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Research on China's Economic and Trade Pattern under the Internet Technology Era

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Abstract: In the era of the Internet, China's economic and trade models have undergone profound and transformative changes, reshaping the landscape of global commerce. This paper aims to explore the critical role that internet technology has played in driving China's economic development while also delving into the future directions and possibilities for further growth. By focusing on Alibaba and JD.com as primary case studies, the paper examines how these industry leaders have leveraged advanced technologies such as cloud computing, cross-border e-commerce, and electronic logistics to revolutionize their operations and expand their global reach. The study not only highlights their innovative approaches and development experiences but also addresses the societal challenges that have emerged or been exacerbated by the rapid expansion of internet technology. Understanding these challenges is essential for formulating strategies to mitigate their impact and ensure long-term, sustainable growth. The significance of this research lies in its potential to provide valuable insights and practical references for small and medium-sized enterprises (SMEs) in China. By learning from the successes and challenges of leading enterprises, SMEs can navigate the complexities of the Internet era more effectively, contributing to the sustainable and healthy development of China's economy in an increasingly digital world.

Keywords: Chinese Economy, Chinese Trade Model, Internet Technology, Big Data.

1. Introduction

1.1. Research Background

Under the influence of Internet development, China's economic and trade patterns have undergone significant changes. According to data from the National Bureau of Statistics, in 2023, the added value of China's core digital economy industries accounted for 10% of GDP, representing a year-on-year increase of 22.44% [1]. E-commerce, mobile data, and cross-border e-commerce have had substantial impacts on the market and corporate operations.

Choosing "Research on China's Economic and Trade Pattern under the Internet Technology Era" as a theme allows for a deeper understanding and analysis of the development of the digital economy, uncovering its commercial and social value. This research can assist enterprises in improving their business strategies and enhancing their competitiveness. Additionally, it can provide strategic

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direction for promoting high-quality economic growth. Establishing more related positions can create employment opportunities and improve people's well-being.

1.2. Literature Review

He and Xue proposed that in the era of artificial intelligence, high-quality economic development is an inevitable trend [2]. A new financial paradigm, "digital finance," integrates financial services with information technology. Digital finance technology is considered a critical foundation for promoting high-quality and sustainable economic and social development, as it can provide more economic entities with lower capital costs and more practical financial service skills compared to traditional financial models.

Tang and Cui, utilizing panel data from 30 Chinese provinces from 2006 to 2018, empirically examined the impact of the Internet on regional innovation disparities. Their findings indicate that the development of the Internet has widened the regional innovation gap, causing an imbalance in labor mobility, which in turn exacerbates regional innovation differences. CICC analyzed the macroeconomic and industry trends under the new pattern [3].

Wang, Tang, and He proposed and improved a neural network based on artificial intelligence, resulting in a neural network with enhanced predictive capabilities [4]. This neural network can accurately and effectively predict the impact of changes in the spatial structure of regional enterprises and regional economic patterns, thereby enabling timely optimization and better regional economic development.

Most articles primarily focus on the impact of the Internet or artificial intelligence on specific domestic sectors, with very few studies examining the influence of the Internet on China's overall economic structure and trade patterns.

1.3. Research Framework

Firstly, research the impact of internet technology on China's economic structure, focusing on the rapid development of digital finance, e-commerce, and other virtual economies, as well as their impact on the real economy.

Secondly, the transformation of trade patterns due to internet technology should be studied. The rise of cross-border e-commerce and the development of online shopping have brought significant changes to China's traditional import and export trade and domestic consumption patterns. Additionally, internet technology has also driven rapid advancements in supply chain management and logistics.

Lastly, examine the impact of internet technology development on the market and consumers. Online shopping has altered consumers' shopping habits and consumption patterns. Big data is steering the market towards precision marketing and personalized services.

2. Case Description

Alibaba Group, founded by Jack Ma in 1999, has become one of the world's leading e-commerce and technology companies. Headquartered in Hangzhou, China, Alibaba initially connected Chinese manufacturers with international buyers through its online marketplace. Today, Alibaba's business spans multiple areas, including C2C (consumer-to-consumer), B2C (business-to-consumer), and B2B (business-to-business). Its subsidiary, Alibaba Cloud, is one of China's largest cloud computing service providers, offering comprehensive data storage, processing, and artificial intelligence services. Additionally, Alibaba has made significant strides in the fintech sector through Ant Group and holds a prominent position in the logistics industry with Cainiao Network. Alibaba continues to expand its influence in media and entertainment as well as in cutting-edge technology research.

