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Embedded System Technology Spillover Effects of Digital Economy and High-Quality Economic Development

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Abstract

INTRODUCTION: With the development of digital technology and computer technology, the theory of digital economy has also had far-reaching development, but at present, the digital economy is still not able to clearly define whether the digital economy is good or bad for the high-quality development of China's economy. Therefore, it is necessary to research the spillover effect of the digital economy and the high-quality development of the economy with the help of embedded system technology.
OBJECTIVES: To solve the issue of the poor coupling between the digital economy and high-quality development, to raise the degree of China's digital economic development, to improve the high energy consumption in the course of China's economic high-quality development, and to improve the application level of system technology in the study of China's economic development.
METHODS: The digital economy model is established using the entropy weight method; its efficiency is evaluated using embedded system technology; the spillover effect analysis of high-quality development is then conducted using the digital economy index; and lastly, the overall assessment of the spillover effect is conducted using the comprehensive evaluation results of the entropy weight method.
RESULTS: Embedded system technology has a noticeable promotion effect on the development of the digital economy; although the development of the digital economy and economic high-quality development are poorly coupled, their promotion effect is more significant; embedded system technology can indirectly promote the development of economic high-quality development through the digital economy.
CONCLUSION: China should vigorously develop embedded system technology to promote the application of new technology in the economy and should further standardize the market economic order to maintain the orderly development of the digital economy.

Keywords: embedded, system technology, digital economy, high-quality development

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1. Introduction

China's economic growth is changing in ways never seen before. A significant step in the reform of China's economic development, the enhancement of its economic structure, and the optimization of its growth has been reached in the last few years as the country's economy has entered a phase of high-quality development and sustainable and rapid growth (Ma & Huang, 2021). In terms of economic indicators, China's economic strength has continued to grow, with a number of indicators ranking among the world's best, and productivity is constantly improving (Brgger et al., 2023). In 2020 China has wholly eradicated poverty, achieved the great goal of reasonable social and economic health, and succeeded in solving the problem of food and clothing for more than 1 billion people (Wang, 2021). During the country's rapid development, the development model that stimulated growth based on natural resources, significant

investments, labor, and other factors of production was usually energy-intensive and affordable. In the long run, there are many problems and dangers. First, China's rapid development needs an ecological footprint; prior to the 2000s, China's growth in energy consumption was much lower than its economic growth (C. Zhang et al., 2021). However, since 2003, China's energy consumption has grown by more than 15 percent, even more than the GDP growth rate. Over time, the potential of natural resources and the environment will reach its limits.

Today, China's population is aging, leading to a diminishing demographic dividend and rising labor costs. Many low-income industries have moved to low-cost countries such as Southeast Asia and Africa (Conley, 2023). In addition, China has long needed more basic technology and competitiveness in high-end industries, and its industrial structure needs to be optimized, and its innovation capacity improved (Zhou, 2021). There are also challenges, such as inconsistent urban and regional development, uneven income distribution, risk sharing between finance and V.R., and many income challenges (Henry & Smith, 2021). It also shows that China has previously been committed to improving the quality of life of its citizens.

Having built a comprehensive and healthy society, more and more people are worried not only about essential social services but also about a better social life. This calls for higher socio-economic development and standards in the areas of democracy, security, the rule of Law, justice and the environment. In a related report, the NPC is committed to ensuring the quality of economic development and improving economic efficiency (Beloshitskii & Patlasov, 2021). Changes in economic efficiency, quality, and strength will enhance the Chinese economy's ability to innovate and its competitive edge in the international economy (Kameshwara et al., 2021). Supporting the next stage of promoting the construction of a new economic system is an objective prerequisite for achieving the strategic goals of renewing and modernizing China in the new period.

The local and global environment has altered as economic performance and productivity have increased. China has ushered in a progressive era. It is essential to support superior social and economic development (Umuhoza et al., 2021). Many researchers have conducted in-depth discussions on related topics. Amidst the digital revolution, a novel financing model has surfaced, shattering the conventional financial barrier.

Furthermore, urgent financial system reform is imperative for the superior advancement of China's economy. Through the use of digital technology, people can better coordinate the availability and efficiency of capital distribution, speed up effective communication between the supply and demand of financial services, eliminate economic imbalances and development bottlenecks, and increase the availability and fairness of financial services (Riabokon, 2021). To stimulate domestic demand, encourage entrepreneurship and innovation, and increase consumption. Understanding the conditions for high-quality economic growth and the crucial role played by the digital economy may be gained by researching the mechanism by which the economy contributes to the development of economic quality.

2. Background of the study

The financial system has always been at the heart of economic development. With digital reforms, the digital economy is changing. In that regard, the financial sector also differed from traditional innovation models, which gave it unlimited vitality (Zeng et al., 2022). In recent years, China has attached great importance to the integration of technological innovation with the financial sector. The term "digital economy" first appeared in a 2014 report by the Chinese government, and since then, documents on the digital economy have been released frequently. In 2015, the government adopted a series of regulatory measures and guidelines to promote the healthy development of e-finance (Zhiting & Jiao, 2022).

