of cities and optimizing the structure of the tourism spatial network based on the requirements of regional integration development patterns. This provides a reference for promoting coordinated development of the regional tourism economy.

2. Research Approach and Data Sources

This paper applies the gravity model to measure and analyze the spatial correlation network layout characteristics of tourism economic development in the four major urban agglomerations. It calculates the intensity of tourism economic connections among 81 cities, uses UCINET software to judge the network structure by calculating network degree, network density, and network efficiency of urban agglomerations; and calculates the degree centrality and betweenness centrality to identify central cities. It also draws the topological structure map of the tourism economic connection social network to observe and compare the relationships of various nodes in the network. Additionally, core-periphery analysis is used to identify core and peripheral cities and to compare the similarities and differences between core cities and central cities. Cohesion subgroup analysis is used to subdivide the subsets of each urban agglomeration to determine the degree of coordinated tourism economic development within the urban agglomerations.

Considering the characteristics of tourism economic development, the focus is on central cities. The tourism economic index and tourism supply capacity index are constructed and calculated to rank the tourism economic development capacity of cities and analyze the degree of misalignment between tourism economic development levels and tourism resources and carrying capacity, thereby determining their development driving capabilities.

To exclude the impact of the pandemic, data on total tourism income, number of tourists, GDP, number of travel agencies, number of star-rated hotels, number of airports, and number of train stations are taken from the 2019 Statistical Yearbook of each city. Data on the number of terminals is sourced from the official websites of various airports. Road network density is referenced from OpenStreetMap data, and distance data is collected from Baidu Maps.

3. Empirical Measurement

3.1. Tourism Economic Network Analysis

3.1.1. Overall Network Construction

Analyzing the topological structure map of the tourism economic network of the four major urban agglomerations reveals that, with the exception of Huizhou and Hengshui, there are generally spatial correlations between cities within the urban agglomerations. The number of tourism economic relationships in the Yangtze River Delta urban agglomeration, Chengdu-Chongqing economic circle, Guangdong-Hong Kong-Macao Greater Bay Area, and Beijing-Tianjin-Hebei urban agglomeration are 240, 38, and 22, respectively. Meanwhile, the sub-networks of different nodes exhibit two characteristics: one is a radial network, such as the network between Hefei and cities within Anhui Province, which is relatively unstable; the other is a clustered network where almost every node is connected, forming a denser sub-network with higher density than the overall network. For instance, Chengdu and Chongqing, as well as Beijing and Tianjin, serve as both sources and destinations of tourists, resulting in a more stable network structure.

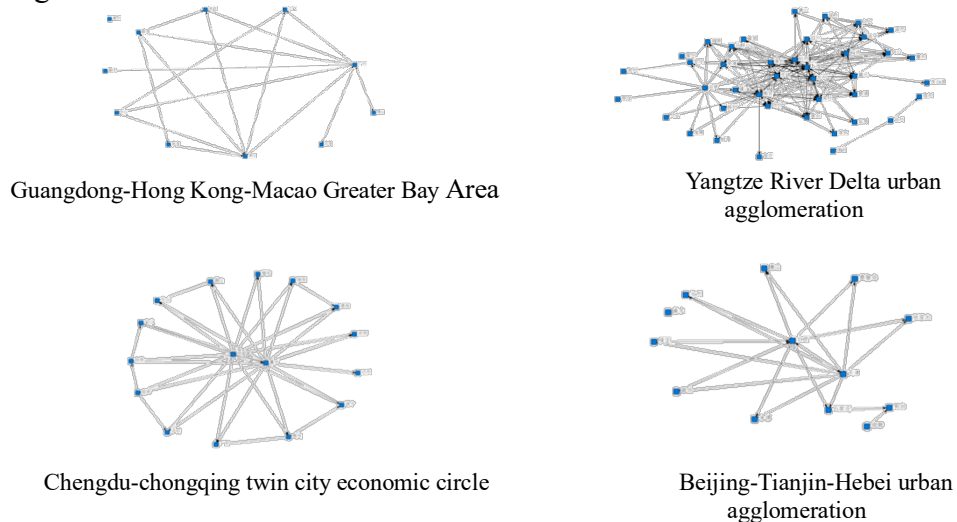


Figure 1: Structure chart of tourism economic connection network of four urban agglomerations

3.1.2. Network Characteristics Analysis

The overall network connections among the four urban agglomerations are more numerous but less frequent compared to connections within each urban agglomeration, resulting in less robustness than the internal networks of the urban agglomerations. The cross-urban agglomeration connections of central cities exhibit a significant clustering effect. Among these, the Yangtze River Delta urban agglomeration demonstrates good network accessibility, strong network stability and coordination, and a pronounced spatial spillover effect. The cities in the Guangdong-Hong Kong-Macao Greater Bay Area have the closest network connections. In the Chengdu-Chongqing economic circle, the network connections between cities generally revolve around a few key points. The Beijing-Tianjin-Hebei urban agglomeration has lower network redundancy and a relatively loose network structure, with most cities only showing single-line connections to Beijing, Tianjin, and Shijiazhuang, indicating a lack of intra-provincial network connections and placing most cities in a subordinate position.

Using degree centrality and betweenness centrality functions to measure individual network characteristics, it was found that most of the connections are based on central cities such as Shanghai, Nanjing, Hefei, Hangzhou, Suzhou, Chengdu, Chongqing, Guangzhou, Macau, Hong Kong, Shenzhen, and Beijing. Cities like Jinhua, Tangshan, Meishan, and Wuhu also play certain intermediary and dominant roles in the network. Macau, Guangzhou, Shanghai, and Hangzhou exhibit strong regional resource dominance, whereas Beijing, Chengdu, and Chongqing lack sufficient resource allocation capacity for their respective urban agglomerations.

Applying the core-periphery analysis function to measure the network structure of the four major urban agglomerations reveals that the Guangdong-Hong Kong-Macao Greater Bay Area and the Yangtze River Delta urban agglomeration have a dumbbell-shaped core-periphery structure, while the Chengdu-Chongqing economic circle and the Beijing-Tianjin-Hebei urban agglomeration have a pyramid structure. In each urban agglomeration, central cities serve as the core cities. However, cities with high centrality such as Huzhou, Jiaxing, Changzhou, Shaoxing, Deyang, and Tianjin, although located in the core areas, do not exhibit strong resource control. Peripheral cities are those with relatively low centrality.

Table 1: Comparative table of structural characteristics of tourism economic network in four major urban agglomerations

Indicator type(+/-)	Ranking of completeness of tourism economic network from high to low				Overall indicator value
Network relevance	Yangtze River Delta urban agglomeration	Chengdu Chongqing Dual City Economic Circle	Guangdong-Hong Kong-Macao Greater Bay Area	Beijing-Tianjin-Hebei city cluster	0.6
Network relevance Indicator value(+)	1	0.85	0.82	0.78	
Network level Indicator value(-)	0.63	0.89	0.53	0.83	0.5
Network density Indicator value(+)	0.16	0.13	0.2	0.11	0.09
Network efficiency Indicator value(-)	0.79	0.81	0.83	0.85	0.79
Core City	Shanghai, Hangzhou, Suzhou, Wuxi, Huzhou, Nanjing, Ningbo, Jiaxing, Changzhou, Shaoxing	Chengdu, Chongqing, Deyang	Macau, Guangzhou, Hong Kong, Shenzhen	Beijing and Tianjin	
Edge cities	5 cities in Jiangsu, and 12 cities in Anhui	10 cities in Sichuan	Huizhou, Dongguan, Zhongshan, Zhaoqing, and Jiangmen	six cities in Hebei Province	

An analysis of cohesive subgroups within the four major urban agglomerations reveals distinct hierarchical characteristics in network structures, closely associated with the distribution of central cities. In the Guangdong-Hong Kong-Macao Greater Bay Area, the 11 cities are divided into four relatively tightly-knit subgroups. The tourism economic network connections are relatively balanced, with Hong Kong, Shenzhen, Guangzhou, and Macau belonging to the first subgroup, and Zhuhai and

Huizhou to the second subgroup. These subgroups form the core area of the overall network in the Greater Bay Area. The Yangtze River Delta Urban Agglomeration's 41 cities are divided into six relatively tightly-knit subgroups. Shanghai, Changzhou, Wuxi, Huzhou, Hangzhou, and Suzhou belong to the first subgroup, constituting the core area of the overall network in the Yangtze River Delta urban agglomeration. In the Chengdu-Chongqing Economic Circle, the 16 cities are divided into four relatively tightly-knit subgroups. Chengdu and Chongqing form the first subgroup, which serves as the core area within the overall network of the Chengdu-Chongqing economic circle. The Beijing-Tianjin-Hebei Urban Agglomeration's 13 cities are divided into four relatively tightly-knit subgroups. Beijing and Tianjin form the first subgroup, acting as the core area within the overall network of the Beijing-Tianjin-Hebei urban agglomeration.

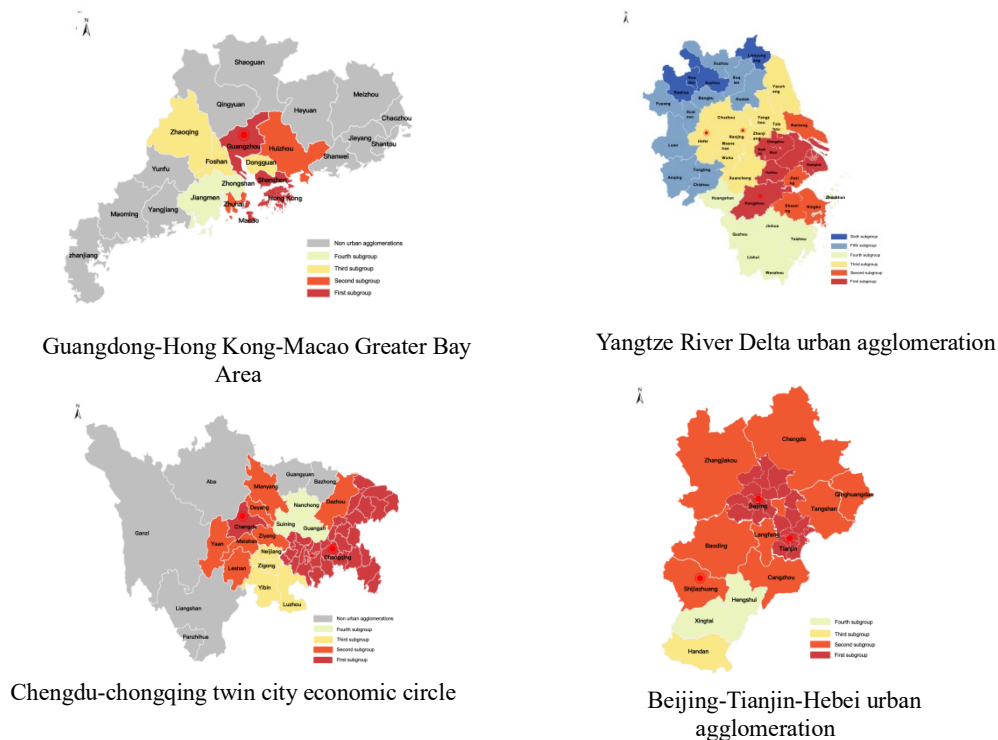


Figure 2: Four major urban agglomerations condenses subgroup distribution

3.2. Analysis of Synchronization and Misalignment between Central Cities' Tourism Economy and Tourism Supply Capacity

Using the Analytic Hierarchy Process (AHP), the weights of the tourism economic indicators were calculated separately, resulting in the Tourism Supply Capacity Index $R = 0.41 \times N_1 + 0.21 \times N_2 + 0.38 \times N_3$.

Table 2: Index system and weight of tourism supply capacity index

Primary indicators		weight	Secondary indicators	weight
Tourism supply capacity index	Convenience of transportation(N_1)	0.41	Highway network density	0.13
			The shortest distance between the center of each administrative district where the scenic spot is located and the airport	0.12
			The shortest distance between the center of each administrative district where the scenic spot is located and the train station (including the high-speed rail station)	0.16

Table 2: (continued)

Tourism infrastructure(N_2)	0.21	Number of travel agencies	0.04
		Number of star rated hotels	0.05
		Number of airports (including urban terminals)	0.06
		Number of train stations (including high-speed rail stations)	0.06
Number of 4A level or above scenic spots(N_3)	0.38	Number of 4A level scenic spots	0.13
		Number of 5A level scenic spots	0.25

Substituting the values of various indicators of central cities into the index formula, it was found that the top ten cities in terms of the Tourism Economy Index and Tourism Supply Capacity Index are: Chongqing, Shanghai, Beijing, Chengdu, Tianjin, Hangzhou, Nanjing, Guangzhou, Suzhou, and Ningbo. The Misalignment Index shows that Hangzhou and Suzhou have relatively balanced supply and demand capabilities in tourism economics. The Tourism Economy Index of Beijing and Guangzhou is lower than their Tourism Supply Capacity, with Guangzhou having the most severe negative misalignment. The remaining cities are in a state of synchronous high values, with Chongqing and Tianjin having higher positive misalignment indexes.

Table 3: Tourism economy index, tourism supply capacity index and dislocation index of TOP10 cities

City name	Tourism Economic Index	Tourism supply capacity index	Dislocation index
Chongqing	1	0.62	0.38
Shanghai	0.56	0.41	0.15
Beijing	0.49	0.56	-0.07
Chengdu	0.42	0.29	0.13
Tianjin	0.36	0.13	0.24
Hangzhou	0.31	0.27	0.03
Nanjing	0.21	0.10	0.11
Guangzhou	0.20	0.33	-0.14
Suzhou	0.20	0.21	-0.01
Ningbo	0.20	0.13	0.07

4. Conclusions and Implications

4.1. Conclusions

4.1.1. Characteristics of Tourism Economic Networks in Urban Agglomerations

For the overall tourism economy network, firstly, the network connectivity, hierarchy, density, and efficiency among urban agglomerations are generally low, with cities within different agglomerations interacting to some extent, and the connection networks among central cities being highly concentrated. Secondly, the network structures of all urban agglomerations exhibit more radiative networks than clustered networks. Thirdly, the degree of perfection of the tourism economy network among urban agglomerations ranks from high to low as follows: Yangtze River Delta, Guangdong-Hong Kong-Macao, Chengdu-Chongqing, Beijing-Tianjin-Hebei.

Regarding the tourism economy networks of various urban agglomerations, the Yangtze River Delta urban agglomeration has relatively close tourism economic connections between cities, a rich hierarchical spatial network, strong stability, and the most subgroups. The cities have extensive

connections, strong synergy, tourism resources are concentrated in multiple points, the central city network has high concentration and resource control, and there are few peripheral cities. The Guangdong-Hong Kong-Macao Greater Bay Area has a relatively stable tourism economy network, with relatively close tourism economic connections between cities, concentrated tourism economic forms, fewer subgroups, clear hierarchies, and significant differences in network connections between cities, characterized by "two large ends" between core and peripheral cities. The Chengdu-Chongqing twin-city economic circle has weak accessibility in the tourism network, poor stability, lack of hierarchy, the smallest proportion of core cities and the largest proportion of peripheral cities, with relatively little tourism economic exchange. The Beijing-Tianjin-Hebei urban agglomeration has not yet formed a complete tourism economy network between cities, with unbalanced tourism economic development, and weak driving effect of the central cities' tourism economy.