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JD.com, founded by Liu Qiangdong in 1998, initially started as a physical store selling magneto-optical products and transitioned to an online retail platform in 2004. Known for its high-quality products and fast, reliable delivery services, JD.com boasts a robust self-operated logistics network, including warehouses, delivery stations, and vehicles, capable of achieving same-day or next-day delivery. JD.com excels in the application of artificial intelligence and big data, optimizing logistics and supply chain management to enhance operational efficiency. JD Digits, its fintech subsidiary, offers a variety of services, leveraging advanced technologies to drive financial innovation. JD.com is also actively expanding its offline retail business, dedicating efforts to smart city development and IoT technology, aiming to achieve seamless integration between online and offline commerce.

3. Analysis on the Problem

3.1. Influence Identified of Alibaba and JD.com

3.1.1. The Development of Internet Technology Has Spurred Market Transformation

The advancement of the Internet has driven the emergence of e-commerce platforms. Shopping websites such as Taobao, JD.com, and Pinduoduo have shifted traditional offline transactions to online ones [5]. This mode of transaction has made trade information more transparent, allowing consumers to access various aspects of product information easily. Additionally, electronic trading platforms have lowered market entry barriers, making it easier for businesses to enter the market and expand their reach. Furthermore, a modern logistics network that integrates warehousing and distribution has emerged. The comprehensive innovation in supply chains and logistics has enhanced market operational efficiency and altered the overall functioning of the market.

3.1.2. Technology-Driven Changes

Alibaba and JD.com, the two major giants of Chinese e-commerce, have ushered China into the era of big data and artificial intelligence. Alibaba's "Alibaba Cloud" enables businesses to analyze and process data more conveniently and efficiently through cloud computing. JD.com leverages artificial intelligence to optimize logistics, transforming the entire supply chain. Beyond these aspects, they are also reshaping China's economic landscape by focusing on intelligence in various fields, including finance, automation, and blockchain [6].

3.2. Problem-Identified Analysis

3.2.1. Digital Divide

The widespread adoption of the Internet has, to some extent, exacerbated social inequality within China. Compared to urban areas, rural regions have lower internet coverage and a lower degree of informatization, resulting in slower overall development. This disparity has led to a concentration of low-wage, labor-intensive industries in rural areas, where working conditions are often poor, the labor is physically demanding, and the pay is low. These factors further restrict opportunities for improvement and development in rural regions. In 2023, the median disposable income per capita nationwide was 33,036 yuan (Figure 1). Specifically, the median disposable income per capita for urban residents was 47,122 yuan, while for rural residents, it was only 18,748 yuan [7]. This significant income gap has driven more young people from rural areas to migrate to cities in search of better employment and living conditions, thus perpetuating further imbalances in development [8].

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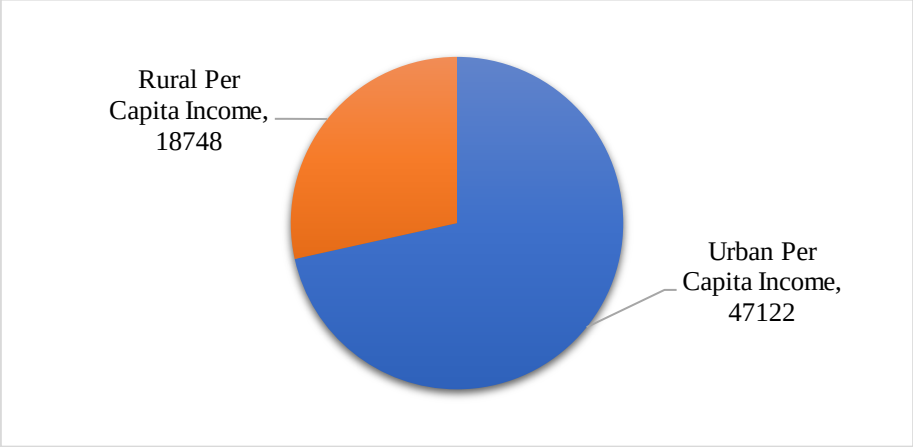

Figure 1: 2023 Income Disparity Between Urban and Rural Areas in China (Source: https://www.stats.gov.cn/sj/zxfb/202401/t20240116_1946622.html)

The digital divide between urban and rural areas limits economic growth and industrial upgrades in rural regions. Due to the relatively underdeveloped internet infrastructure in rural areas, businesses find it difficult to explore e-commerce markets online. This further widens the economic gap between urban and rural areas, leaving rural regions at a persistent disadvantage in the modernization process. Additionally, the proliferation of the Internet has led to a surge in telecom and online fraud. With lower levels of education and insufficient experience in using the Internet, rural residents often fall victim to these scams.