At a government-organized meeting of the Financial Stability and Development Commission, the government called for more strategic, forward-looking, fundamental and targeted fiscal policies. It emphasized that critical areas such as inclusive economy, green economy and digital economy are now crucial areas that require multilateral research, and scientific research needs to be strengthened to provide a theoretical basis for the implementation of fiscal policies. China's central bank guides the future of healthcare fintech and promotes the digital transformation of financial institutions (Lumer, 2022). The World Health Organization presents concrete ideas for the digital transformation of funding in the coming years. Explain the development goals and key objectives. With rapid socio-economic development, the role of the financial sector in the socio-economy is no longer limited to economic growth. As digital, intelligent, green, low-carbon, equitable, and inclusive financial technologies advance, they will be better able to leverage the core traits of the digital economy—convergence and precision, for example—and support the sector's highly targeted and steady growth (Lan, 2021). In this stage of economic change, more effective promotion of China's economic development is also an inevitable solution. In the digital economy model, financial information and digital technologies contribute to network sharing, intensive integration and precise coordination of financial components, helping to harmonize financial and economic development (Lino et al., 2022). This all-encompassing and well-coordinated growth complements the economy's high-quality, diverse development.

Innovative financing strategies, such as non-contact banking, have been essential in the growth of the digital economy since the New Crown Pneumonia pandemic of 2019, which has been gradually recovering in a challenging and unstable climate. The financial system and structure have also been enhanced by digital financial reforms, which have also helped the real economy,

encouraged the integration of the digital and real economies, more effectively closed the financial gap, and supported the steady and sound growth of the economy (Guliev et al., 2021). The financial industry as a whole is essential to the economy's healthy growth, and digital financial reform is essential to the industry's continued success. Thus, it is essential to focus more on how the digital economy and high-quality economic development are related, enhance the digital economy's mechanism, encourage high-quality economic growth, and advance upcoming digital financial reform (Hu, 2022). Explain the impact of quality factors of economic development on economic development and change support.

This paper conducts an empirical study utilizing data from China's main cities, analyzes the relationship between the development of economic quality and the digital economy, and proposes an evaluation system for economic quality based on the findings of previous research (Yan, 2021). It illustrates how the advancement of economic quality and the digital economy are related. The various effects of the digital economy on the development of economic quality are examined while taking into account its unique mechanisms. Furthermore, a model of the relationship between the development of economic quality and the digital economy is put out, offering both empirical and theoretical support for the idea that China may leverage the digital economy to enhance its economic quality further. Additionally, some ideas regarding China's future place in the digital economy are provided, outlining the challenges of creating a digital economy as well as the need for both quick and high-quality economic development (Li & Wu, 2021). One way to preserve the impact of the digital economy on high-quality regional economic development is to extend the theory of comparative advantage through the transfer of classical conceptions. The second is using three spatial data equivalency models from various angles to assess the regional influence of subsectors and enhance their regional relationships, as well as to summarize the effects of the digital economy on high-quality economic development. The development of the digital economy in the new century depends critically on the incorporation of digital technologies into participatory finance. The necessity of incorporating the Internet and other digital technology into the actual economy was also stressed during China's economic conference (N. Zhang et al., 2021). An era of shared prosperity requires that the actual economy shift to a new normal, which the growth of the digital economy can effectively support. The transformation of the financial services sector, which not only modernizes financial markets but also reflects the caliber of economic progress, is heavily reliant on the digital economy (Moldabekova et al., 2021). Therefore, in order to give financial policymakers more profound insights and enable them to make more precise and targeted policy recommendations, a thorough and systematic study of the effects of the digital economy on the new average economy, as well as an in-depth analysis of the effects of the digital economy on the new average economy, regional impacts, responses to shocks, and threshold impacts are necessary.

3. Research methodology

3.1 Digital economy and high-quality economic development

The high-quality economic development indicator is not the same as the conventional metrics. It accurately portrays the reality of the region's economic development and gives more weight to the competitiveness, dynamism, and inventiveness of that development—that is, its quality. High-quality economic development is not only China's best option for readjusting to the new economic normal in the modern period but also the primary means of resolving the country's significant social contradictions. The goal of this study and the first issue to be addressed before developing indicators is the selection of critical factors for quality economic development. A quality economy covers a wide range of sectors, and there are no uniform selection criteria, but ultimately, it implies the development of new concepts of innovation, coordination, green action, transparency, and sharing.

Theoretical studies summarize the concept of the digital economy as a combination of financing and networked ecosystems. The development of the digital economy has gone through many stages, from non-financial institutions that use I.T. for personal financial activities to industries that use digital technologies to transform the entire financial system. However, the nature of the economy has stayed the same. The digital economy is now booming globally, and it is against this backdrop that it joins the digital wave in all sectors as it emerges and grows. The People's Bank of China coined the term "online finance" before the digital economy and defined it as a new financial business model.

In addition to traditional financial institutions, there are also online companies that improve the efficiency of financial markets by utilizing online technologies to provide financial services such as investment, finance, payment and information brokers. However, while the digital economy and online finance are different, they are similar. The article draws on existing research from the G20 Digital Economy Study. It defines it as a new financing model that brings digital innovation to traditional financial institutions, instruments and financial services through modern digital technologies and platforms such as the Internet. The digital economy includes financial services such as online payments, online investment and financing, online credit and online insurance. The concept of the digital economy does not deviate from the essence of finance. Instead, it utilizes a more comprehensive range of Internet connectivity and information technologies based on traditional financial instruments and uses information as a tool for a variety of financial operations. The digital economy retains the monetary and credit nature of traditional finance through

the quality and innovation of financing operations, products, service models and concepts. Embedded system technology simulation diagram, as shown in Figure 1.