4.1.2. Characteristics of Internal Tourism Economic Development in Urban Agglomerations

Firstly, the external connectivity of China's tourism economy is more pronounced than its internal connectivity, and the network structure's clustering is uneven. Secondly, central cities occupy core positions in the network; however, not all core cities are the central cities of their respective urban agglomerations, such as Huzhou, Changzhou, and Deyang. Additionally, central cities generally have a high degree of tourism economic connections but a weaker capability for resource allocation within the urban agglomeration. Thirdly, the clustering of subgroups spatially presents a concentric pattern, with central cities as the origin, showing strong spatial self-organization capabilities. Core cluster cities are mainly concentrated in Beijing, Shanghai, and Jiangsu Province, while most cities in Hebei, Sichuan, and Anhui Provinces are in peripheral areas, with fewer tourism economic connections between cities. Fourthly, cities with a high tourism economy index also have high tourism supply capacity indexes, and these are all core cities. The tourism supply and demand levels in Chongqing, Beijing, and Shanghai are far higher than those in other cities, while there is still significant potential for the development of the tourism industry in Guangzhou.

4.2. Implications

1. Economic development levels are a crucial driving force for tourism economic development. It is necessary to establish cultural and tourism economic belts according to urban agglomeration development plans and local policies, improve collaborative tourism development mechanisms, and promote the aggregation and circulation of resources, information, and related talents. This can enhance the regional driving force and improve the tourism supply capabilities of positively misaligned cities and the market expansion capabilities of negatively misaligned cities.

2. Under the trend of regional economic integration, future urban agglomeration tourism should focus on both local integration and the spatial spillover effects of integration. Sub-central cities can be considered as regional tourism centers, utilizing the resources of central cities to develop local tourism. For underdeveloped tourism areas, it is essential to deeply explore potential, strengthen cultural construction investment, create a good market business environment, and absorb the spatial spillover from core cities.

3. Improving traffic accessibility and convenience is a crucial engine for urban tourism development. The integration of tourism with high-speed rail, aviation, and road transportation should be emphasized. It is necessary to enhance transportation infrastructure and supporting service functions, strengthen tourism distribution functions, and build a "comprehensive transportation network + tourism" service system. This includes innovatively launching special tourist trains for well-known scenic spots, opening direct flight routes between popular cities, and developing multi-

city joint self-driving tour routes to promote the spread of tourism flows from core to peripheral areas and improve the regional tourism pattern.

4. Digitalization is an essential support for the high-quality development of the cultural and tourism industry and a vital tool for promoting the deep integration of the "five-in-one" digital China. Leveraging "Internet+", big data, and establishing regional tourism cooperation trading platforms can innovate tourism products, develop IP operation chains, extend the service and consumption chains of tourism operations, and optimize the efficiency of tourism economic network structures and the spatial sub-organization capabilities of urban agglomerations. This will better achieve differentiated coordinated development and deep cooperation in the tourism economy.

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The Development of Characteristic Towns in China

– Take Yangzhou as an Example

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Abstract: The construction of characteristic towns has been popular in recent years. These towns are trying to utilize their distinctive features to create competitive advantages and foster local economic growth. Among all types of towns, it's evident that significant opportunities exist for developing tourism-focused characteristic towns in China. This paper's primary case study centers on Yangzhou, a town renowned for its rich tourism tradition in China. Also, a comparative case of Xi'an provides insights into the operational patterns and strategic advantages in tourism development. Methodologically, a hybrid approach is employed, including direct observations and a tailored survey to assess the impact of tourism on Yangzhou's residents. The findings from this research are anticipated to offer targeted recommendations for enhancing tourism development and resident satisfaction in characteristic towns like Yangzhou. Overall, this essay provides a comprehensive analysis of the factors contributing to the success of characteristic towns in China, with a focus on tourism, cultural and technological integration, and sustainable community development.

Keywords: characteristic town, tourist economy, marketing innovation

1. Introduction

Characteristic towns are defined by their unique industry orientations, cultural identities, tourism attractiveness, and community functions [1]. They often leverage these distinctive features as competitive advantages to draw in a targeted consumer base, helping foster the local economy. This essay is going to examine the reasons and operational patterns of characteristic towns that focus primarily on tourism. It includes an in-depth case study of Yangzhou, a town in China that is well-known for its rich tourism tradition. Additionally, the analysis will draw on a comparative study of Xi'an and the contemporary tourism scene in Yangzhou, supplemented by data from a survey investigating the impact of tourism on the residents' everyday lives. Finally, relevant recommendations will be presented.

2. Literature Review

2.1. Positive impacts of characteristic towns

2.1.1. Promote the development and innovation of regional industries

Once deciding to develop a characteristic town, the first step, naturally, is to select a specialty industry. This unique industry ensures that the town has a competitive advantage over other traditional towns and, to some extent, effectively avoids homogenized competition [2]. Sequentially, with support from different sources, dominant industries in characteristic towns can capture new opportunities to realize new upgrading and innovation. For instance, instead of developing traditional characteristic tourism towns, Jiangsu Province focuses on emerging industries, such as high-end manufacturing, creative entrepreneurship, and information technology [3].

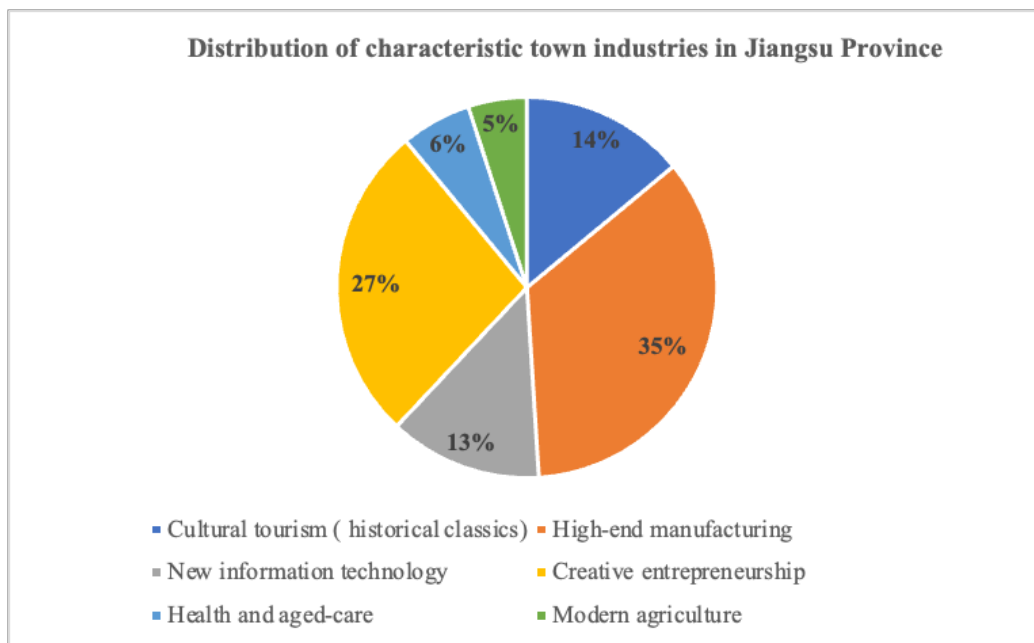


Figure 1: Distribution of characteristic town industries in Jiangsu Province.

Additionally, cultural elements are imperative among all the elements in a characteristic town. Thus, cultural elements have been utilized in recent years to inspire innovation, invigorate traditional industries, and facilitate a more comprehensive industrial chain [4]. According to research conducted by Cushman & Wakefield, Chengdu OCT Anren Ancient Town has created an integrated industrial chain through a wise industrial division [5]. As is shown in Figure 2, cultural tourism in Anren Town is regarded as a core industry that is being developed as a priority. Numerous industrial zones surround the core, allowing the system to produce even more impressive revenues.

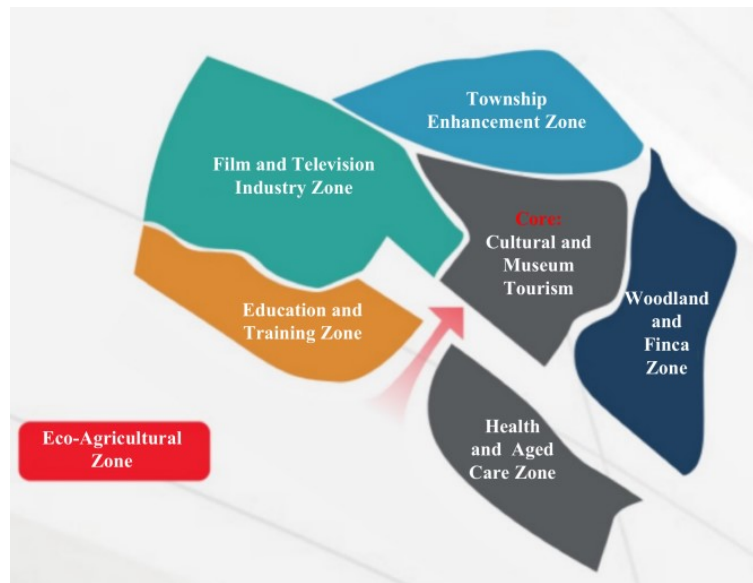


Figure 2: Industrial division in Chengdu OCT Anren Ancient Town.

As a result, the development and innovation in regional industries and their operating patterns can effectively stimulate the local economy in characteristic towns.

2.1.2. Foster harmonious livelihood

Numerous employment positions are undoubtedly created during the construction of characteristic towns and their specialty industries. In 2018, when only considering European employment status in cultural activities, 8.7 million people were engaging in relevant work [6]. Meanwhile, it is highly possible that job circumstances in characteristic towns will attract more talents to participate in strategy-making and town-building, making the place a better one to live in.

Governments in characteristic towns are required to formulate people-oriented policies to attract and retain more residents. Some typical examples include rationalizing housing density, improving infrastructure, and providing well-laid-out stores and factories [3]. Gradually, dwellers in characteristic towns will achieve a higher sense of well-being.

2.1.3. Protect the environment and guarantee sustainable development

A characteristic town could elevate ecological and environmental protection to a new height [2]. This is attributed to a characteristic town's essence, an agglomeration of socio-economic spaces integrating production, living, and ecological functions [7]. Consequently, most policy implementers are concerned about environmental protection when building characteristic towns, which could also guarantee their sustainable development in the future.

2.2. Opportunities for developing characteristic towns in China

2.2.1. Historical and current statement calls for tourism towns

Undoubtedly, China stands as a remarkable country steeped in a profound historical legacy and cultural diversity, which creates a fertile ground for the development of tourism—an industry in which China has a unique edge, also in the creation of characteristic towns. Cultural tourism is a highly-participated industry that reflects people's longing for a better life [8]. Hence, it is evident that the construction of characteristic towns in China must embody the methodology of "integration of

culture and tourism," thereby enhancing visitors' cultural immersion and experience. Furthermore, in the post-COVID-19 era, there is a obvious hunger for cultural exploration among the public, fueling a greater desire for travel. All these factors converge to illustrate the burgeoning opportunities for constructing characteristic towns featured by cultural tourism.

2.2.2. New development of intangible cultural heritage serving characteristic towns.

If we glimpse the current consumption trends in intangible cultural heritage, the size of consumers in China has already reached hundreds of millions [9]. The dissemination channels of intangible cultural heritage have become diversified and dominated by digital economy forms like live broadcasts and short videos.

Furthermore, the designs of intangible cultural heritage are becoming more aesthetically pleasing to young people. The 2022 Intangible Cultural Heritage Consumer Innovation Report indicates that the 90s and 00s have become the mainstay of intangible cultural heritage consumption [9]. This statement reveals that tourism characteristic towns should utilize intangible cultural heritage to attract more new bloods.

With aspect of technical elements, the novel promotion of intangible cultural heritage can help characteristic towns attract more visitors. For example, a virtual simulation animation is used at the famous picture "Riverside Scene at Qingming Festival", which has attracted numerous young visitors [10]. In addition, intangible cultural heritage can be stored as digital forms in the museums [11]. This greatly diversifies visitors' experiences.

3. Methodology

This essay employs a hybrid approach to learning about tourism development in Yangzhou. It integrates a case study of Xi'an, direct observations of Yangzhou's tourism phenomena, and a survey investigating the impact of tourism on the residents' everyday lives.

The survey is designed as follows:

Recognizing the critical role of residents' perspectives in shaping tourism-focused towns, a detailed survey has been designed to capture local attitudes towards Yangzhou's tourism development. The survey employs a Likert scale (1—Strongly Oppose to 5—Strongly Favor) across ten questions:

Q1. The ancient buildings in Yangzhou have regional characteristics.

Q2. Assuming you are a foreigner, would you like to visit Yangzhou's special attractions (e.g., Dongguan Street, Slender West Lake)?

Q3. Yangzhou is a livable city with a good environment.

Q4. Yangzhou's transportation facilities can accommodate both locals and tourists (there are convenient transportation facilities).

Q5. Yangzhou's history and culture are well explored.

Q6. Yangzhou's tourism construction has not affected the daily life of locals.

Q7. Yangzhou's cultural construction and commercialized facilities meet the needs of consumers nowadays.

Q8. You are willing to introduce and publicize the characteristics of Yangzhou to your new friends when you go out.

Q9. Yangzhou's tourism development has unleashed the potential for local employment.

Q10. Are you satisfied with the development of tourism in Yangzhou?

After collecting 100 responses from local residents, the average scores of each aspect will be calculated and compared to see the exact impacts.

4. Case study -- Xi'an

4.1. Basic situation on tourism of Xi'an

In 2023, Xi'an, renowned as one of the "Four Great Ancient Capitals of the World," witnessed a remarkable surge in tourism, transporting a total of 151,857,200 passengers, which marked a 148.6% increase [12]. During New Year's Day holiday, tourism orders in the city increased by 395% year-on-year, and attendance at key scenic spots reception rose by 116% [12]. This dramatic growth reveals the great achievement of Xi'an's tourism.

Undoubtedly, Xi'an captivates visitors with its unique historical charm. However, the successful integration of modern elements with its rich traditional culture has truly pushed Xi'an to the forefront of the tourism industry.

4.2. Historical culture -- Dayan Pagoda Square

Among all the attractions, the Dayan Pagoda Scenic Area is one of the most typical spots built around Tang culture. The Dayan Pagoda Square is designed to be neat and orderly, which fully draws on the layout design form of "Li Fang" in the Tang Dynasty. The square is distributed with sculptures and platforms of varying heights. The difference in height between north and south is about 9 meters, and the square is subdivided into nine platforms, which is in line with the ceremonial system in Tang Dynasty [13]. Meanwhile, the delicate design has potentially added the aesthetic value of Dayan Pagoda Square.