3.2.2. Employment Structure Changes

In response to development needs, the demand for network engineers, programmers, and digital marketing experts has increased. These positions not only require professional knowledge and skills but also strong adaptability. Correspondingly, traditional retail and manufacturing industries are gradually shifting towards online sales and automated production in the course of Internet development, thereby reducing many traditional employment positions [3]. For example, large manufacturing enterprises such as Foxconn and Tianneng Group have introduced automated robotic technology into their production lines. Although automated and intelligent equipment reduces losses and improves production efficiency, it has caused a large number of grassroots workers to lose their jobs. Many traditional retailers, such as Belle International, a footwear giant, have had to close numerous offline stores and transition to online markets. This not only affects the employment of store clerks and managers but also impacts numerous small suppliers and logistics companies in the supply chain. These changes have led factories to relocate to rural areas with lower land costs and cheaper labor, while high-tech enterprises are concentrated in cities with abundant talent and well-developed infrastructure. This further deepens the imbalance in urban and rural development within the country [9].

Internet technology has also given rise to more freelance professionals, such as professional writers, fashion bloggers, and web designers. Although these new roles bring employment opportunities, their forms and incomes are often unstable, lacking contracts and other forms of security. The rise of online ride-hailing services has made ride-hailing drivers an emerging occupation. However, since many drivers work part-time, they face numerous risks due to the lack of contractual protection in the event of accidents.

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3.2.3. Data Privacy and Security

The Internet has gradually become an essential tool in people's lives, storing a vast amount of personal privacy and data. Despite the Chinese government's efforts to draft and revise relevant laws and regulations, such as the Personal Information Protection Law of the People's Republic of China and the Cybersecurity Law of the People's Republic of China, to safeguard citizens' safety and personal information, there are still shortcomings in practical application [10].

For instance, in 2017, SF Express experienced a large-scale data breach where hackers stole millions of users' personal information, including names, addresses, phone numbers, and tracking numbers. This data was subsequently sold on the black market, leading to a severe threat to the privacy of many users. Similarly, in 2018, Baidu faced a data breach issue. Although the company quickly patched the vulnerability, it exposed the inadequate protection of personal information by internet companies.

Moreover, the number of telecom fraud cases in China has significantly increased compared to five years ago (Figure 2). The methods of fraud have become more diverse and complex, resulting in more citizens, especially the elderly and residents in rural areas, falling victim to these scams. This situation underscores the urgent need for stronger enforcement and practical measures to protect personal information and enhance cybersecurity in the face of evolving threats.

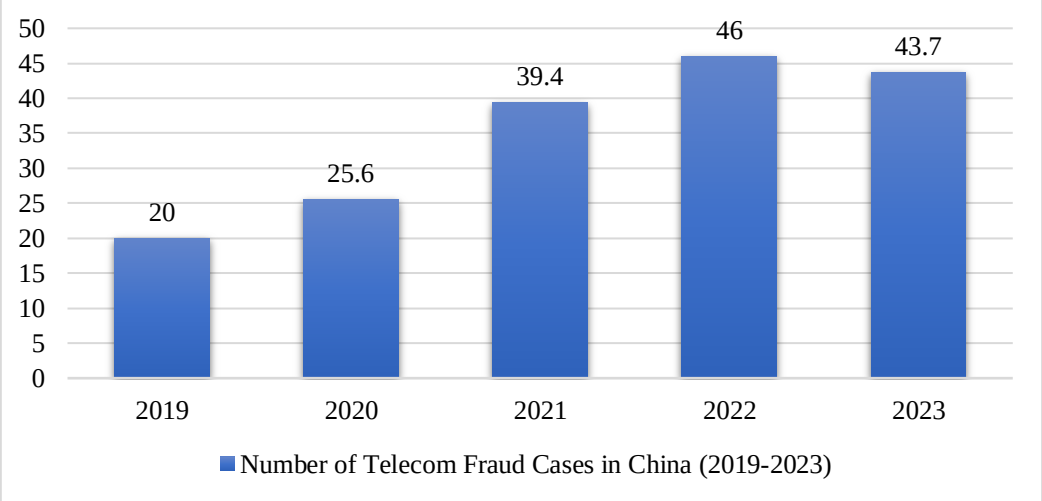

Figure 2: Number of Telecom Fraud Cases in China (2019-2023) (Measured: thousands of yuan) (Photo credit: Origin)

4. Suggestions

4.1. Expand Internet Infrastructure Development

To address the digital divide, the first step is to enhance network coverage and improve network quality in rural and remote areas. Digital enterprises and government departments should invest in the construction of high-speed broadband networks to increase the stability and speed of internet services in these areas, ensuring that underserved regions receive the same quality of internet services as urban areas. Additionally, the government can establish comprehensive information-based public service platforms that integrate education, healthcare, and other services, helping people resolve issues online. This approach not only improves administrative efficiency but also allows residents in rural areas to benefit from the advantages of internet development.