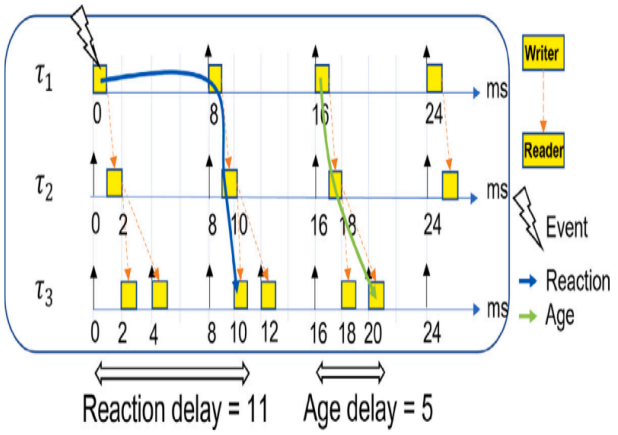

Figure 1. Embedded system technology simulation diagram

Researchers have examined a number of procedures before arriving at quality economic development, including economic growth, quality economic development, and economic growth. The present study departs from prior research in a few ways regarding the definition of excellent economic development. Firstly, the notion of high-quality economic development is broad and international. Second, China has advanced the idea of excellent economic development that is tailored to the demands of the moment since the dawn of the new age. This idea is connected to the most critical issues and challenges China is currently dealing with. Researchers have primarily concentrated on two aspects of high-quality economic development from the standpoint of goal theory: first, the new idea of normal development, and second, a thorough analysis of the fundamental contradictions and changes in society. Although there are several perspectives on the idea of high-quality economic development, certain notions still need to be made clear. Thus, this article integrates multiple categories and viewpoints to identify the high-quality growth of the economy, as explained below, based on the theoretical analysis and perspectives that are currently available.

In strict terms, high-quality economic development entails eschewing the previous era of rapid economic expansion and adopting new ideas, drives, and strategies for progress. Optimizing the engine necessitates concentrating not just on the amount of economic growth but also on the caliber and effectiveness of economic development. To attain quality and economic efficiency, as well as to build cross-sectoral standards for economic development, the focus should be on industrial innovation, consumption, investment, and modernization. With the advent of the new normal, China must address the many challenges of economic development under the guidance of the new development concept and improve the quality and efficiency of economic development from the bottom up. At the same time, a situation of harmonious coexistence and co-development exists in essential areas such as society, ecological civilization, and national government. The main criteria used to define high-quality economic development are shifts in the underlying social tensions.

In summary, the primary goals of excellent economic growth are people's and human development. Adapting to the good life of the people entails enhancing the structure and quality of many facets of life in addition to encouraging economic growth. It is a comprehensive reform of the current development model. Embedded system flowchart, as shown in Figure 2.

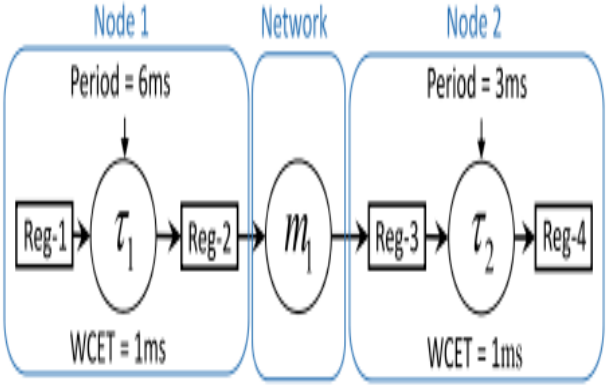

Figure 2. Embedded system flowchart

The specific calculation process of the entropy weight method is as follows:

$$X_{ij} = \frac{X_{tij} - \min(x_{tij})}{\max(X_{tij}) - \min(X_{tij})} \quad (1)$$

$$Y_{tij} = \frac{\max(X_{tij}) - X_{tij}}{\max(X_{tij}) - \min(X_{tij})} \quad (2)$$

Xtij and *Ytij* are the positive indicator normalized and negative indicator normalized indices, respectively.

$$X'_{tij} = 0.001 + X_{tij} \quad (3)$$

$$Y'_{tij} = 0.001 + Y_{tij} \quad (4)$$

X'tij and *Y'tij* are the results after normalization by the entropy weight method, respectively.

3.2 Research design

A complete set of digital economy indicators has been built to quantify its impact on projecting the development of the digital economy, given its extensive use across multiple sectors. As of right now, the digital economy indicator system has yielded sophisticated international study. The ITU Framework for ICT Development was created in 1995 by the International Telecommunication Union (ITU) and was based on 11 sub-indicators that

addressed the potential, use, and accessibility of ICTs. The United Nations International Telecommunication Union released the eleventh edition. It compiles an extensive body of expert, long-term research from governments worldwide. The European Union took society's reaction to the digital economy into consideration in 2014. According to estimates from the Confederation of Industry and the U.S. Department of Commerce, this accounted for 6.5% of the country's GDP in 2016. The association has set up measurement methods for e-commerce, digital media, and digital infrastructure. Since some Western nations have already established digital economies, Chinese scholars must rely on better-developed theoretical frameworks.