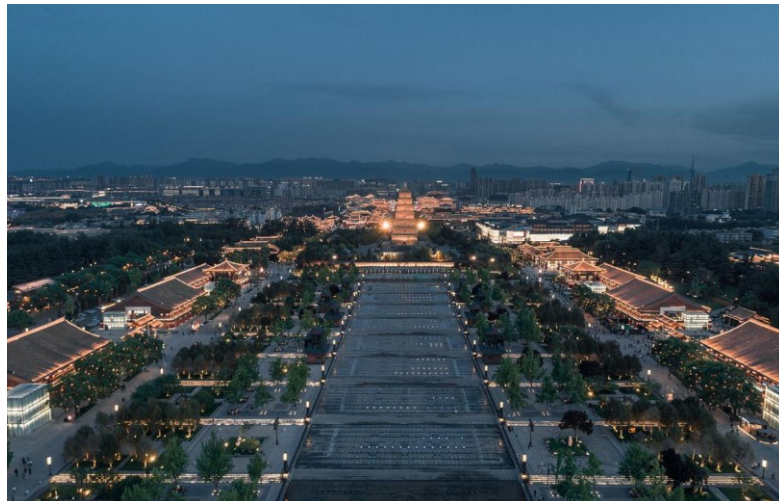


Figure 3: The structure of Dayan Pagoda Square.

The north wall of the Dayan Pagoda Square concentrates on the relief area, featuring the "Great Tang Dynasty" as its theme [14]. The 106-meter relief characterized the prosperity of the Great Tang Dynasty, which not only promote the ancient culture, but also functions as a divider of the square. The delicate relief adequately demonstrates the graceful and elegant Tang culture and integrates it into its ground design, enhancing the cultural connotation of the plaza ground landscape.



Figure 4: Relief in Dayan Pagoda Square.

In terms of the landscape design of the Dayan Pagoda Square, Xi'an has indeed taken full advantage of its rich historical resources.

4.3. Innovative framework of tourism -- Datang Everbright City & Shanxi Museum

As a Wanghong (meaning highly-valued on the Internet) city in China, Xi'an has established a triadic theoretical framework of tourists-media-cities (ToMeCi) to publicize its unique characteristics [15]. In contemporary society, media representations of destinations play a significant role in the attractiveness of tourism.

A prime example of leveraging social media's influence is Datang Everbright City. When typing this spot on a platform like Tiktok, the prosperous Tang Dynasty, remodeled by modern technology, will be presented to every netizen. The fantastic visual attraction on the screen is one of the strongest driving forces that has made Xi'an an acknowledged city in Wanghong. In terms of novel promotion, the most popular case would be the tumbler performance in Datang Everbright City. The performance in 2019 earned more than 230 million views on TikTok, attracting many travelers to Xi'an to see the actress perform [15]. Following the trend online, more tourists decide to visit Xi'an, "clock in" at some famous spots, and post images of their trip to social media. Thus, escalating tourists will be attracted to Xi'an. It's obvious that social media led Xi'an's tourism to a virtuous circle.



Figure 5: The night scene of Datang Everbright City.

Apart from traditional travel, the Shanxi History Museum in Xi'an also holds digital exhibitions on its website, allowing people to enjoy cultural relics without leaving home. The digital exhibition is in the form of exploration with interactive game sessions during the visit. With advanced technology like VR, the digital artifacts on display are very real and vivid, and there is no difference from what is

seen by human eyes. When visiting the online museum, tourists can gain deeper insights into those cultural relics, which in turn increases their interest in enjoying it in person.



Figure 6: A digital exhibition on the Shanxi History Museum Website.

5. Case analysis -- Yangzhou

5.1. Basic information about tourism in Yangzhou

Yangzhou, located in Jiangsu Province, is a town that is celebrated for its significant focus on tourism. With a history stretching back over 2,500 years, Yangzhou is not only steeped in rich cultural heritage but also distinguished as the "Capital of East Asian Culture."

As a traditional tourism characteristic town, Yangzhou boasts a wealth of travel resources. The city's mild climate fosters lush and diverse vegetation, which is particularly vibrant during the spring and summer months. Culturally, Yangzhou is a treasure trove of artistic expression. As the Yangzhou Municipal Government noted in 2024, the city proudly hosts over 20 arts recognized as part of the national intangible heritage list, including the Yangzhou Opera, exquisite lacquerware, and delicate jade sculpture.

Tourism remains a cornerstone of Yangzhou's economy. In 2023, the city welcomed approximately 103.212 million domestic and international tourists, generating a staggering 100 billion RMB in its tourism revenue [16].

5.2. Strengths of targeting and innovation -- Grand Canal Museum & Pishi Street

Like other traditional characteristics towns, Yangzhou's main visitors are families and young generations. Recognizing this trend, Yangzhou has implemented innovative strategies to effectively cater to these demographics.

The Grand Canal Museum in Yangzhou is particularly well-suited for parents with children who prefer educational experiences. The museum showcases the comprehensive history of the Grand Canal's transformation, allowing children to understand this canal more deeply. To enhance the learning experience, the museum is equipped with ample interpretative tools and dedicated volunteers who assist visitors in understanding the exhibits more thoroughly.

Another significant motivator for family travel is the desire to escape the routine of daily life for relaxation and rejuvenation. To align with this need while adding an element of fun, the museum has introduced multiple virtual reality setups that present vivid views of the ancient Grand Canal. The

unique immersive role-playing experience, "Labyrinth Escape of the Canal," has also become a popular attraction, drawing numerous children and young adults.



Figure 7: The Grand Canal Museum.



Figure 8: Roles in "Labyrinth Escape of the Canal".

Pishi Street in Yangzhou is always filled with young people, likely due to the specialty stores that line the street. These stores are thoughtfully decorated in styles that resonate with the preferences of the younger demographic, making it a popular spot for them to "clock in" and experience.

Additionally, the street is home to numerous souvenir shops that carry a range of novel items tailored to the tastes of young consumers.



Figure 9: A "coffee & book" shop on Pishi Street.



Figure 10: Lacquered fan making in Yangzhou.

5.3. Weaknesses of homogenization and design -- Dongguan Street & Xie Fuchun

As an ancient characteristic town, Yangzhou is inevitable to construct antique streets. Dongguan Street is one of the most typical ones. However, this street is currently facing significant challenges related to homogeneity. The goods available on Dongguan Street largely lack Yangzhou's unique characteristics and are similar to items that can be found on antique streets in other cities. Tourists have noted that even the snacks and drinks, such as yogurt and tofu, are indistinguishable from those offered in other historic towns.



Figure 11: The appearance of Dongguan Street.

In addition, Yangzhou suffers from a scarcity of prominent local brands. Xie Fuchun, established in the 1830s, is one of the few well-known brands from Yangzhou, serving as China's first cosmetic enterprise. Despite its rich history, the brand has struggled in recent years. Most of the time, there are hardly any customers in the store because many potential customers are unaware of the superior qualities of Xie Fuchun's makeup products. Furthermore, the brand's sketchy packaging and store decoration may fail to attract tourists' interest or encourage purchases. This situation highlights a missed opportunity for Yangzhou to capitalize on its heritage brands.



Figure 12: The product and store outlook of Xie Fuchun.

5.4. Impact of character town construction on Yangzhou residents -- Survey analysis

There were 100 valid responses collected in total. The diagram below displays the total number of each score as well as the average scores:

Table 1: The number of each score.

	1	2	3	4	5
Regional characteristics	6	1	4	14	75
Tourist attractions	5	1	7	15	72
Environment & Living conditions	6	3	3	13	75
Transportation facilities	3	16	24	19	38
Historical & Cultural exploration	4	5	18	20	53
Influence on locals' daily lives	6	12	22	18	42
Consumer needs	5	5	25	23	42
Confidence in hometown	4	5	5	12	74
Employment situation	6	6	14	24	50
Overall development of tourism	4	3	21	26	46

Table 2: Average scores of the satisfaction situation.

	Average scores		
Regional characteristics	4.51		
Tourist attractions	4.48		
Environment & Living conditions	4.48		
Transportation facilities	3.73		
Historical & Cultural exploration	4.13		
Influence on locals' daily lives	3.78		
Consumer needs	3.92		
Confidence in hometown	4.47	< 3.90	Relatively unsatisfied
Employment situation	4.06	3.90 - 4.45	Moderate
Overall development of tourism	4.07	> 4.45	Satisfied

Excluding residents' inherent affection for their hometown, the average scores can be divided into three levels to measure their satisfaction with Yangzhou's tourism aspects. A score above 4.45 indicates that residents are satisfied with this facet of Yangzhou's tourism. Conversely, a score below 3.90 suggests dissatisfaction. Scores that fall between these two extremes represent a moderate level of satisfaction.

Satisfied level (Average score > 4.45) :

Elements contributing to this high level are primarily related to Yangzhou's natural and cultural heritage, including the local environment, regional characteristics, and tourist attractions. This demonstrates that Yangzhou possesses the essential qualities expected of an ancient town. Consequently, residents exhibit strong confidence in its travel resources.

Moderate (Average score in 3.90-4.45) :

This category highlights the aspects related to Yangzhou's tourism industry's operation, suggesting ample space for enhancement. Specifically, Yangzhou might not have fully leveraged its local tourism potential or implemented innovative strategies to attract targeted customers effectively. Moreover, the tourism sector's contribution to local employment could be further optimized. Enhancing these areas could significantly increase the benefits tourism brings to the city.

Unsatisfied level (Average score < 3.90) :

The relatively lowest scores in this category reveal significant resident dissatisfaction, primarily due to the adverse impacts on their daily lives. During peak travel seasons, locals often experience inconvenience. Roads near popular attractions frequently become congested, reflecting that the existing transportation infrastructure is inadequate for handling the demands of tourism growth. Such issues disrupt the daily pace of life for Yangzhou residents, highlighting critical areas needing attention and improvement.

Although the sample size was adequate for statistical analysis, there are still limitations. The survey may only partially represent some demographic groups living in Yangzhou, which can affect the generalizability of the findings.

6. Conclusion and Recommendation

The exploration of characteristic towns, particularly through the cases of Yangzhou and Xi'an, demonstrates the critical role these towns play in leveraging their unique cultural and historical assets to boost tourism and local economies. This essay illustrated how such towns exhibit their inherent

heritage and adapt it to modern demands. To achieve this, characteristic towns such as Yangzhou should consider the following:

1) Thoroughly learn and tap into local resources:

A characteristic town that effectively understands and exploits its unique local resources, both culturally and naturally, can brand itself more distinctively (Quinn, 2013). This makes marketing campaigns more compelling and can help the town stand out in a crowded tourism market. A robust local flavor can be a powerful tool in promotional strategies, attracting those looking for unique vacation destinations.

2) Implement innovative strategies:

In the conventional commercial framework, characteristic towns should constantly monitor evolving consumer preferences and update and refine their offerings promptly. Additionally, they can innovate their operational models, such as introducing stamp-collecting activities, to enhance the interactivity of local tourism experiences. Such strategic innovations are crucial for boosting their competitive edge in the market.

3) Drive tourism with intangible cultural heritage:

Characteristic towns, especially those with a long history, can use their intangible cultural heritage to drive tourism. On the one hand, they can spend more time on product research and development to produce goods of higher quality that are in line with mainstream preferences. On the other hand, these towns are likely to see improved performance by actively encouraging visitors to create and preserve intangible cultural heritage. Such innovative engagement strategies are poised to attract greater attention and interest.

4) Utilize the strength of social media:

Characteristic towns focusing on tourism can develop a professional, visually appealing social media presence that highlights the town's uniqueness and beauty. For instance, it's recommended to use high-quality images, videos, and engaging stories to showcase the town's attractions, cultural events, and local experiences. Platforms like TikTok, Instagram, and Facebook are especially useful for visual storytelling.

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The Rise of Digital Banking in the UK Financial Sector and Its Impact on Commercial Banks

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Abstract: In the contemporary financial domain, the emergence of digital banks has revolutionized operational models in traditional commercial banking. This article delves into how digital banks, through advanced technology and customer-centric services, compel commercial banks to reevaluate their operational and regulatory frameworks. Specifically, it focuses on the digital banking market in the UK, analyzing how digitalization and technological progress are driving the evolution of competitive dynamics within the financial sector. As one of the world's foremost financial hubs, the UK's trends in financial market development have profound implications for the global financial system. The British government and regulatory bodies have proactively adapted to these shifts, framing policies that facilitate innovation while ensuring security and compliance within digital banking. This backdrop sets the stage for this report to explore the transformative impact of digital banks on traditional banking models in the UK, aiming to understand the regulatory adaptations and the overall influence of digital entities on the conventional banking landscape.

Keywords: Digital Transformation in Banking, UK Financial Market, Regulatory Adaptations, Operational Efficiency

1. Introduction

The rise of digital banks is intricately tied to the dynamic evolution of the contemporary financial landscape, propelled by rapid advancements in technology and the widespread embrace of digitalization. As traditional banking paradigms undergo profound transformations, digital banks harness the power of mobile applications, online platforms, and cutting-edge technologies to meet the expectations of a digitally connected society. This paradigm shift reflects a strategic response to changing consumer dynamics, where individuals increasingly seek banking experiences characterized by convenience, efficiency, and tailored services. Regulatory adaptations and advancements in cybersecurity further foster an environment conducive to the emergence of digital banks, enabling financial institutions to redefine their services, cut operational costs, and remain competitive. The UK, in particular, has seen significant growth in digital banking, which emphasizes convenience and accessibility without the need for traditional physical branches. This introductory analysis sets the groundwork for a deeper exploration of how these innovations have impacted the operational frameworks and strategic positioning of commercial banks [1].

2. Impact of Digital Banks on Commercial Banks in the UK

2.1. Elevated Expectations from Customers

PwC's UK research revealed that developers in commercial banks spend significant time maintaining customer service systems to meet higher expectations [2]. For instance, commercial banks have launched 'Talking ATMs' to cater to customer needs [3].

The advent of digital banks has transformed customer expectations in the banking sector. Customers now demand not only basic online banking services but also seamless, personalized, and secure experiences across various digital platforms. Traditional banks must innovate and adapt to these changing expectations to remain competitive in the digital age.

Meeting these heightened expectations is not merely a matter of convenience but crucial for customer retention and satisfaction. With the increased competition from digital banks, traditional banks are pressured to enhance their customer service through innovative solutions like live chat, chatbots, and 24/7 support. An exceptional customer experience can lead to higher customer loyalty, a competitive edge, and an improved brand reputation. However, the challenge lies in integrating these digital services seamlessly into existing systems without compromising service quality. Moreover, as technology evolves, customer expectations will continue to rise, necessitating ongoing innovation and investment in customer service technologies.

2.2. Personalization Driven by Data and Cost Structure Optimization

Lloyds Banking Group, with over 10 million active internet users and 5 million mobile users, has invested £1 billion in digital transformation. This investment has driven the adoption of data-driven personalization and enhanced digital services [4].

Using customer data has emerged as a key strategy for commercial banks to offer personalized banking experiences. By leveraging advanced analytics and machine learning, banks can provide customized recommendations and financial products tailored to individual customer needs. Additionally, digital transformation has necessitated reevaluating cost structures to achieve greater operational efficiency and cost-effectiveness.

Data-driven personalization has the potential to revolutionize the way banks interact with customers. By analyzing vast amounts of data, banks can gain insights into customer behavior, preferences, and financial needs, allowing for more targeted marketing efforts and product offerings. This approach not only enhances customer engagement and satisfaction but also improves cross-selling opportunities and risk management. However, banks must prioritize data privacy and security to comply with regulations and maintain customer trust. As data privacy regulations continue to evolve, banks must invest in robust data protection measures and transparency initiatives to ensure compliance and foster trust among customers. Additionally, optimizing cost structures through digital initiatives is essential for banks to remain competitive in a rapidly evolving market. By investing in technology infrastructure and automation, banks can streamline operations, reduce overhead costs, and improve overall efficiency. However, achieving cost optimization requires careful planning and strategic decision-making to balance short-term cost savings with long-term value creation.