Finally, efforts should be made to advance digital education in disadvantaged areas. For example, free Internet technology training programs can be offered to enhance the digital skills of farmers and

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workers. Community training sessions for the elderly can be organized to teach them basic internet usage and prevent the proliferation of online fraud. Additionally, schools should incorporate information technology courses into their curriculum to develop students' digital literacy and raise awareness about fraud prevention.

4.2. Improve the System for Emerging Industries

The government should first implement encouraging policies for emerging professions, establish entrepreneurial loan programs, and provide tax incentives. Additionally, industry-specific parks should be created to facilitate the development of these sectors. Furthermore, during the transition of large enterprises to informatization and automation, appropriate compensation measures should be taken for optimized personnel. Both enterprises and the government can jointly provide employment placement services and unemployment benefits for laid-off workers, aiming to minimize the impact on grassroots workers.

Strengthening the social security system is also a crucial aspect of supporting emerging industries. For example, new professions such as freelance writers, fashion bloggers, and part-time rideshare drivers often lack adequate insurance coverage due to their independent and home-based nature. Therefore, it is essential not only to improve and complete medical insurance, unemployment insurance, and pension insurance but also to establish insurance schemes specifically designed for emerging professions. This approach not only protects citizens' legitimate rights but also maintains social stability and cohesion.

4.3. Strengthen Legal Regulation in the Digital Network Domain

So far, China's judiciary has established laws and regulations such as the "Personal Information Protection Law of the People's Republic of China" and the "Cybersecurity Law of the People's Republic of China" to protect citizens' personal information security in the digital network. However, in the face of increasingly rampant online fraud and increasingly severe personal information leaks, relying solely on legal provisions is clearly not enough. It requires joint supervision and management by the state, enterprises, and individuals [3].

For internet companies, the state issued the "Regulations on the Management of Algorithmic Recommendations for Internet Information Services" in 2021, requiring digital platforms to screen all content posted on the platform to prevent the appearance of fraudulent and other false information. This is to prevent citizens from being harmed by illegal activities on the corporate side. Banks can also collaborate with IT companies to monitor users' transaction records through big data to identify potential fraud risks. For example, major banks in China have established anti-fraud intelligent risk control systems that can detect abnormal users 24 hours a day based on police fraud databases.

At the same time, communities can collaborate with local governments to establish information-sharing platforms to share information on illegal activities. This can provide warning information to community residents. The platform can also include a hotline for reporting online fraud, encouraging people to report suspicious or illegal activities. Through these measures, the government and communities can both warn the public and obtain relevant information, allowing them to take timely countermeasures and effectively combat illegal activities.

From this, it can be seen that China should establish a multi-level supervision and management system to strengthen regulation in the digital network domain. The implementation of such a system will help improve the overall level of cybersecurity in China, protect citizens' personal information, and thus maintain social stability.

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5. Conclusion

5.1. Key Findings

The article primarily summarizes the technological transformations brought about by the development of the Internet and mentions the leading companies in China's internet industry. Additionally, it discusses the various impacts of internet development on different aspects of China, such as the imbalanced development of informatization, changes in employment structures, and issues related to data privacy and security, which are challenges that need to be addressed at this stage. In the latter part of the article, solutions to these issues are proposed.

5.2. Research Significance

In the internet era, China's economic and trade pattern is an unavoidable topic in contemporary development. China is home to top internet companies such as Tencent, JD.com, and Huawei, and analyzing their cases can provide valuable insights. This can help improve the business strategies of both large and small enterprises in the information industry while also guiding their future development. Furthermore, China's future economic growth is expected to achieve higher quality and speed due to the advancement of Internet technology. Therefore, a research topic titled "Research on China's Economic and Trade Pattern under the Internet Technology Era" is both meaningful and important.

5.3. Limitations

This paper primarily employs literature review and case study methods based on relevant papers and corporate examples. These approaches allowed me to understand the progress of previous research and identify unresolved issues, providing a foundation for my study. The specific cases helped me integrate theory with practice, leading to a more in-depth analysis of the issues. However, this paper does not include the design of relevant surveys to collect and analyze data. In the future, primary data can be obtained through questionnaires for further research.

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