A thorough set of indicators for China's digital economy has also been made available by the China Institute of Information and Communication Technology (CICT). The first indicator system to track the growth of a city's digital economy is the Digital Economy Development Indicator System, which consists of 12 secondary indicators and four primary indicators for urban information infrastructure, services, governance, and industrial integration. The first assessment in 2017 covered more than 40 cities, and the number of cities surveyed in the China Digital Economy Index 2020 White Paper (2017) rose to 148. This is a measurement system with Chinese and modern characteristics. However, the selection of currently popular indicators may jeopardize the sustainability of the data and the value of long-term observations. The report utilizes dynamic data from a dozen major platforms, including Tencent and China, to break down the digital economy measurement system into four subsystems: core population, industrial population, innovation population, and intelligent population. The growth of China's Internet business in its cities and provinces is reflected in these metrics. The Internet and mobile Internet are essential components of the digital economy's infrastructure, reflecting the pervasiveness of both platforms' use as well as the proportion of urban workers and the general public who use telecommunications for software, computer services, and data transmission. The Center for Financial Studies at Peking University is the source of each city's Participatory Finance Index.

The Digital Economy Evaluation Index and the Comprehensive Index of the Yangtze River Economic Zone are computed in this study using linear interpolation and data from 108 cities in the Yangtze River Economic Zone between 2011 and 2019. Each index has different ratios and units, which cannot be directly compared and calculated. To achieve this effect, it is necessary to harmonize each indicator before calculating the weights.

$$Z_{tij} = \frac{X'_{tij}}{\sum_{t=1}^{d}\sum_{i=1}^{m} X'_{tij}} (1 = 1, 2...n) \quad (5)$$

$$e_j = -\frac{1}{\ln n}\sum_{t=1}^{d}\sum_{i=1}^{m}[Z_{tij}\ln(y_{tij})](i = 1, 2...) \quad (6)$$

In Equation (5), *Ztij* is the weight occupied by the part, and *ej* is the calculated entropy value.

3.3 Embedded systems

The use of information technology in a range of systems and devices with intelligent control and processing capabilities to achieve automation, management, and processing intelligently and effectively is known as embedded system technology. The benefits of this helpful model include its tiny size, low power consumption, affordability, and excellent reliability. The design and development of embedded systems require expertise in hardware, software development, system integration, and testing. The digital economy efficiency model is shown in Figure 3.

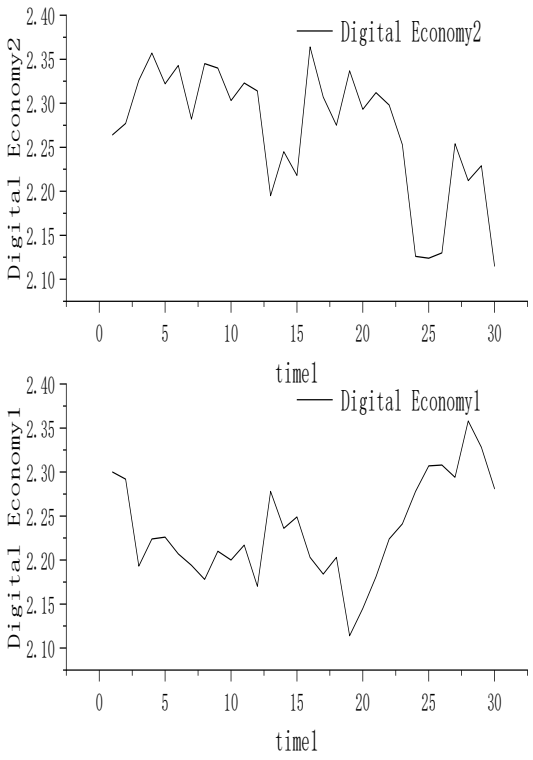

Figure 3. Digital economy efficiency model

It is usually integrated into a complete device, such as a smartphone or medical device. An embedded system can include a processor, memory, I/O peripherals, and other electronic components. It is usually designed to be programmed independently of other systems and specific tasks. The purpose of an embedded system is to provide the computing power and intelligent control needed for the stable operation of a device. Embedded systems are used to control and monitor a variety of devices and

systems. Examples include industrial automation, medical diagnostic systems, home automation, vehicle control, consumer electronics and cyber security systems. Embedded systems are designed for real-time management, data acquisition, data processing and data visualization. It can also be used for network communication, data storage and multimedia applications. Embedded systems have become a valuable technology application in modern industrial production. The entire embedded system architecture can be categorized from the bottom up into the hardware layer, driver layer, operating system layer, and application layer.

The hardware layer is the foundation of the entire embedded system and the controller layer. It is the physical components of the system, including the processor, memory, I/O, and other peripherals. This level provides the software-level resources needed to perform the tasks of the embedded system. It also includes communication interfaces that allow the internal system to communicate with other devices. The ARM processor is an essential component of the system motherboard and supports all computing and control tasks. Flash memory can store large amounts of code and data, while SDRAM can store large amounts of temporary files. Serial connections are used to communicate with other devices, and the keyboard is used to enter data. Expanded system panels are panels used to supplement various functional hardware modules. These modules can include various sensors, displays, communication interfaces, etc. System extensions are usually user interface circuits, logic circuits, and controllers.