2.3. Adjustments in Operational and Regulatory Frameworks

European retail banks have digitized only 20-40% of their processes, with less than 0.51% of their total expenditure on digital initiatives [5]. Mc Kinsey highlights that digital transformation can place over 30% of revenues at stake for a typical European bank [6].

The shift towards digital banking models, characterized by lower operational costs and increased efficiency, exerts pressure on traditional banks to modify their operational and cost structures.

Moreover, the growing presence of digital banks necessitates regulatory adjustments to ensure secure and private online transactions and protect consumer interests.

To remain competitive in the digital era, banks must invest in advanced technology to streamline operations, reduce costs, and enhance customer experiences. Regulatory frameworks need to evolve to address emerging challenges such as cybersecurity, data privacy, and anti-money laundering [5]. Compliance with these regulations is essential for maintaining financial stability and preserving customer trust and confidence. Banks should adopt a proactive approach to regulatory compliance, leveraging technology and automation to ensure adherence to regulatory requirements while minimizing operational risks. Collaboration with regulatory authorities and industry stakeholders is crucial for staying abreast of regulatory changes and implementing best practices. By fully embracing digital transformation and adhering to regulatory compliance, banks can innovate through technological advancements like AI and blockchain, enhance operational efficiency with automation, and provide personalized customer experiences. This approach not only improves security and transparency but also optimizes resources, reduces costs, and increases customer satisfaction and loyalty, while ensuring compliance and mitigating risks.

3. Strategic Responses of UK Commercial Banks to Digital Transformation

3.1. Enhancing Customer Service

Commercial banks are introducing innovative digital services such as 'Talking ATMs' and advanced online banking features to enhance customer experiences [3].

To meet the evolving expectations of customers who prefer seamless digital banking experiences, traditional banks must innovate and adapt. Enhancing service speed, transparency, and accessibility is critical in retaining and attracting customers in an increasingly competitive market.

Providing superior digital experiences is not just about meeting customer demands; it's about exceeding them. Banks need to continuously gather and analyze customer feedback, conduct satisfaction surveys, and utilize tools like the Net Promoter Score (NPS) to gauge customer loyalty. Investing in digital innovations such as mobile banking apps, intuitive user interfaces, and personalized financial management tools can significantly improve customer service quality. However, the implementation must be strategic to ensure consistency and reliability across all service platforms. Moreover, as customer preferences evolve and technology advances, banks must remain agile and responsive, continuously refining their digital offerings to stay ahead of the curve.

3.2. Leveraging Data-Driven Personalization

Lloyds Banking Group's extensive use of digital capabilities demonstrates the importance of data-driven personalization in meeting customer demands[4].

Data-driven personalization has emerged as a game-changer in the banking industry, allowing banks to offer tailored services and experiences based on customer preferences and behavior. By leveraging advanced analytics and artificial intelligence (AI), banks can create detailed customer profiles and deliver personalized recommendations, products, and services in real-time.

Integrating AI-enhanced Customer Relationship Management (CRM) systems to analyze real-time data enables banks to anticipate customer needs, personalize marketing messages, and offer targeted financial solutions. This level of personalization not only enhances customer satisfaction and loyalty but also drives revenue growth through increased cross-selling and upselling opportunities. However, banks must tread carefully to ensure data privacy and security. With growing concerns about data breaches and regulatory scrutiny, maintaining customer trust is paramount. Banks must implement robust data governance frameworks, encryption technologies, and cybersecurity measures to safeguard customer data and comply with regulations such as the General Data Protection Regulation

(GDPR). By striking the right balance between innovation and privacy, banks can unlock the full potential of data-driven personalization while mitigating associated risks.

3.3. Optimizing Cost Structures

Banks like Barclays and Citibank have adopted digital technology to optimize their cost structures and remain competitive [7].

Digital transformation has prompted banks to reevaluate their cost structures and operational efficiency. By leveraging technology and automation, banks can streamline processes, reduce overhead costs, and improve profitability.

Leveraging automation to streamline operations can result in significant cost savings and operational efficiency gains. By automating routine tasks such as account opening, loan processing, and customer inquiries, banks can free up resources to focus on value-added activities and strategic initiatives. Conducting thorough cost-benefit analyses helps identify areas for investment and optimization, ensuring that digital initiatives deliver maximum return on investment (ROI). Additionally, negotiating favorable vendor contracts, leveraging cloud computing, and exploring partnerships with fintech companies can further enhance cost optimization efforts [8]. However, achieving sustainable cost optimization requires a holistic approach that balances short-term cost savings with long-term value creation. Banks must carefully assess the trade-offs between cost reduction and service quality, ensuring that efficiency gains do not come at the expense of customer satisfaction or regulatory compliance.

3.4. Strengthening Regulatory Compliance

PwC's survey indicates that banks are willing to cooperate with fintech companies and comply with regulatory requirements [9].

Maintaining regulatory compliance is a top priority for banks, given the complex and ever-changing regulatory landscape. Banks must invest in robust compliance systems and processes to ensure adherence to regulations and mitigate compliance risks.

Investing in robust compliance systems and conducting regular audits are essential for managing regulatory requirements effectively. By implementing advanced technology solutions such as regtech (regulatory technology) platforms, banks can automate compliance processes, reduce manual errors, and enhance regulatory reporting accuracy. Proactive engagement with regulators and industry associations enables banks to stay abreast of regulatory changes, anticipate compliance challenges, and implement best practices. Collaboration with fintech companies and regtech startups can provide banks with innovative solutions to address compliance-related issues. By embracing a culture of compliance and accountability, banks can strengthen their reputation, build trust with regulators, and mitigate regulatory risks. Ultimately, proactive compliance management is not just a legal requirement but also a strategic imperative for banks looking to thrive in a highly regulated environment [10].

4. Status and Recommendations

4.1. Addressing Rising Customer Expectations

Commercial banks are facing increasing pressure to meet the rising expectations of customers in the digital age. As customers demand more seamless, personalized, and accessible banking experiences, banks must innovate to stay competitive.

To address these expectations, commercial banks should prioritize continuous innovation and enhancement of their service offerings. Establishing customer advisory boards can provide valuable

insights into customer needs and preferences, guiding the development of new products and services. Regularly conducting satisfaction surveys and employing feedback mechanisms like the Net Promoter Score (NPS) can help banks stay informed about customer satisfaction levels and identify areas for improvement. Additionally, staying abreast of competitive dynamics and industry trends will enable banks to anticipate and respond to shifts in customer expectations effectively.

4.2. Implementing Data-Driven Personalization

Data-driven personalization has emerged as a key strategy for commercial banks to engage customers and drive loyalty. However, many banks are still in the early stages of leveraging advanced analytics and AI to offer personalized financial products and services.

To fully leverage the benefits of data-driven personalization, commercial banks should invest in AI-enhanced Customer Relationship Management (CRM) systems. These systems can analyze real-time data to create detailed customer profiles and deliver personalized recommendations. It is essential to prioritize data privacy and security to comply with regulatory requirements and maintain customer trust. Investing in advanced analytics and machine learning tools will enable banks to offer highly personalized experiences, thereby increasing customer engagement and loyalty.

4.3. Optimizing Cost Structures

Optimizing cost structures is critical for commercial banks to remain competitive in the digital banking landscape. While some banks have made progress in leveraging automation and technology to streamline operations, there is still room for improvement.

To optimize cost structures, banks should focus on leveraging automation to streamline operations and reduce costs. Conducting thorough cost-benefit analyses can help identify areas where investments in technology can yield significant returns. Furthermore, negotiating favorable contracts with vendors and exploring collaborative opportunities with fintech companies can enhance cost optimization efforts. Efficient cost management will enable banks to allocate resources strategically and support growth initiatives.

4.4. Enhancing Regulatory Compliance

Regulatory compliance is a top priority for commercial banks, given the complex and ever-changing regulatory landscape. While many banks have robust compliance systems, staying compliant requires ongoing investment and vigilance.

To enhance regulatory compliance, banks should invest in robust compliance systems and conduct regular audits to ensure adherence to regulatory requirements. Proactively engaging with regulators can help banks stay ahead of regulatory changes and address compliance-related concerns effectively. Implementing advanced technology solutions to manage compliance can mitigate risks and promote financial stability. By fostering open communication with regulators, banks can navigate the complex regulatory landscape more efficiently, ultimately enhancing trust and credibility in the banking sector.

5. Conclusion

The advent of digital banking has significantly reshaped the landscape of the UK banking sector. This report has highlighted the pivotal changes traditional banks must navigate to stay relevant amidst the rising tide of digital innovation. As consumer preferences veer increasingly towards digital solutions, traditional banks are at a crossroads: adapt swiftly or risk obsolescence. The shift towards digitalization is not merely a technological upgrade but a strategic transformation that demands an overhaul of customer service, operational efficiencies, and regulatory compliance. Traditional banks

must embrace data-driven personalization to cater to the evolving demands of customers, ensuring tailored and responsive banking experiences. Furthermore, regulatory bodies must continue to evolve, crafting policies that protect consumers while fostering innovation. The successful banks of tomorrow will be those that can seamlessly integrate technology while upholding the trust and security that customers expect. This evolution presents a unique opportunity for traditional banks to redefine their roles in a digital-first era, emphasizing technological adoption and a commitment to enhancing customer engagement and operational agility.

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A Study on the Brand Marketing Strategy of Luckin Coffee Based on SWOT Analysis

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Abstract: Using a SWOT analysis, this study investigates the brand marketing approach of Luckin Coffee, a well-known Chinese coffee company. With the backdrop of the rapid evolution of marketing strategies driven by the Internet and new media, this study aims to address the gap in understanding how marketing strategies can be tailored to a specific company's unique characteristics. Specifically, it investigates Luckin Coffee's strengths, weaknesses, opportunities, and threats based on an analysis of its current marketing efforts across channels and relevant brand topics. The findings provide insights into how Luckin Coffee can optimize its marketing strategy to seize opportunities and mitigate threats, ultimately contributing to the enhancement of the brand's competitiveness and relevance in the market. This research is a valuable reference for other coffee brands seeking to formulate effective marketing strategies in today's dynamic business environment.

Keywords: SWOT Analysis, Marketing Strategy, Social Media Marketing, Coffee Brand.

1. Introduction

In recent years, marketing strategy has witnessed significant developments and advancements. These advances have been made possible by the development of the Internet and new media, which also provide important guidelines for business operations. Several previous studies have examined the selection and adoption of marketing strategies. For example, Moorman and Day investigated the individual and integrative roles of four elements of marketing organization: capabilities, configuration (including structure, metrics, and incentives), culture, and the human capital of marketing leadership and talent [1]. Yarbrough et al. focused on interrelationships among product market strategy decisions and organizational culture orientations [2]. Although these studies have offered useful insights, there are still deficiencies in the present comprehension of marketing strategies that may be applied to a particular company, considering the company's unique qualities. Meanwhile, not much research has been done on the marketing strategy used recently by well-known Chinese coffee business Luckin Coffee.

Therefore, this study aims to provide marketing suggestions for Luckin Coffee based on a SWOT Analysis, examining its strengths, weaknesses, opportunities, and threats through the investigation of its existing marketing across channels and hot topics concerning the brand recently. Moreover, this study has potential practical implications for the progress of coffee brands and the development of national brands, which can lead to improvements in the efficiency and effectiveness of marketing.

2. Marketing overview of Luckin Coffee

2.1. Brand overview

Luckin Coffee was founded in 2017 and is based in Xiamen, China. Positioned as a new retail speciality coffee operator, the company is committed to promoting the popularization and development of coffee consumption in China. At the end of October 2017, the experimental store of Luckin Coffee was open for business in Beijing Galaxy SOHO. Since then, with the rapid opening of stores, substantial price subsidies, celebrity endorsements and other high-profile promotional activities, Luckin Coffee began appearing in major cities' core areas. As of June 5, 2023, the number of Luckin Coffee stores has exceeded 10,000, becoming China's biggest coffee chain brand [3]. Luckin Coffee aims to provide customers with high-quality, cost-effective and convenient coffee and food and beverage products using a new retail model. The vision is to build a world-class coffee brand that becomes part of everyone's daily life.

2.2. Characteristics of marketing strategy

2.2.1. Discount promotions

In June 2023, Luckin Coffee launched the "¥9.9 Thanksgiving Campaign". Guo Zhenyi, Chairman and CEO of Luckin Coffee, said at the Q2 2023 earnings meeting that the ¥9.9 coffee promotion would continue for at least two years to increase market share. In the first week of the ¥9.9 campaign, Luckin Coffee sold more than 39 million cups. Throughout 2023, the number of new transaction customers of Luckin Coffee exceeded 95 million, of which the number of new transaction customers in the fourth quarter exceeded 26 million, and the average monthly number of transaction customers exceeded 62 million, with the cumulative number reaching 230 million.

2.2.2. Celebrity endorsement

When Luckin Coffee first launched, it focused on "young business coffee" and used young celebrities Zhang Zhen and Tang Wei to introduce the brand to young professionals, gaining significant attention.

In 2021, Luckin Coffee signed Eileen Gu early on, anticipating her Olympic success. On November 27, 2023, Luckin Coffee announced famous actor Yi Yangqianxi as its global spokesperson. Yi's youthful, energetic, and fashionable image perfectly aligns with Luckin's, sparking enthusiasm from fans and raising brand awareness. Fans have also expressed support and trust in this partnership, expecting it to bring more opportunities for Luckin Coffee.

2.2.3. Cross-broader cooperation

Luckin masters the fan economy and carries out cross-border marketing with celebrity IP, film and television IPs. In addition to joining hands with real-life IP, Luckin has also ventured into virtual IP cooperations, such as the cooperation with Pikachu. The target consumers behind such cross-border derivatives are the loyal fan base of the cooperating parties. At the same time, Luckin also adopts innovative cross-border combinations, such as the union of Luckin and the Forbidden City, which demonstrates the integration of the brand with the excellent traditional culture. Whether in cross-border cooperation or event promotion, Luckin focuses on innovation and creating topicality, using the value of social communication and triggering consumers' attention and love for its cross-border derivatives.

3. The SWOT analysis of Luckin Coffee's marketing strategies

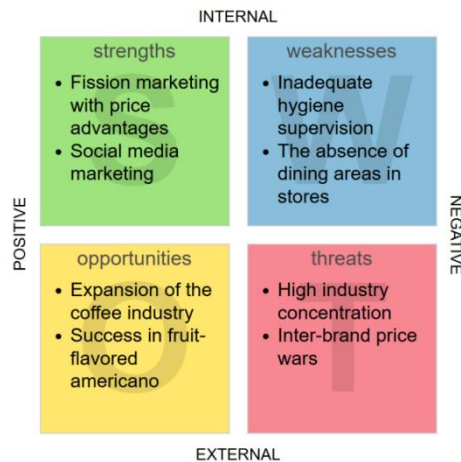


Figure 1: The SWOT analysis of Luckin Coffee's marketing strategies

3.1. Strength

3.1.1. Fission marketing with price advantage

Luckin Coffee carries out "extensive fission marketing" with comprehensive coverage and high frequency with subsidies. Fission marketing is a marketing model that combines the consumer market with social media to form the strategy of "socialization + sharing" [4]. Its main purpose is to introduce traffic from external social media platforms by encouraging consumers to share products. Therefore, by encouraging customers to join the community to receive coupons, Luckin Coffee has rapidly expanded its market by converting advertising costs into customer benefits, lowering the price of its goods while gaining high brand acceptance. Meanwhile, harboring the brand vision of making good coffee affordable and accessible to everyone, most of its products are priced at less than 15 yuan compared to high-end coffees such as Starbucks and M Stand. Hence, it has a much broader mass market.

3.1.2. Social media marketing

Social media marketing allows firms to use social media to build relationships with customers, employees, communities, and other stakeholders [5]. Luckin Coffee leverages social media platforms for marketing, capturing potential consumers' attention through appealing visuals and engaging content.

For instance, Luckin is active on WeChat, releasing videos in forms of commercials, lottery announcements, and themed dramas to showcase its products. These videos have concise yet engaging texts and a homepage activity entrance, motivating user participation. Additionally, its official WeChat account regularly promotes new products with "Click to get coupon" incentives and decorative animations, enhancing product promotion and visual appeal. Luckin Coffee also engages in sweepstakes and contests to boost consumer engagement and loyalty, broadening its brand reach and attracting target audiences.

3.2. Weakness

3.2.1. Inadequate hygiene supervision

On May 8, 2024, a netizen claimed moldy dots on Luckin ice cubes. Luckin Coffee has faced hygiene issues before, including Mr. Zhu finding a suspected plastic in his coffee. After complaints, he received 1,000 yuan compensation. These issues adversely affect customer satisfaction. A decrease in customer satisfaction leads to a decrease in customer loyalty [6]. Thus, the hygiene of Luckin Coffee needs to be more strictly regulated, which is not only for the protection of the brand reputation and customer loyalty but also for the guarantee of the health of consumers.

3.2.2. The absence of dining areas in stores

More than 92% of Luckin Coffee's stores are quick pickup stores, which are smaller and mostly located in populated areas. While this design allows Luckin Coffee to expand excitedly at a small cost, it is also a disadvantage compared to coffee shops that focus on stores with office or dining areas, such as Starbucks. Starbucks has successfully created a high-end, professional brand image by providing comfortable dining and office areas. In contrast, Luckin Coffee's quick pick-up store design may give the impression of being more convenient and fast but relatively less high-end. This may affect the choice of some consumers who pursue quality and experience. Meanwhile, coffee shops with dining areas are not just places for buying coffee, they are also places for social interactions. People can chat with friends, hold meetings or conduct business negotiations there. However, the design of Luckin Coffee's quick pick-up store may limit the possibility of such social interactions.

3.3. Opportunities

3.3.1. Expansion of the coffee industry

With the improvement of the living standards of Chinese people and the ongoing growth of the domestic coffee market, coffee culture is gradually gaining acceptance in China, leading to a general uptrend in the local coffee industry [7]. According to London International Coffee Organization statistics, China's coffee consumption is experiencing a significant growth rate of 15% annually, outpacing the global average growth of 2% [8]. So, it can be recognized that China's coffee market has enormous growth potential, offering opportunities and laying the foundation for Luckin Coffee's future expansion and development.

3.3.2. Success in Fruit-Flavored Americano

In 2024, Luckin Coffee triumphantly announced its sales of Orange Americano surpassed 100 million cups. The niche product's floral-citrus blend, using top-grade beans and NFC juice, captured consumers' taste buds. Subsequent grapefruit and lemon variants were also well-received. Hence, Luckin should seize this opportunity to invest in R&D for more fruit-flavored series to stand out.

3.4. Threats

3.4.1. High industry concentration

Starbucks entered China in 1999 as the fastest-growing market. Although the emergence of Luckin Coffee caused a sudden downturn in Starbucks in China, the high density of the coffee industry is still a threat to Luckin. For example, there has been a proliferation of small and medium-sized coffee brands in recent years, such as M stand, Manner coffee, Cotti Coffee and Tim Hortons, which are

new local Chinese brands created in recent years. These brands are expanding rapidly and are favored by Chinese consumers. At the same time, the big brands that entered the Chinese market long ago, such as Costa and Starbucks, also occupy a significant market share. Therefore, in such a dense industry, innovating, surviving and growing is a challenge for Luckin Coffee.

3.4.2. Inter-brand price wars



Figure 2: Luckin Coffee's Net income growth trend and operating profit/(loss) from Q4 2021 to Q4 2023[9]

In the fierce competition in the coffee industry in 2023, Luckin and Cotti opened more than 13,000 new stores, far exceeding the total number of Starbucks stores in China. The intensity of the price war is evident, with Luckin's low price strategy and Cotti's coupon making ¥9.9 the industry's keyword. However, the side effects of the price war also showed up at the end of last year. Although Luckin's total net revenue in the fourth quarter of 2023 increased by 91.2% year-on-year, mounting to RMB7,065.0 million (US\$995.1 million), operating expenses as a percentage of net revenues raised to 97.0% in the fourth quarter of 2023 from 91.5% in the same quarter of 2022, mainly due to the increase in cost of materials as a percentage of net revenues resulting from the decreased average selling price of the Company's products [9]. In fierce market competition, coffee brands must seek new ways to grow beyond the price war. Changing consumer focus from price to brand value is a new challenge for Luckin.

4. Recommendations for Luckin Coffee's marketing strategies

4.1. Strengthening quality supervision

Safe food saves lives. Many millions become sick, while hundreds of thousands die every year because they consume unsafe food [10]. With the previous hygiene incidents, a negative impression of Luckin Coffee. In order to correct the mistake and repair the image, what Luckin can do is to strengthen the regulation of hygiene to ensure food safety. At the same time, this process can be translated into part of the marketing. For a brand to recover, it needs to work with its stakeholders and the more comprehensive industry network, revitalizing transparency, providing tangible evidence, and restoring trust are all key factors [11]. Regarding Luckin, the products can be sent for inspection regularly, and food safety reports can be put in the form of monthly or quarterly reports in the newsletters so that consumers can be assured of their safety, and this can be transformed into a highlight in marketing to publicize its products and attract consumers.

4.2. Promote brand extension

Brand extension strategies provide opportunities to use brand awareness and image to enter new markets [12]. Moreover, it is important to promote brand extension because it positively impacts the brand equity of the beverages [13]. Luckin Coffee can strengthen its cross-border cooperation with famous brands in different industries to create a unique consumer experience through co-branded products and joint promotion. For example, cooperating with fashion brands to launch limited-edition coffee cups, which not only leverages the brand influence and consumer base of the other party, but also brings freshness and topicality to Luckin Coffee. Luckin can also take advantage of its image as a local Chinese brand by combining coffee elements with traditional Chinese culture and launching limited-edition products, such as coffee mooncakes and coffee rice cakes, to enhance its cultural heritage and affinity.

5. Conclusion

After a thorough analysis of Luckin Coffee's marketing strategies and the corresponding SWOT evaluation, it is evident that Luckin Coffee has emerged as a major player in China's coffee market through discount promotions, celebrity endorsements, and social media marketing.

Its strengths lie in pricing advantages and social media outreach, while hygiene supervision and limited dining space are weaknesses. Opportunities abound in the expanding coffee industry, but threats from high competition and price wars persist. To strengthen its marketing, Luckin Coffee should enhance quality supervision, promote brand extension through innovative campaigns, and differentiate itself from competitors. By leveraging its strengths, addressing weaknesses, seizing opportunities, and mitigating threats, Luckin Coffee stands a good chance of continuing its impressive growth trajectory.

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An Analysis of the Optimization of ANTA's Marketing Strategy

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Abstract: ANTA's announcement of Irving as the face of their basketball division, alongside record revenue growth, underscores the potency of strategic marketing in driving profitability and brand recognition. This paper explores the significant impact of effective marketing strategies on business development, using the case study of ANTA's collaboration with NBA player Kyrie Irving as a focal point. By adopting SWOT analysis, this paper delves into the pivotal role of marketing in leveraging strengths, addressing weaknesses, seizing opportunities, and mitigating threats. Moreover, it elucidates Irving's multifaceted influence, from his on-court prowess to his social media presence and philanthropic endeavors, underscoring the immense value he brings to brand partnerships. This paper further examines the synergies between ANTA's brand strengths and Irving's influence, emphasizing the competitive edge attained through strategic collaboration. While the study identifies the importance of marketing strategies, it also acknowledges areas for future research, advocating for deeper empirical analysis and case studies to enhance insights into maximizing marketing efficacy. Ultimately, this paper underscores the paramount importance of robust marketing strategies in optimizing business competitiveness and driving sustained growth in dynamic market landscapes.

Keywords: ANTA, Kyrie Irving, Marketing strategy.

1. Introduction

ANTA's recent signing of NBA player Kyrie Irving on July 12 has a profound impact on the company's growth and revenue. By appointing Irving as the Chief Creative Officer, ANTA has leveraged his star power and expertise to enhance the brand's image and drive profits. One of the key initiatives Irving is involved in is the design of an exclusive logo and personal product line for ANTA Basketball, which is expected to further boost the company's financial performance. In 2023, ANTA experienced a remarkable 16.2% increase in revenue, reaching a record RMB 62.36 billion (US\$8.63 billion). This growth was driven by the success of the namesake brand, which saw its revenue grow by 9.3% to RMB 30.31 billion [1]. These impressive figures highlight the power of effective marketing strategies in elevating brand awareness and attracting a larger customer base. Successful marketing strategies not only enhance brand visibility but also have the potential to drive product or service sales. By understanding and meeting customer needs, companies can foster customer loyalty and retention, which in turn contributes to sustained profitability. Furthermore, innovative and targeted marketing approaches can open doors to new markets and appeal to diverse

customer segments, expanding the company's reach and revenue streams. To navigate the complexities of the market, businesses employ various analytical tools, such as a SWOT analysis [2]. This method allows companies to gain insights into their internal strengths and weaknesses, as well as external market opportunities and threats. Armed with this knowledge, companies can strategically position themselves to capitalize on market opportunities while mitigating potential risks. The significance of a robust marketing strategy for driving business development cannot be overstated. It not only forecasts future growth but also enhances customer retention and guides a company's competitive strategies. ANTA's partnership with Kyrie Irving exemplifies the power of effective marketing, as it has not only elevated the brand's image but also contributed to its sustained success and profitability. By continuously refining their marketing approach, companies can remain competitive, expand their market share, and secure their position in the industry [3].

2. Technical Attainment and Playing Style

Brand identity has become a top priority for branding. As the demand for branding grows, a number of professional service (design, advertising, consulting) firms have come into existence. These companies are mainly responsible for the design related to brand identity, which has become one of the main businesses of many advertising agencies that have flourished in the last century [4]. In the modern professional basketball league, players have evolved from being mere athletes to becoming pivotal figures in commercial branding and marketing. Kyrie Irving, one of the top basketball players, possesses commercial value that extends beyond his on-court performance and stems from his personal traits and image. A comprehensive analysis of Irving's characteristics allows for a better understanding of his value in the business world. One of the key elements contributing to Irving's commercial value is his technical prowess and playing style. As an exceptionally skilled point guard, Irving's superb dribbling and scoring ability make him the focal point of attention on the court. His technical performance not only garners the applause of fans but also captures the interest of numerous commercial brands. In business collaborations, Irving's technical advantages serve as a significant selling point, attracting more partners and creating additional business opportunities. In addition to his on-court abilities, Irving excels in social media engagement and personal image development. His active participation in various social media platforms and frequent interaction with fans have not only bolstered his popularity but have also strengthened the emotional connection he shares with his supporters. Furthermore, Irving's unique style and personalized image have garnered a substantial fan following. In the realm of business partnerships, Irving's social media presence and personal image provide brands with broader exposure and deeper market penetration. Irving's character also shines through his positive attitude towards off-court activities and philanthropy. Owen told Interface News, "The core elements included in the design of the signature shoe are love, forward thinking, visual craftsmanship, listening to the community, focusing on charity, and helping those in need. It's a product that will use a lot of craftsmanship and ensure comfort, amongst all the details "I'm involved in" [5]. His active involvement in charitable endeavors and commitment to promoting social good highlight an aspect of his personality that can be leveraged by brands to enhance their corporate social responsibility image. By aligning themselves with Irving's values and contributing to meaningful causes, brands can enhance their reputation and cultivate customer loyalty. To fully comprehend Irving's commercial value, one must consider his multifaceted attributes, including his technical skills, social media presence, personal image, and philanthropic activities. By understanding and leveraging these facets of his character, businesses can forge stronger partnerships with Irving, thereby enhancing their brand image and expanding their market reach. The modern professional basketball league has transformed players into more than just athletes, with Kyrie Irving exemplifying the commercial value derived from personal traits and image. His technical abilities,

social media engagement, personal image, and philanthropic endeavors all contribute to his overall commercial value. Businesses that recognize and capitalize on these aspects of Irving's character can form stronger partnerships with him, ultimately enhancing their brand image and expanding their market reach in the process.

3. Social Media Presence and Personal Image Building

Since the 20th century, the development mode of China's sports brand enterprises has mainly been to use the expansion of stores to increase turnover, although this channel expansion has temporarily promoted the economic development of their enterprises, but it has also left serious problems for the enterprises. Along with the continuous development of domestic sports brand enterprises, the internal conflict between domestic sports brands has become more serious, while the localized management strategy of international sports brand enterprises for the Chinese market has also gradually shown its effectiveness [6]. ANTA, as a leading sporting goods brand in China, has always been at the forefront of innovation and strategic partnerships to enhance its international influence. One such collaboration opportunity has presented itself in the form of Kyrie Irving, a renowned American basketball star with Native American heritage. This unique combination holds great potential for ANTA to expand its presence in the competitive US market. By leveraging ANTA's brand strengths and incorporating Irving's heritage, the partnership can provide ANTA with new inspiration and direction in developing the US market. The incorporation of Irving's Native American heritage can lead to the creation of unique product lines and innovative marketing campaigns. ANTA, being an international brand, can design and launch a series of products that pay homage to Native American culture, including basketball shoes and apparel inspired by the rich traditions and symbolism of the Native American people. This strategic move not only captures the attention of American consumers but also establishes a distinctive brand image for ANTA in the American market, setting it apart from its competitors. The combination of Irving's Native American heritage and ANTA's dedication to quality and innovation can create a broader market space for the brand to thrive in the US. Native American culture holds significant esteem in today's society, with increasing recognition and appreciation for its rich history and traditions. By collaborating with Irving, ANTA can incorporate Native American cultural elements into their product design, marketing activities, and overall brand strategy. This integration will attract a dedicated consumer base interested in supporting brands that embrace and celebrate diverse cultures. Through this strategic partnership, ANTA can expand its influence and market share in the US by appealing to consumers who are captivated by Native American culture. The incorporation of Native American heritage into ANTA's offerings will not only attract attention but also establish a deeper emotional connection with consumers who value cultural appreciation and authenticity.