The interface circuitry is used to connect the expansion card to the system motherboard, the logic circuitry is used to perform various functions, and the controller is used to control the operation of the expansion card. In short, the combination of the system motherboard and system expansion board creates an integrated hardware platform on which the system has many functions and flexibility. The central processor is the heart of the computer. It is responsible for performing complex computation, logic, control, and I/O functions, as well as controlling components throughout the system to ensure stable computer operation. Its presence allows the computer to perform tasks more efficiently and increase performance. A processor usually consists of one or more CPU cores, each capable of executing multiple instructions.ARM processors are often used as system processing cores, taking into account the requirements of embedded systems in their own localized and operating environments.ARM processors are widely used in cell phones, embedded systems, and consumer electronics. It uses ARM design concepts to balance system efficiency and cost.

Drivers are an essential part of an embedded system and are responsible for communication between the hardware and the operating system. The driver level usually consists of a device driver and an interrupt program. A device driver is a software used to manage a hardware device. This allows the operating system to control the hardware device in read-write mode. Device drivers are usually written in C and must conform to the hardware specification. The shutdown procedure is the program that is automatically called when a hardware device is interrupted. Handles suspend requests and respond to interrupts. Edit interrupts are usually brief and fast, so responding to suspend requests needs to be executed quickly. The performance and stability of the controller level are significant for embedded systems and directly affect the response rate and stability of the system. Therefore, developing embedded system drivers requires an in-depth understanding of hardware features, basic programming methods, and the core of the operating system.

4. Results and discussion

4.1 Empirical evidence of digital economy development results

Currently, digital technology is mainly used as an innovative service tool to move financial and banking services from offline to online. For example, in 1997, the Commercial Bank of China established an "online office" in its online bank, and a number of trusts and insurance companies began to introduce online trading systems. The second phase began with the launch of Taobao and Alipay in 2004. At the same time, smartphones became popular. Online companies have started to develop a number of financial products, resulting in a large number of online investments and financial instruments. These online financing tools were mainly based on communication devices used for financial operations. During this period, China's mobile payment industry also developed well. In 2006, the Chinese government began to develop inclusive finance vigorously. The digital economy, online platforms and digital technologies played an essential role in this process. Innovations in the digital economy have created factors such as e-credit, which can better balance demand and supply in the financial market. After 2013, when the digital economy boomed in China, regulators provided a more accessible environment for its development. In 2015, the digital economy grew exponentially with the growth of online financial services, insurance companies, and banks that are entirely Internet-based. However, many e-investment and financial platforms, such as e-investment and financing platforms, have created disruption. Digital technologies, as shown in Figure 4.

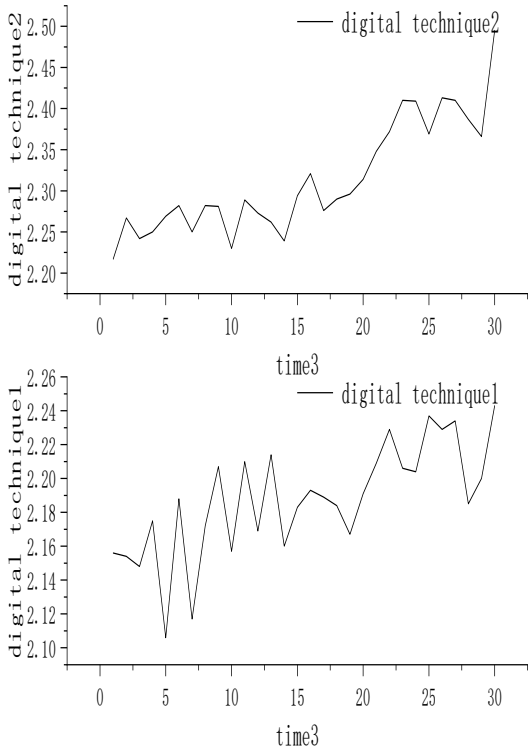

Figure 4. Developments in digital technology

Many scholars have produced indicators of the state of the digital economy and evaluated and computed the evolution of China's digital economy. The current study has made extensive use of the Digital Economy Index, which was created by Peking University's Digital Economy Study Center. Building a digital econometric system with three core indicators and a few common subsidiary indicators that gather data allowed for the achievement of this outcome. The breadth and depth of the digital economy, the usage of digital support services, the number of users who have registered to utilize digital business tools, the percentage of relationship graphs, and the total number of users are the leading indicators of the rating system. The utilization of the digital economy is gauged by how far it has advanced in terms of payments, credit, insurance, and other financial services. Through metrics like liquidity, credit, convenience, and liquidity, the level of digital support services is used to gauge how well digital technologies are being applied in the context of the digital economy. The data sources are more trustworthy, and the assessment methodology as a whole is more extensive. Its Digital Economy Index offers trustworthy information for analytical studies of China's digital economy. Numerous scholars have acknowledged its validity in characterizing the evolution of China's digital economy, evaluating and analyzing its present condition, and researching the effects of China's digital economy on the national economy.