Furthermore, this collaboration enables ANTA to tap into Irving's personal brand and influence, as he embodies the values of determination, resilience, and cultural pride. His affiliation with ANTA and the incorporation of his Native American heritage will resonate with consumers who resonate with these values, further boosting ANTA's image and market appeal. The collaboration between ANTA and Kyrie Irving holds immense potential for both parties. By combining ANTA's brand strengths with Irving's Native American heritage, ANTA can create unique product lines and marketing campaigns that resonate with American consumers. This strategic move will not only differentiate ANTA from its competitors but also establish a deeper connection with a dedicated consumer base. Through this collaboration, ANTA can expand its influence, market share, and brand image in the highly competitive US market. As a sunrise industry in China, sports industry has a broad development prospect and potential. ANTA's development model also provides an example for the development and construction of other sports brands in China [7].

4. Off-Court Activities and Philanthropy

Kyrie Irving, a top basketball player known for his exceptional skills on the court, has also established a significant presence in the business world. His influence extends beyond the realms of athletics, as he becomes the face of various brands and forms lucrative business partnerships. By delving into the concept of Kyrie Irving's star effect, we can gain a better understanding of how his influence impacts business sales and awareness. One of the key aspects of Kyrie Irving's star effect is its ability to significantly boost the sales of a company's products. As a highly respected basketball player, his image and fame attract a vast number of fans and supporters. When companies choose Kyrie Irving as their brand ambassador, they not only benefit from his exceptional performance on the basketball court but also leverage his influence and extensive fan base on social media to market their products. Due to his endorsement, Kyrie Irving's fans and supporters are more inclined to purchase the endorsed brand's products, ultimately leading to a substantial increase in the company's sales. Furthermore, Kyrie Irving's star effect plays a vital role in increasing business awareness. Being an internationally acclaimed basketball superstar, Kyrie Irving's name and image are widely recognized. When companies opt to collaborate with him, their brands gain greater exposure and attention. Whether it be on the court or in everyday life, Kyrie Irving commands a tremendous amount of attention, which effectively enhances a company's visibility and brand image. By closely analyzing the strengths of the ANTA brand and Kyrie Irving's influence in the basketball world, it becomes evident that their partnership can be fully exploited to create a robust marketing cooperation strategy. To ensure a successful collaboration, measures can be implemented to address potential disadvantages and market threats. This can involve developing a clear brand positioning strategy and establishing a comprehensive risk management plan [8].

By seizing the opportunity to collaborate with Kyrie Irving, ANTA and its co-created products can gain a competitive edge in the market, further solidifying the company's position in the sports footwear and apparel industry. Consumers are more likely to develop an interest in and desire to spend money on brands associated with Kyrie Irving. Moreover, Kyrie Irving's personal image enhances the professionalism of ANTA's sports products, making them more appealing to potential customers. Kyrie Irving's star influence extends beyond the basketball court and leaves a significant impact on the business world. Through his endorsement, companies can witness a substantial increase in sales, as his image and influence attract a large fan base. Additionally, working with Kyrie Irving enhances a brand's visibility and image, ultimately leading to increased awareness. By thoroughly examining the potential of a partnership between ANTA and Kyrie Irving, businesses can leverage their respective strengths and create a successful marketing strategy. The collaboration not only solidifies ANTA's position in the market but also attracts consumers who are drawn to Kyrie Irving's image and professionalism [9].

5. Conclusion

In this paper, the study delves into the strategic integration of NBA star Kyrie Irving into ANTA's marketing campaigns, aiming to shed light on the significant impact it has had on the brand's growth and market positioning. By investigating Irving's dual roles as both the face of ANTA Basketball and its Chief Creative Officer, the research reveals how his involvement has played a pivotal role in driving the company's revenue and enhancing its brand image.

A notable example of the profound effect of celebrity endorsements in sports marketing is seen in 2023, after Irving's endorsement, when ANTA experienced a remarkable 16.2% revenue increase, reaching an unprecedented RMB 62.36 billion. This staggering growth emphasizes the power and influence that celebrity endorsements can have on a brand's financial success. To gain a

comprehensive understanding of ANTA's marketing strategy, a thorough SWOT analysis was conducted. This analysis revealed how the company leverages its strengths, addresses its weaknesses, capitalizes on market opportunities, and mitigates potential threats. The study showcases how Irving's involvement goes beyond typical endorsements, as he actively participates in product design and branding. This level of involvement not only boosts sales but also strengthens customer loyalty and attracts new customer segments. As a result, ANTA is able to maintain a sustained competitive advantage. The essay concludes by asserting that integrating an athlete of Irving's caliber into strategic marketing initiatives is not just about amplifying brand visibility, but also about fostering significant market penetration and profitability. The success of ANTA's model serves as a valuable reference for other companies aiming to enhance their marketing strategies through celebrity endorsements. The implications of this research are crucial for predicting future trends in sports marketing. By understanding the power of celebrity endorsements and the importance of athlete involvement in product design and branding, firms can navigate the complexities of brand development in competitive markets more effectively. This study provides valuable insights and guidance for companies seeking to optimize their marketing strategies and capitalize on the benefits of celebrity endorsements [10].

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How to Transform Congenital Disadvantage into New Momentum for Economic Development: Based on the Study of Dutch Foreign Trade

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Abstract: The Netherlands is an ancient trading country, and due to geographical constraints, it has been actively seeking business opportunities and resources. This paper examines how the Netherlands transformed its natural disadvantages into new drivers of economic development since the fifteenth century. The purpose of this paper is to better understand the dynamics and paths of economic development in the Netherlands. This paper takes the perspective of Dutch foreign trade, combines literature analysis and case study methods, and adopts the method of diachronic research. The results of the study show that the Netherlands has transformed its geographical limitations into a new driving force for economic development in the development of maritime power, commerce, and foreign investment. The innovation of this paper lies in the unique perspective. Starting from the economic development process of the Netherlands since the 15th century, it presents readers with a comprehensive and in-depth economic development process of the Netherlands.

Keywords: Netherlands, Congenital disadvantage, Development momentum, Foreign trade.

1. Introduction

The Netherlands is a low-lying country with poor natural resources, and its economic development is hampered by many inherent disadvantages. But the Netherlands was able to maintain its economic and political power for a long time in the 15th century, and even dominated the seas for a time. Today, the Netherlands has become a developed country in Europe, with a strong economy and a high degree of international competitiveness. This is inseparable from the fact that the Netherlands has continuously transformed the inherent disadvantages that limit its development into new drivers of economic development.

This paper begins with a description of the Dutch economy, both in its past and in its current challenges. The following literature review focuses on the inherent disadvantages of the Netherlands and the challenges it presents. On this basis, this paper analyzes in detail how the Netherlands became a maritime hegemon, lost its maritime hegemony, repaired the Dutch disease, and realized direct foreign investment based on case studies. Finally, the challenges that the Netherlands may encounter in finding new drivers of economic development in the future are analyzed.

This paper adopts the perspective of diachronic research and provides the possibility of a comprehensive understanding of the development of foreign trade in the Netherlands and the

dynamics of economic development in the Netherlands at different times. Through the analysis of this paper, the public can better understand the driving force and path of Dutch economic development, and provide reference and inspiration for the economic and trade development of other countries.

2. The Current State of the Economy: From Glory to Challenge

The earliest foreign trade in the Netherlands dates back to the 15th century. During the "Dutch Golden Age" of the 17th century, the Netherlands rose to prominence as a world-famous maritime and economic power and even monopolized Europe's trade with Japan. With its great seafaring and trading power, the Netherlands became the economic center of Europe. This status not only brought it great wealth but also affected the structure of its economy.

Today, although these glories have faded somewhat, the Netherlands remains an important player in global trade [1]. Historically, Dutch supremacy has left a rich legacy for the country and has influenced the structure of the Dutch economy. For a long time, the basic structure of the Dutch economy has been dominated by international trade, financial services and high-value-added manufacturing, while maintaining the competitive advantages of traditional agriculture and industry.

With the convergence of global markets and the emergence of new economic powers, the structure of the Dutch economy began to face challenges. At the same time, the negative impact of the Dutch debt burden on the economy is becoming increasingly apparent. In response, the Dutch government has taken a series of measures to reduce the deficit. However, the debt level of the Netherlands remains high, which to some extent restricts the continued growth of the Dutch economy.

3. Historical Review: Innate Disadvantages and Challenges

The main inherent disadvantage of the Netherlands is its small size, which leads to a series of other congenital disadvantages, including the lack of natural resources, small population, and geopolitical location. These inherent disadvantages limit the economic development and industrial diversity of the Netherlands to a certain extent.

First, the Netherlands is a small country. The size of the Netherlands limited its economic and military development. During the years of the struggle for supremacy, the Dutch army was relatively small. In terms of modern agriculture, although the Netherlands has developed efficient agriculture, it is limited by land area, and the output of agricultural products cannot meet the needs of the domestic and international markets. In terms of modern industry, due to limited land, industrial areas and enterprises in the Netherlands tend to be concentrated in limited areas, which limits the diversity of its industries and the diversity of its economic structure.

Second, the Netherlands lacks natural resources. Compared to other European countries, the Netherlands has limited mineral resources, which makes the Netherlands relatively backward in the process of industrialization. Mineral-rich European countries can gain economic advantages by extracting and exporting ores and metals, creating jobs, promoting international trade, developing related industries, and attracting investment.

Third, the Netherlands has a small population. To a certain extent, this has affected the size of its labor market and its military resources. Despite the fact that the Netherlands has highly qualified human resources, the limitation of its population has always been a constraint on its development.

Fourth, the Netherlands is geopolitically unfavorable. The Netherlands is located in the heart of Europe, surrounded by many powerful countries with large land areas. This made it easy for the Netherlands to get involved in the strife of European countries. Historically, the Netherlands has been involved in many wars and political disputes in Europe, such as the Anglo-Dutch War, the French intervention in the Netherlands, and the Napoleonic Wars, all of which had a great impact on the Netherlands' maritime hegemony.

4. Golden Age: The Hegemon of the Seas

The Netherlands is located in the lowlands, bordering the ocean. As a low-lying country, as early as the 13th century, it began to strengthen its dikes, reclaim land from the sea, and expand its territory [2]. The Dutch took advantage of their geographical location and port advantages to develop entrepot trade and transportation. They profit from importing raw materials from all over Europe, processing them and exporting them to other countries. In addition, the Netherlands made major breakthroughs in shipbuilding and navigation technology, becoming one of the most advanced shipbuilding countries in the world at the time. By the beginning of the 17th century, the Netherlands, with a population of less than 2 million, had 4/5 of the tonnage of merchant ships in Europe, 4-5 times that of England and 7 times that of France. At that time, Dutch ships were the cheapest and most practical in the European world, which allowed the Dutch merchant fleet to transport goods safely and quickly, gaining the advantage of maritime trade, and became known as the "coachmen of the sea" [2].

In addition, the Netherlands has implemented a series of measures to reverse its inherent disadvantage. These measures both derive from and serve the Dutch maritime supremacy. First, the Netherlands attracted a large number of foreign immigrants to the country to participate in the navy, transport, agriculture and industry. Second, the Netherlands has developed intensive agriculture adapted to small areas of land. The Netherlands increases the added value of its products through technological innovation and specialization in production. The Netherlands had a "modern standardized, increasingly standardized, reusable process method" that other countries did not have at the time, and it was highly mechanized and used many labor-saving methods and tools [3]. Thirdly, the Dutch government has supported the establishment of a number of commercial companies and trade organizations to encourage domestic and foreign trade and investment activities. These companies and organizations have amassed a great deal of wealth and influence through trade with other countries, laying a solid foundation for the economic growth of the Netherlands. The Dutch East India Company also adopted a joint-stock system to raise funds from the whole society, and the development of the joint-stock system and the financial industry directly combined the interests of the general population with overseas trade, and all classes of the Netherlands from top to bottom were involved in the tide of maritime trade [2].

In the 16th and 17th centuries, the Netherlands became the world's maritime hegemon by virtue of its strong naval power and commercial superiority. While overcoming the inherent disadvantages, the Netherlands has also given new impetus to the development of foreign trade, ushering in a golden age belonging to the Netherlands.

5. The Emergence of Crisis: The Loss of Maritime Hegemony

With the change in times and the changes in the internal and external environment, the Netherlands gradually lost its maritime hegemony. The reasons for the loss of maritime supremacy by the Netherlands are manifold, and in the final analysis, it is due to the inherent disadvantage of the Netherlands.

The first is geographical limitations. The Netherlands' small size and relative scarcity of resources made it lose its advantage in long-term maritime competition. In addition, the geographical advantage of the Netherlands is relative to countries such as Italy on the Mediterranean coast, while compared to the United Kingdom and France, it is at a significant disadvantage. Dutch merchant ships had to trade overseas in and out of the Atlantic, and the most recent route was through the English Channel. The English Channel was controlled by Britain and France, and Dutch merchant ships were often plundered by pirates from both countries when they passed through the channel and suffered losses.

The second is the rise of competitors. Countries such as Britain and France gradually caught up with and surpassed the Netherlands in terms of naval power and commercial trade, and industrial

capitalism replaced commercial capitalism in Britain and France to occupy a dominant position, which was what the development of Dutch capitalism lacked [4].

The third is the mistake of strategic decision-making. Failing to seize the opportunity at a critical historical juncture, Dutch commercial capital was not transformed into industrial capital, and the Dutch position was replaced by Britain due to the lack of an industrial base to back it up. The decline of the Dutch East India Company, changes in the form of world trade, and competition between European countries made the Netherlands no longer dominant in foreign trade, and the long wars for hegemony and colonial wars consumed too much national power [5].

The eventual loss of maritime supremacy by the Netherlands illustrates that the inherent disadvantages that limit economic development cannot be overshadowed by the glory of the Golden Age. The inherent disadvantages of the Netherlands have a deep-seated impact on economic development, which is reflected in the single industrial structure and the rigidity of the labor market. This requires the Dutch government to find new development momentum for the development of Dutch foreign trade.

6. The New Crisis: Dutch Disease and Recovery

After the end of World War II, the Netherlands relied on the strong foundation before the war, and after more than 20 years of recuperation, by the late 60s and early 70s of the 20th century, the Netherlands was already a modern industrialized country dominated by manufacturing, and there was a considerable degree of prosperity in almost all fields [6].

In the 60s of the 20th century, the Netherlands experienced an economic crisis known as the "Dutch disease". The Dutch economy is overly dependent on the export of natural gas and other resources, and the export market is mainly concentrated on the European continent. This has resulted in a monolithic Dutch economy that is susceptible to external market fluctuations. As soon as the demand in the European market decreases, the Dutch exports that depend on it will be hit hard. In addition, the large amount of export income in the past led to the depreciation of the local currency and the appreciation of foreign currency, and the traditional export industry lost its competitiveness in the international market. When prices fall on the international market, the Dutch economy suffers from high unemployment, low economic growth, high fiscal deficits, and high inflation.