The last ten years have seen a trend of fast expansion in the digital economy across several regions, and there has been a notable increase in the breadth, depth, and quality of digital support services. The eastern region continues to lead with a higher overall degree of development than the middle and western regions. The eastern region's comparatively sophisticated and widespread Internet technology, along with the notable disparity in usage intensity between the central western and eastern regions, could be the reason for the peak in coverage. This could be the result of regional variations in users' financial transaction comprehension and economic literacy. Different regions have different levels of digital support services, which could be connected to the digital exclusion of Internet technology. These variations show quick growth, decline, and slow expansion. With notable advancements in the financial industry's use of Internet technology, 2013 marked the start of a new chapter in the history of the digital economy. But as this technology is used more and more, bottlenecks are being formed. China's digital economy is proliferating overall, but regional inequality is steadily rising, and regional development is still uneven. The infrastructure supporting the digital economy in the central and western areas has to be strengthened, and financial data should be increased.

Financial data is being digitalized to close knowledge gaps and imbalances in the financial system. In contrast to the traditional economy, the digital economy can process vast amounts of data using technologies like big data and cloud computing to transform financial information into usable big data finance. It can also leverage the information technology of the Internet to gather user-generated data from various platforms. On the other hand, it can describe the current status of individuals, institutions and social relationships. For example, Zuma Credit may collect user information, understand relationships and social networks, and collect information about financial habits, assets, companies, credit history, etc.

Moreover, it constantly monitors behavior when registering for an account, leaving a trail of online behavior and filling in various information. It can also record risk factors or misbehavior in a timely manner, creating and evaluating complete personal or business information; on the other hand, forecasting is based on data held by individuals or institutions to predict other behavioral patterns or characteristics, such as the dynamic probability of default due to significant dates in the credit sector. Actuaries' accuracy can be increased in the insurance industry by utilizing big data clouds. As a result, the digital economy may support information disclosure in the financial markets, enhance the effectiveness and caliber of information flows, offer a solid foundation for the supply and demand of financial services, and boost pricing and risk management efficiency. The efficiency of digital finance is evaluated as shown in Figure 5.

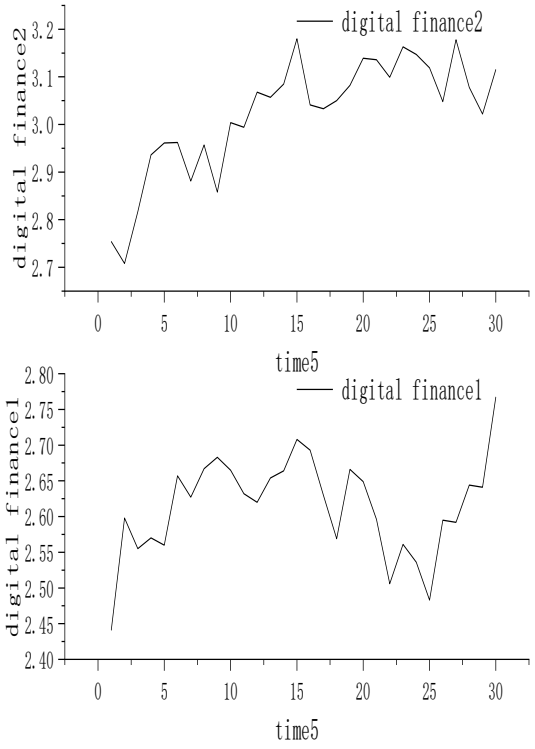

Figure 5. Efficiency evaluation of digital finance

The convergence of financial services and mobile devices is an essential feature of the digital economy. Many traditional financial institutions have developed mobile banking services. Internet companies have added financial services such as WeChat Pay and Money to their online services to enable more competent economic behavior. This has simplified the procurement of financial services and reduced transaction costs, saving traditional financial institutions and branches most of their transaction costs. At the same time, Internet technology has helped break down the time and space constraints of economic behavior and improve the quality of financial services. Third-party payment applications, such as Alipay, allow users to connect multiple debit cards and transfer funds quickly between accounts, streamlining payment and billing processes and increasing efficiency.

The expansion of financial bargaining power has led to integration and long-term effects. Compared with the traditional economy, the digital economy can utilize digital technology to expand the target audience for financial services to reach previously inaccessible areas and users, leveling the playing field for users and promoting financial inclusion. As traditional financial institutions increasingly trust and value big and good borrowers, it is difficult for small and medium-sized users to access many financial services. With the development of the digital economy, the reduction of information asymmetry in the financial market makes it more valuable in the marketplace. Efficient financial services for MSMEs and long-term users in remote areas. Moore's Law makes it possible not only for more financial transactions but also for Internet technology to create economies of scale in the digital economy. The external advantages of the Internet can meet various funding needs and support financial growth in a variety of sectors. A comparison of the digital economy and digital technologies is shown in Figure 6.