In the face of Dutch disease, the Dutch government took steps to intervene in the country's inherent disadvantages. First, reduce dependence on resources and promote diversified economic development. The Netherlands began to increase its investment in services and high-tech industries, gradually reducing its dependence on the export of natural gas and other resources. Second, open up new export markets and diversify market risks. The Netherlands is actively exploring markets outside Europe, especially in North America and Asia, in order to reduce its dependence on the European market. Third, we should adjust our industrial policies and pay attention to the growth of domestic demand. The Netherlands has strengthened domestic investment in infrastructure construction, education, medical care and other fields, increased the level of national income, and expanded the domestic demand market. Fourth, technological innovation, using local first-class universities and research institutions to attract international students and researchers, and close cooperation between institutions and enterprises to promote technological innovation and business transformation. Fifth, to strengthen international cooperation, the Netherlands has established extensive trade and investment relations with EU (European Union) member states and other countries and regions, and has strengthened its innovation network links with Europe and beyond through its participation in EU research programs and cross-border cooperation projects.

7. Finding Another Way out: Direct Foreign Investment

The motivation for Dutch outbound investment is manifold. First, the Netherlands has a strong industrial base and advanced technology, which makes it capable of foreign investment. Second, the Dutch government actively encourages companies to invest abroad in order to achieve the country's economic development and diversification goals. Third, in order to overcome the inherent disadvantage of a small domestic market, Dutch companies also tend to expand their markets and reduce production costs through foreign investment. The Netherlands is known for its vast network of international treaties, three of which are bilateral and multilaterally applicable, mutually beneficial and applicable to all Dutch investment and trading partners [7]. Through overseas branches, mergers and acquisitions, the Netherlands has successfully entered the global market and gained access to more business opportunities and resources. This aggressive outbound investment strategy not only increases the competitiveness of Dutch companies, but also brings significant economic benefits to the Netherlands.

From the data point of view, since the 20th century, the Netherlands has gradually become an important foreign investment country in Europe and even the world. According to statistics, the stock of Outward Foreign Direct Investment in the Netherlands has continued to grow, from about 20 billion euros in 1990 to more than 800 billion euros in 2020. Dutch foreign direct investment is not only large-scale, but also wide-ranging, covering many countries and regions around the world. The Netherlands Foreign Investment Agency is the agency responsible for the management and promotion of foreign direct investment in the Netherlands as a specialized agency under the Dutch Ministry of Economic Affairs and Climate Policy. More than 15,000 companies around the world are invested and operated by the Netherlands, and these companies are involved in various sectors such as manufacturing, services, and finance.

8. Conclusion

The development of the Netherlands' foreign trade is a process of constantly adapting to the inherent disadvantages and finding new momentum for economic development.

Since the 15th century, the Netherlands has actively used its maritime resources and geographical location to develop a strong maritime trade power and become a global maritime hegemon. However, with the rise of competitors and the lapse of internal strategic decisions, the Netherlands gradually lost its maritime supremacy.

In the face of new challenges, the Netherlands has chosen to find new momentum for development by strengthening international cooperation, adjusting the economic structure, promoting scientific and technological innovation, and actively investing abroad.

Through the study of the foreign trade of the Netherlands, it can be concluded that in the face of congenital disadvantages and changes in the external environment, only by continuously innovating economic development methods, strengthening international cooperation, and promoting economic diversification can we find new momentum for economic development and maintain sustained economic prosperity.

The shortcomings of this article are, first, the lack of mathematical analysis methods, so that the article is not supported by sufficient data. Second, it mainly focuses on the overall economic development of the Netherlands, and lacks in-depth discussions on the specific development of different regions or industries in the Netherlands. Thirdly, due to space constraints, this article does not cover all aspects of the Dutch economy, which may result in some details being omitted or not sufficiently in-depth. It is expected that future research can focus on the economic benefits of Dutch direct foreign investment, and the analysis of the economic growth model of the Netherlands based on models.

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Research on Innovation of Food Logistics Supply Chain Management

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Abstract: In the context of globalization and constantly changing consumer demand, the management of food logistics supply chains has become increasingly complex and important. This paper mainly studies the problems and innovative methods in food logistics supply chain management, aiming to improve the efficiency and adaptability of the supply chain by optimizing management strategies. This paper adopts literature analysis and case analysis methods to analyze in detail the problems of information asymmetry, cost control, transportation efficiency, and inventory management in the food logistics supply chain. It proposes innovative supplier management models, digital management, modern supply chain management concepts, inter chain cooperation, and risk management solutions. Research has found that adopting information-sharing mechanisms and advanced information technology, as well as strengthening collaboration among various links in the supply chain, can effectively improve management efficiency and reduce operating costs. This study provides some useful references for food logistics enterprises in practical operation, helping them improve service quality and reduce operating costs in a fiercely competitive market environment, enhance market competitiveness, ensure food safety and freshness, and meet the growing needs of consumers.

Keywords: Food logistics supply chain, information asymmetry, cost control, transportation efficiency, innovative management.

1. Introduction

The food logistics supply chain, as an important link connecting producers and consumers, plays a crucial role in the modern economic system. With the continuous deepening of global trade, the complexity and dynamics of food logistics supply chains have also increased. It not only involves the physical flow of food from production to consumption, but also includes the integration of information flow, capital flow, and service flow. Effective management of the supply chain is crucial in ensuring food quality, reducing costs, improving service levels, and meeting consumer demands during this process.

Every link from production to consumption may have efficiency bottlenecks, which affect the performance of the entire supply chain. For example, issues such as food loss during transportation and storage, inaccurate demand forecasting, and information asymmetry in the supply chain can all lead to increased costs and decreased service quality. In addition, with the increasing demands of

consumers for food safety and quality, supply chain management also needs to constantly innovate and improve to adapt to market changes.

Based on a comprehensive review of existing literature and in-depth case analysis, this paper provides theoretical and practical references for improving food logistics supply chain management. The aim of this study is to promote the continuous progress of the food logistics industry, in order to meet the growing market demand and seek a win-win situation for all parties in the supply chain.

2. Problems in Food Logistics Supply Chain Management

2.1. Information Asymmetry

The imbalance in information acquisition between various links in the supply chain has increased the difficulty of market forecasting, affecting the efficiency of inventory management and transportation scheduling [1]. This information asymmetry can lead to unreasonable resource allocation, increase operational costs, and reduce the responsiveness and flexibility of the supply chain. Therefore, it is necessary to establish an effective information-sharing mechanism, utilize advanced information technologies such as the Internet of Things and big data analysis, improve transparency and collaborative efficiency, ensure real-time information sharing among various links, and enhance overall operational efficiency.

2.2. Cost Issues

Cost control in the food logistics supply chain is a key link in ensuring competitiveness. The cost issue involves multiple aspects, including raw material procurement, production and processing, transportation and distribution, and inventory management. The high logistics costs not only reduce profit margins, but may also lead to a decrease in price competitiveness. An effective cost management strategy needs to be achieved through refined cost accounting, supply chain collaboration, and the adoption of advanced information technology. Thus, while ensuring service quality, we can minimize operating costs, improve the overall efficiency of the supply chain, and accelerate market response.

2.3. Transportation Efficiency Issues

The issue of transportation efficiency in food logistics cannot be ignored. Due to the short shelf life of food products, delays in transportation can lead to food spoilage and increased losses [2]. This not only affects consumer satisfaction, but also causes economic losses and a decline in the reputation of the enterprise. Efficient transportation strategies, including optimizing route planning, improving loading efficiency, and adopting advanced transportation management systems, are crucial for ensuring food freshness and reducing costs, thereby improving the overall operational efficiency and service level of the supply chain and enhancing market competitiveness.

2.4. Inventory Management Issues

The transportation efficiency issue in the food logistics supply chain is crucial, as the perishability of food requires fast and reliable transportation. Effective route planning and real-time tracking technology reduce transportation delays and ensure food safety [3]. Inventory management affects costs and customer satisfaction. Accurate demand forecasting and timely replenishment to avoid excess inventory and shortages, utilizing advanced technology to optimize inventory management, and improving overall operational efficiency and flexibility [4].

3. Innovative Measures for Food Logistics Supply Chain Management

3.1. Innovative Supplier Management Model

The innovative supplier management model focuses on establishing close partnerships with suppliers, sharing key information such as market demand, inventory levels, and production plans, and promoting synergies throughout the entire supply chain [5]. For example, supply chain management software and data analysis tools, which utilize advanced information technology, can monitor and evaluate the performance of suppliers in real time, and identify and solve potential problems in a timely manner. Integrate supplier networks to optimize procurement processes, reduce unnecessary intermediate links, lower costs, and improve supply chain responsiveness. The construction of a more flexible, efficient, and cost-effective food logistics supply chain cannot be achieved without the joint action of these measures.

3.2. Digital Management

Cloud computing, big data analysis, and Internet of Things technology enable supply chain managers to monitor product flow in real time, optimize inventory levels, and accurately predict market demand [6]. While improving the speed and accuracy of data processing, it also enhances control over the visibility of the entire supply chain, enabling managers to quickly respond to market changes and effectively reduce inventory backlog and out-of-stock risks. Digital tools can also assist decision-making, such as analyzing historical data and trends, predicting future market trends, and providing data support for supply chain strategic planning. For example, Wal Mart has significantly improved the efficiency of the supply chain through big data analysis and Internet of Things technology. Real time monitoring of inventory and transportation to avoid loss of out of stock or excess inventory. Data analysis predicts market demand, ensures sufficient goods, and improves customer satisfaction. Digital management optimizes supply chain operations, reduces costs, and improves flexibility and responsiveness.

3.3. Modern Supply Chain Management Concept

Implementing modern supply chain management concepts, the food logistics industry is gradually abandoning traditional isolated management methods and shifting towards a more comprehensive and systematic operating mode. This means that every step from raw material procurement to product distribution is integrated into a unified strategic plan. Integrating resources and sharing information has become the key to improving efficiency, enabling every participant in the supply chain to access necessary data and make more accurate decisions. The practice of this management philosophy has a great promoting effect on the collaborative work of various links in the supply chain, and also enhances customer satisfaction. For example, Amazon adopts an advanced supply chain management system that closely integrates all aspects of the global supply chain, optimizes inventory management and distribution networks through big data and artificial intelligence technology, and achieves efficient logistics services. Using predictive analysis for demand planning to ensure optimal inventory for each warehouse, and reducing storage costs and transportation delays. The intelligent warehousing system improves operational efficiency and accuracy through automation technology, reducing labor costs. Modern supply chain management also includes the concept of sustainable development. Food logistics companies pay attention to environmental impacts, adopt green logistics technologies such as electric transport vehicles and recyclable packaging materials, improve operational efficiency, and meet environmental requirements.

3.4. Inter Chain Collaboration

Inter chain collaboration strengthens the connection between food logistics supply chains, enabling different supply chain entities to achieve resource sharing and information exchange. This cooperation model eliminates information silos, accelerates data flow, and enables various links in the supply chain to timely capture market dynamics and respond. The resource sharing strategy allows all parties to utilize collective resources and intelligence to enhance the adaptability and flexibility of the entire network. In addition, the risk sharing mechanism enhances the supply chain's ability to resist market fluctuations. In practical operation, collaborative relationships promote mutual benefit and win-win outcomes in all aspects of the supply chain, significantly enhancing overall competitiveness and market response speed.

For example, Nestle and Wal Mart have optimized the operation efficiency of the supply chain by sharing inventory and sales data. Nestle can timely understand the inventory and sales of Wal Mart stores around the country, accurately predict demand and adjust production to avoid excess inventory or shortage. Wal Mart has reduced inventory costs, improved commodity turnover speed and customer satisfaction. Another case is that Unilever and its supply chain partners use the Collaborative Planning and Forecasting Replenishment System (CPFR) to share sales forecasts, inventory data, and production plans, achieve information sharing and joint decision-making, reduce inventory levels and transportation costs, and improve supply chain response speed and efficiency. Inter chain collaboration enhances the flexibility and adaptability of the supply chain, improves operational efficiency and market competitiveness.

3.5. Risk Management

Risk management requires the systematic identification, assessment, and mitigation of various risks that may arise in the supply chain, including but not limited to food spoilage, supply chain disruptions, and fluctuations in market demand [7]. By developing a detailed risk management plan, enterprises can take preventive measures, such as establishing backup supply chains, adopting advanced food preservation technologies, and implementing flexible production and distribution strategies, thereby improving the resilience and reliability of the supply chain. For example, McDonald's implements a comprehensive risk management strategy in its global supply chain, establishing diversified supply chains and adopting cold chain logistics systems to ensure food quality and safety. Danone Company has introduced predictive analysis tools to identify potential risks in advance, adjust procurement and production plans, and reduce the risk of supply chain disruptions by analyzing weather data. Enterprises should establish effective emergency response mechanisms, conduct regular risk assessments and simulation exercises, ensure prompt action in the event of emergencies, reduce losses, strengthen information sharing and communication, and enhance the overall risk response capability of the supply chain.

4. Conclusion

This paper provides a comprehensive analysis of the problems and innovative methods in food logistics supply chain management. Information asymmetry, cost control, transportation efficiency, and inventory management are key factors affecting supply chain performance. By introducing innovative supplier management models, digital management, modern supply chain management concepts, inter chain collaboration, and risk management strategies, the efficiency and responsiveness of the supply chain can be significantly improved. These innovative methods can not only reduce costs and improve service quality, but also enhance the transparency and risk resistance of the supply chain. This paper has not yet delved into the specific challenges of regional food supply chains. In addition, empirical research methods have not been used to analyze the

specific application effects in actual cases, which are directions for future research to improve and expand. With the continuous advancement of technology and changes in the market environment, innovation in food logistics supply chain management will be the key to driving industry development, meeting consumer needs, and addressing future challenges. Future research and practice should continue to explore more efficient and intelligent management methods to achieve sustainable development of the food logistics supply chain.

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The Impact of Changes in the RMB Exchange Rate on the Export Competitiveness of China's Textiles and Clothing Industry

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Abstract: In recent years, the export volume of China's textiles and clothing industry and its international market share have increased year by year. Under such circumstances, studying the export status of China's textiles and clothing is conducive to further promoting the development of its textiles and clothing industry. This paper establishes a model based on the annual Revealed Comparative Advantage Index of China's textiles and clothing industry from 2000 to 2021, the nominal exchange rate of RMB against the US dollar, and the annual data of GDP. This paper then tests its stability, and continues to carry out the co-integration test and Granger-Causality under the condition that the data is stable in the same order to judge the relationship between the change of RMB exchange rate and the Revealed Comparative Advantage Index of China's textiles and clothing. Research shows that for every 1% appreciation of the nominal exchange rate of the RMB against the US dollar, the Revealed Comparative Advantage Index of China's textiles and clothing industry will increase by 0.0009647%. The rise of the RMB exchange rate has a certain effect on the RCA of China's textiles and clothing industry, and the results of Granger-Causality also show that the RMB exchange rate is the reason for RCA in China's textiles and clothing industry.

Keywords: RMB exchange rate, RCA, Textiles and clothing industry.

1. Introduction

Since the cancellation of global textile quotas in 2005, China's textiles and clothing industry has maintained rapid growth. As of 2021, China's textiles and clothing exports accounted for about 35% of the world's share. However, this does not mean that the international market share of textiles and clothing can be unimpeded by China. First, in recent years, China's world market share of textiles and clothing has continued to rise, but the speed has slowed down significantly, and with the gradual rise of labour costs in China, the textiles and clothing industry has gradually shifted to Asian countries such as Vietnam and India. Second, although the world market share of Chinese textiles continues to rise as a whole, its Revealed Comparative Advantage Index (RCA) has gradually declined. The RCA index is the most convincing indicator to measure the competitiveness of a product or industry in a country in the international market. Its decline shows the gradual decline in the international market competitiveness of China's textiles and clothing. In the above context, this article aims to achieve the following purposes through research:(A) Through a

comparative study of China's textiles and clothing exports and international market share between China and its main competitor India and its main competitor from 2010 to 2021, we will explore the development status of the world's major textiles and clothing exporters; (B) Use RCA to compare and study the export competitiveness of China and its main competitors in the textiles and clothing industry, and explore the overall changing trend of the international market competitiveness of textiles and clothing in these three countries; (C) Through the empirical analysis of China's textiles and clothing industry RCA through the changes in the exchange rate of RMB against the US dollar, discuss whether the changes in the RMB exchange rate are the main factors affecting China's textiles and clothing RCA. This paper can provide certain reference value for practitioners in the relevant industry in China.

2. Analysis of Export Competition in China's Textiles and Clothing Industry

2.1. The Export Status of China's Textiles and Clothing Industry

The textiles and clothing industry is one of the earliest industries in human history. As one of the earliest countries in the world to introduce textiles, China has a long history and a long textile culture. The textiles and clothing industry has also made great contributions to the exchange and dissemination of Chinese and Western cultures. Since modern times, China's textiles and clothing industry has gradually shifted from handmade textiles to mechanical textiles. At present, China's textiles and clothing exports rank first in the world. According to the data released by the World Bank, the export value of China's textiles and clothing industry in 2021 is about \$304.9 billion, mainly exported to Vietnam, Japan and the United States, totalling about \$88.7 billion, accounting for about 30% of total exports. Among them, exports to Vietnam are about \$17.7 billion, exports to Japan are about \$19.3 billion, accounting for about 6% of exports, and exports to the United States are about \$51.7 billion, accounting for about 17% of exports. In terms of export volume, the United States is China's largest exporter of textiles and clothing.

In order to adapt to the evolution of the times, China must clearly understand its shortcomings and compare it with the main competitors in the textiles and clothing market.

Since World Trade Organization (WTO) fully relaxed the textile export quota system in 2005, China's textile export market has opened up rapidly. Taking advantage of the labour force and the market, China has gradually become a global textile production centre. However, in recent years, the textiles and clothing industry has gradually shifted to Vietnam, India and other Asian countries with lower labour costs. And the major textiles and clothing exporters of China, India and Vietnam are highly overlapping. That is why India, Vietnam and China are selected for comparative study by this study. The selection of these two countries as research objects is also based on the following considerations.

India is one of the four ancient civilisations in the world, and the textiles and clothing industry is one of the oldest industries in India. In 2021, India's textile exports accounted for 10.5% of India's total exports, which is one of India's pillar industries. In recent years, based on population welfare and relatively cheap social welfare, India has gradually become a textile purchaser second only to China. In 2021, the exports of India's textiles and clothing industry increased by about \$30.2 billion compared with 2000, with an average annual growth rate of about 12.9%. Therefore, India was selected as one of the main competitors for China's textile exports.

In recent decades, Vietnam's textiles and clothing industry has developed rapidly, and its textile industry also occupies an important position in the country's economy. In 2021, textiles and clothing exports were about \$41.2 billion, the world's second largest exporter of textiles and clothing. And although its share in the world market is only about 20% of China, its share in the

U.S. market is about 50% of China's U.S. market. The biggest competitor of Chinese textiles in the United States.

Table 1: Exports and market share of the textiles and clothing industries in China, India and Vietnam[1]

Year	China/Billion\$	MS of China	India	MS of India	Vietnam	MS of Vietnam
2010	199.53431	0.294679657	27.127	0.40062158	13.303	0.19646363
2011	240.539595	0.30148505	33.347	0.041796121	16.76	0.021006477
2012	246.094186	0.31505178	32.682	0.041839762	18.15	0.023235778
2013	274.010292	0.32719546	40.191	0.04799204	21.535	0.025714926
2014	287.645387	0.34040387	38.597	0.045676269	25.241	0.029870578
2015	273.46473	0.33856986	37.161	0.046008107	27.27	0.033762307
2016	253.292356	0.33504137	35.429	0.046863557	28.705	0.037969415
2017	257.399072	0.32385654	37.22	0.046829775	31.811	0.040024233
2018	266.228192	0.31819796	37.01	0.044234634	36.664	0.043821092
2019	260.341791	0.31432455	35.485	0.042842937	39.428	0.047603532
2020	280.643238	0.35288365	29.605	0.037225627	37.1	0.046649916
2021	304.896146	0.3322196	41.4	0.045110086	41.29	0.044990228

Since 2010, textile exports from China, India and Vietnam have continued to grow rapidly. Specifically, in 2011, China's textile exports reached \$240Billion, accounting for 30.14% of the world market share (see Table 1), India was \$33Billion, accounting for 4% of the world market share, and Vietnam was \$16.76Billion, accounting for 2% of the world market.

As shown in Table 1, India's textile exports fell sharply from \$35.485 billion to \$29.605 billion in 2020 due to COVID-19. Vietnam's textile exports fell for the first time in a decade, from \$39.4 billion to \$37.1 billion. The growth of China's textile exports has changed from negative to positive. In 2021, with the gradual recovery of the global economy and the increase in global demand for textiles such as masks, the import demand for textiles in countries around the world has also rebounded significantly. India and Vietnam's textiles and clothing exports also increased from negative to positive, especially India's textile exports from \$29.6 billion to \$41.4 billion. In 2021, the exports of these three countries reached the highest level in a decade: \$304 billion in China, \$41 billion in India, and \$412.9 billion in Vietnam.

From Table 1, China's textile exports have increased by about \$6.5 billion in 10 years. From China's global market share, it can be seen that China has always been an important country in the world's textile exports. India's textile industry has also gradually developed, with an increase of about 700 million US dollars. Vietnam's textiles and clothing industry has achieved great development in 10 years. Textile exports have increased by about 2.5 billion US dollars, and the world market share has increased from 2.1% to 4.4%, gradually becoming a textile power.

2.2. Comparative Analysis of RCA Index of Textiles and Clothing in China, India and Vietnam

RCA index is the dominant comparative advantage theory. The so-called dominant advantage theory is the ratio between the share of the total export value of a country's total export value of a certain type of commodity exported by a country and the share of the total export value of such goods exported worldwide in the world market. The expression of the index is:

$$RCA = \frac{\frac{X_{ij}}{X_{tj}}}{\frac{X_{iw}}{X_{tw}}} \quad (1)$$

X_{ij} Indicates the export value of commodity i in the country j , X_{tj} indicates the export value of all goods in the country, X_{iw} Indicates the export value of commodity i in the world, X_{tw} represents the total export value of all commodities in the world. This index aims to judge whether a commodity in a country is internationally competitive. If $0.8 \leq RCA \leq 1.25$, it means moderate international competitiveness; if $1.25 \leq RCA \leq 2.5$, it indicates strong international competitiveness; if $RCA \leq 0.8$ indicates weak international competitiveness[2-3].

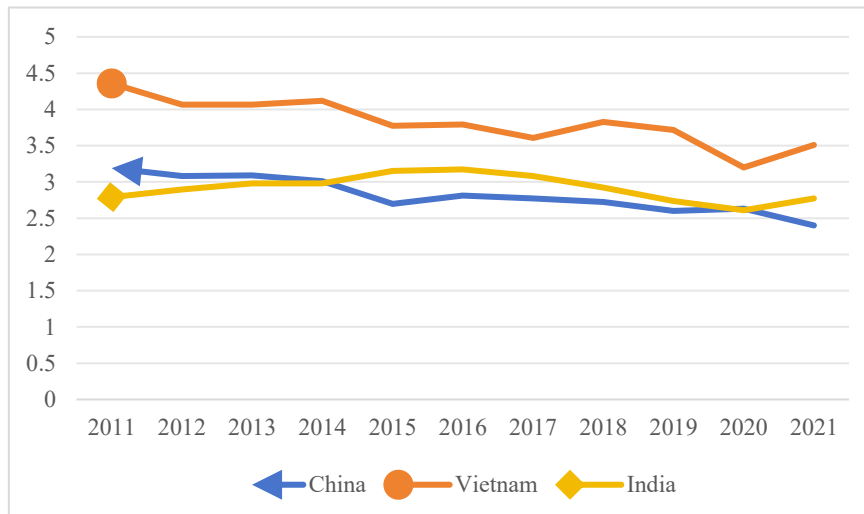


Figure 1: Changes in the RCA index of China, Vietnam and India in 2011-2021

From Figure 1, the RCA index of China, Vietnam and India is greater than 2.5, which has strong international competitiveness. The RCA index of China's and Vietnam's textiles and clothing exports maintained an overall downward trend from 2011 to 2021. China fell from about 3.3 to about 2.5; Vietnam fell from about 4.4 to about 3.5. The RCA index of Indian textiles was about 2.8 in 2011 and fell to about 2.8 after reaching a high of about 3.2 in 2015. International competitiveness changed from Vietnam > China > India to Vietnam > India > China in 2011. This shows that China is gradually losing its competitiveness.

3. Empirical Analysis of the Impact of RMB Exchange Rate Changes on RCA in Chinese Textiles and Clothing Industry

3.1. Selection of Variables and the Source of Data

The above concludes that the RCA index of Chinese textiles has declined. Regarding the export of textiles and clothing, its competitiveness may be affected by changes in the RMB exchange rate, because changes in the exchange rate can directly reflect the price of textiles exported from China in the world market. In addition, the global GDP per capita will also affect the international competitiveness of China's textiles. Therefore, the description of each variable selected to analyse the influencing factors of export competitiveness is as follows: (a) explicit comparative advantage (RCA). Data from World Integrated Trade Solutions (WITS); (b) RMB exchange rate change (EX). Data from China National Bureau of Statistics; (c) world gross domestic product (Y_{wt}). Data from the United Nations website.

3.2. Empirical Analysis

3.2.1. Stability Test

Stability test is a statistical detection method used to detect the stability of the time series of a certain trend [4]. In order to prevent pseudo-regression of data, it is necessary to conduct a stability test of each variable before the data is a co-integration test to ensure that each variable is stable at the same level.

Table 2: Second-order differential unit root test of RCA, EX, Y_{wt}

Variable	t-Statistic	5% level	Stability
RCA	-7.182	-3.600	✓
EX	-4.562	-3.600	✓
Y_{wt}	-4.309	-3.600	✓

Table 2 shows that the test statistic=-7.182 of the second-order difference ADF unit root test of the variable RCA is less than the critical value of -3.600 at the level of 5%, so the second-order difference of the variable RCA is stable at the significant level of 5%. Similarly, the Test statistic of the second-order differential ADF unit root test of the variable GDP and the variable exchange rate is -4.562 and -4.309 respectively, both of which are less than their critical values at the 5% level. Therefore, the assumption that it has a unit root can be rejected, and the second-order difference between the variable GDP and the exchange rate is stabilised at a significant level of 5%.

3.2.2. Co-integration Inspection

The co-integration test adopts a linear combination method to stabilise the non-stationary sequences [5]. Because this article only studies the co-integration relationship between two variables, the Engel-Granger Two-step co-integration test method can be used to carry out the co-integration test. And the second-order difference between the variable RCA, Y_{wt} and EX is stable at a significant level of 5%. Therefore, it can be co-integregated. The test results are as follows:

Table 3: Co-integregistic regression results

D2.y	Coefficient	Std. err.	t	P>t
D2.x	0.0009647	0.0017791	0.54	0.595
D2.z	5.24E-15	8.38E-15	0.63	5.40E-01
cons	-0.0014996	0.0396421	-0.04	0.97

Table 4: ADF test results of residuals

	t-Statistic	Prob.*
Augmented Dickey–Fuller test statistic	-4.512	0.0002
test critical value:		
1% level	-3.750	
5% level	-3.000	
10% level	-2.630	

As shown in Table 3, the coefficient of the variable EX is 0.0009647, the coefficient of the variable is 5.24×10^{-15} , and the constant term is -0.0014996. Therefore, its co-integration is multiplied by:

$$RCA = -0.0014996 + 5.24 \times 10^{-15}Y_{wt} + 0.0009647EX \quad (2)$$

And do ADF tests on its residual sequence. According to Table 4, its t statistical value is -4.512, which is less than the critical value of -3.570 at the level of 1%, indicating that the residual sequence is significant at the level of 1%, so it is stable.

Through the co-integration equation, it can be concluded that the textile RCA index will rise by 0.0009647% for every 1% increase of the RMB against the US dollar. Therefore, the appreciation of the RMB will be conducive to the RCA index of Chinese textiles, but the impact is significant.

3.2.3. Granger Cause and Effect Test

Granger proposed a statistical test method to test the statistical causal relationship between two time series, so it is called Granger-Causality [6]. Before Granger-Causality, it is necessary to determine the optimal lag order test result of the VAR vector autoregressive model. As shown in Table 5, choose the fourth lag as the optimal lag order.

Table 5: Post-test results

Lag	LL	LR	DF	p	FPE	AIC	HQIC	SBIC
0	-561.84				9.30E+26	70.605	70.6125	70.7499
1	-552.445	18.79	9	0.027	9.10E+26	70.5556	70.5853	71.1351
2	-538.578	27.735	9	0.001	5.80E+26	69.9472	69.9992	70.9613
3	-527.159	22.838	9	0.007	6.80E+26	69.6449	69.719	71.0935
4	-468.085	185.15*	9	0.000	4.7E+26*	63.3856*	63.4821*	65.2688*

After determining the lag order, you can establish a VAR model according to its optimal lag. After establishing the VAR model, its main variable can be Granger-Causality. The results are shown in Table 6:

Table 6: results of Granger-Causality

Original hypothesis	chi2	df	prob>chi2	Result
EX is not RCA's Granger reason	22.77	4	0	×
Y_{wt} is not RCA's Granger reason	31.671	4	0	×

According to Table 6, the RMB exchange rate, Y_{wt} , and the RCA index of Chinese textiles are respective Granger reasons.

4. Conclusion

This paper mainly discusses the current situation of China's textiles and clothing industry and the comparison between India and Vietnam, and focuses on the impact of RMB exchange rate changes on China's textile RCA. After analysis and testing, the conclusion of this article is as follows: First, Chinese textiles have an overwhelming advantage over India and Vietnam in terms of world market share, but China is lower than India and Vietnam in terms of the RCA index. And the RCA index of Chinese textiles showed an overall downward trend between 2010 and 2021. Second, the exchange

rate elasticity of RCA for Chinese textiles and clothing is 0.0009647, that is, for every 1% increase in the exchange rate of RMB against the US dollar, the RCA of Chinese textiles will rise by 0.0009647%. According to Granger-Causality, the change in the RMB exchange rate, there is a statistically causal relationship between the GDP and the RCA index of China's textiles and clothing. Empirical analysis shows that the rise in the RMB exchange rate has a stimulating effect on the RCA of Chinese textiles, but the effect is not significant. There are some shortcomings in this paper. For example, only two variables are selected in this article. In future research, the number of workers and factories in China's textiles and clothing industry can be taken as new variables. It is included in the measurement square multiplication to further verify the impact of these influencing factors on the export competitiveness of the textiles and clothing industry.

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