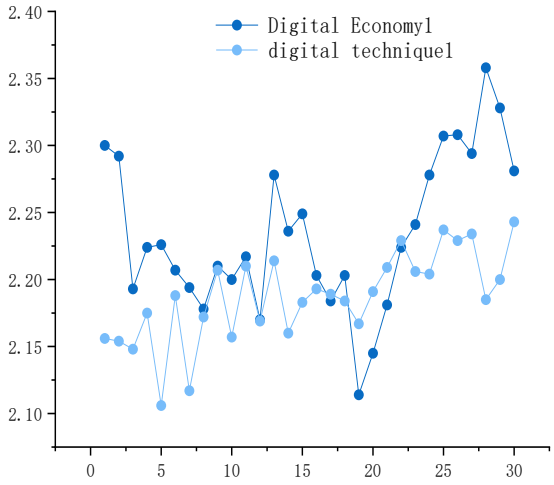

Figure 6. Comparison of digital economy and digital technology

The decentralization of financial operations has facilitated the secondary decentralization of funds. In the digital economy, investment and finance can take place directly on the Internet, bypassing traditional financial intermediaries and markets, such as commercial banks and investment firms. In the traditional fund allocation process, financial intermediaries are specialized financial service providers. However, in the digital economy, the supply and demand of finance can be ensured through digital technology, thus allocating capital efficiently. For example, in the credit sector, P2P lending can alleviate many of the imbalances and value bottlenecks for individuals and MSMEs. In addition, crowdfunding and other financing options exist whereby parties can freely exchange relevant information by posting or negotiating on crowdfunding platforms. In the process of deregulating the financial sector, information has shifted from closed to open, resulting in a more flexible flow of financial resources and a more rational allocation of resources. The digital economy is better able to respond to the demand and supply of financial services through information technology and big data platforms. With more comprehensive information, capital flows will no longer be limited in time and space, capital supply and demand will expand, and capital transactions will become flexible and efficient, which will significantly improve profitability, facilitate "second intermediary" financing and allow capital value to be shared. At the same time,

one can be protected by various restrictions. The digital economy model is shown in Figure 7.

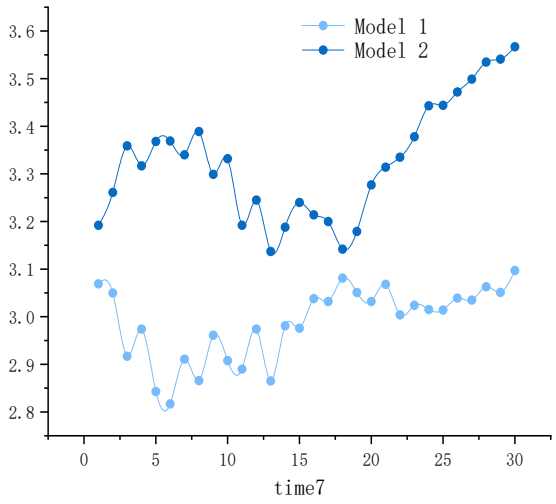

Figure 7. Digital economy model

a description of the digital economy's technical regulation. Information security and financial regulation are two of the problems that the digital economy must overcome as it innovates. Conventional financial regulatory frameworks and guidelines may not function effectively as the digital economy grows more reliant on the Internet and information technology. Traditional regulation strategies may also prove ineffective. Digital reforms confound the co-evolution of the digital economy and the regulatory environment. On the other hand, as the digital economy proliferates and digital technology is used appropriately, digital regulation will eventually assist the financial system in new ways. By putting in place information norms and forward-looking processes, financial regulation might become more capable and efficient.

4.2 Characterization of high-quality economic development

High-quality economic development is people-centered. In the Marxist discourse on economic development, human development is always the ultimate goal. When productive forces are underdeveloped, material scarcity and social development are relatively crucial to meeting people's survival needs; increasing labor productivity and labor productivity can stimulate the mass production of material goods. In social development, people move from solving fundamental problems such as clothing and food to realizing a state of mind. High-quality economic development symbolizes the satisfaction of citizens' higher demands in the economic, political, cultural, social and environmental spheres. Excellent economic growth is significant historically. The creation of high-quality raw materials and living in the natural environment under specific industrial circumstances are considered aspects of high-quality economic growth. From a historical perspective, productivity reflects the historical stage of economic development in a given period, and the level of productivity in different periods must have corresponding factors of production in order to promote healthy economic development. With the advent of the new normal, the contradiction between productive forces, i.e., the fundamental contradiction between society and the relations of production, changes with the growth of productive forces. The tension between the increasing demand for a better life and inadequate and unsustainable development must be resolved through high-quality economic development. The objective of superior economic development is more comprehensive than that of the fast-growth stage. It is limited to enhancing specific economic metrics and economic growth. A better understanding of the dynamics and effectiveness of economic growth is necessary for high-quality development. Examples of this include fostering new development rhythms, maximizing economic structures, encouraging innovation and entrepreneurship, and coordinating regional development. At the same time, attention must be paid to issues such as environmental protection, making high-level economic development research multidimensional as well. The iteration of digital technology, as shown in Figure 8.

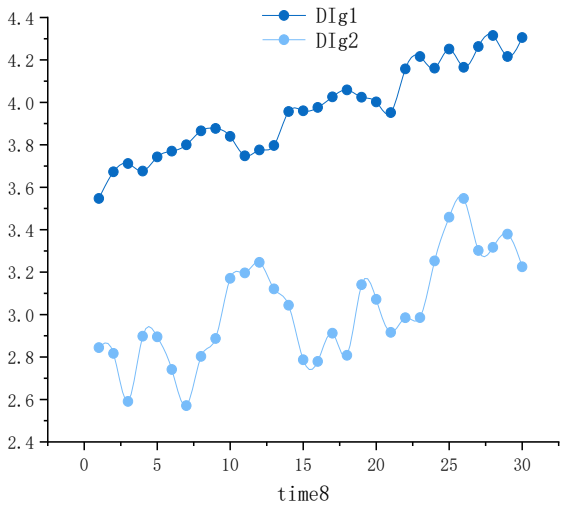

Figure 8. Iteration of digital technology

Innovative development emphasizes that innovation is the primary driver of economic development, including institutional mechanisms that promote technological innovation and innovations that can contribute directly to economic development. Innovation in institutional arrangements can release vitality more effectively. Coordinated development included regional coordination, industrial coordination and urban-rural coordination, which were priority issues to be addressed in the current imbalance in economic development. Environmental development is oriented towards sustainable economic development; China's past economic development has

caused environmental damage. In the process of natural change, production will be interrupted if the objective laws are not respected. The goal of sustainable development can only be achieved by preserving green landscapes and building a society with limited resources. The goal of open development is to create a high-level open economic system in a complex and changing international and national environment, to create a more open global economy and to better integrate into global value chains. China's overcapacity removal has improved production flows and productivity growth while also promoting a new paradigm for development. High-quality economic development shouldn't be predicated on GDP, according to co-development.

Due to data asymmetries and credit constraints among low-income groups, MSMEs often need help to benefit from the traditional financing models and services offered by people in developed regions. On the one hand, SMEs often lack comprehensive and accurate performance reports and data to obtain accurate and reliable credit rating results. On the other hand, most low-income people need to be adequately protected, which increases the risk of providing financial services to traditional financial institutions. As a result, the barriers to accessing financial services are usually higher. Traditional financial institutions tend to carry out major financial activities in economically developed regions, where many small and medium-sized enterprises and individuals in need of investment and financing are unable to obtain timely financing or higher returns on their investments. The problem of data asymmetry is more acute in less developed regions, especially those with poor transportation and communication infrastructure. There are no effective channels for exchanging information on the supply and demand of financial services, resulting in higher transaction costs for different buyers of financial services.

Through lowering information asymmetries, effectively lowering economic discrimination, facilitating capital mobilization, and enhancing real economy access to financial services, the digital economy can promote economic development. First, less economic discrimination may result from the digital economy. One way that the digital economy can record and evaluate the online behavior of businesses and individuals is by using digital technologies like big data and cloud computing. Therefore, comprehensive credit data may be a prerequisite for SMEs to maximize their economic growth and risk management, for financial institutions to use as a basis for decision-making, to lessen information asymmetry in the financial services industry, and to manage risks associated with investment and financing. However, by offering low-income populations in need a wider variety of financial products and investment channels, the digital economy can increase the accessibility of financial services. Provide more varied financial trading platforms and transparent information to investors and financial institutions. Through the Internet, the digital economy can enhance the quality of numerous financial firms by facilitating the supply and demand of financial services like e-credit. This is achieved by leveraging intelligent information technology to make economic decisions and by removing limitations on capital flows related to time, location, and currency. Second, real estate investment can be stimulated by the digital economy. By reducing the time and speed of capital flows through communication and information deficiencies and online banking, financial services can be accessed more quickly and richly, and disadvantaged financial groups can reach more remote areas. The digital economy can protect the actual economy from operational risks by strengthening economic governance through the creation of more accurate supply and demand relationships, coordinating investor programs, and, to some extent, providing insurance services for investment practices in the real economy. In addition, the externalities and economies of scale of the Internet can reduce the cost of developing the real economy and providing financial support. The use of artificial intelligence has significantly reduced labor costs and increased enthusiasm for investment in the real sector. Overall, the digital economy can utilize human skills and cloud computing to integrate Internet data and reduce credit constraints caused by data asymmetries. At the same time, there is a need for a more transparent financial services platform capable of meeting and supporting the needs of long-term users and vulnerable financial groups, lowering market access barriers for financiers, expanding investor access, and increasing capital accumulation. Improved financing mechanisms and investment incentives for the real sector are needed to facilitate expansion.

5. Conclusion

Economic quality development, in general, has substantial positive regional impacts, suggesting that economic quality development in China is a driver of development. At the regional level, these positive regional impacts are visible on the East Coast. The economic situation in Jiangsu, Zhejiang, and Shanghai shows that economic development in the East is complementary. However, the level of high-quality economic growth in most cities still needs to be higher. China still has a long way to go before creating a high-quality economy; some southwestern regions have even witnessed a siphoning effect.

Mutual learning that is constructive can quickly raise the standard of economic progress. Furthermore, there are regional variations in the effects of the digital economy on the growth of a quality economy: the quality economy is more strongly impacted regionally in areas with lower levels of digital economy development. As a result, these areas can grow the quality economy's beneficial effects in addition to the digital economy. The quality economy is affected by the local economy and the digital economy. With the most significant effects on size and scope, the

digital economy can significantly enhance the quality of regional economic development.

On the other hand, the quality of the local economy is not significantly impacted by the digital economy in the region. This could be because the unequal distribution of resources, like customers, which impedes the growth of the digital economy in neighboring regions, means that local financial institutions, in the context of the development of the digital economy, obtain sufficient resources from those regions. The adverse effect on the superior local economy is minimal and of an indirect nature. Additionally, the digital economy directly affects superior local economies, fostering their superior development.

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