Research on the Promotion of High-Quality Enterprise Development through Digital Business Environment

Mingnan Li[1,a], Hongxia Wu[2,b]

[1]Energy College, Sichuan College of Science and Technology, Chengdu, Sichuan, 62050, China

[2]President's Office, Sichuan Vocational College of Science and Technology, Chengdu, Sichuan, 62050, China

[a]486500261@qq.com, [b]16284848@qq.com

Keywords: Digital Business Environment, High-Quality Enterprise Development, Enterprise Innovation Ability, Institutional Innovation

Abstract: In response to the application issues of the digital business environment, such as the lagging construction of digital infrastructure, weak service targeting, and shortage of digital talents, based on theories like resource dependence, transaction costs, and enterprise innovation, this paper deeply analyzes the internal reasons why the digital business environment affects the high-quality development of enterprises. An evaluation system for the digital business environment and the high-quality development of enterprises has been established. Solutions such as strengthening the construction of digital information infrastructure, promoting the construction of digital government, and improving the legal and regulatory system have been proposed. Through practice, it has been proved that the digital business environment constructed can significantly promote the high-quality development of enterprises.

1. Introduction

The construction of digital business environment is crucial for building a unified national market and promoting the development of new productive forces. However, problems in the construction and application of digital business environment are widespread, affecting the operational efficiency, market competitiveness, business scope, and business risks of enterprises. It is necessary to conduct in-depth research on the construction and application of digital business environment and promote high-quality development of enterprises.

The Fourth Plenary Session of the 19th Central Committee of the Communist Party of China proposed to "improve the business environment and stimulate the vitality of all types of market entities". Li Zhijun et al. [1] pointed out that the business environment is a comprehensive ecosystem that encompasses a series of activities such as enterprise innovation, entrepreneurship, financing, and investment. These activities influence and depend on each other, jointly constituting the overall framework of the business environment. Sun Ping and Chen Shiyi [2] first defined the government-related business environment. Based on the theoretical framework of government intervention, this concept was further divided into several key areas, including the supply of public policies, institutional transaction costs, the practice of market supervision, and the quality of infrastructure services. This classification helps to analyze and understand the factors of the government-related business environment that affect enterprise operations more precisely. In the field of digital business environment research, Xie Shouxiang and Tian Mengming [3] when constructing the evaluation system of the business environment in China's coastal provinces, not only considered four aspects: macroeconomy, supporting environment, infrastructure, and government efficiency, but also paid special attention to the development of new infrastructure, which is in line with the concept of digital infrastructure in the digital business environment. In the research on high-quality development of enterprises, Li Zheng [4] pointed out in the study that in order to promote high-quality economic development, it is necessary to attach importance to and focus on enhancing the five core capabilities of the state-owned economy, namely competitiveness, innovation ability, control ability, influence,

  DOI: 10.25236/mepsd.2025.027

and risk resistance ability. In conclusion, the research on the construction and application of digital business environment is not yet perfect.

Based on the data statistics of the application of digital information technology in the new era, we select the ecological elements of the digital business environment, such as digital infrastructure construction, digital legal environment, digital talent supply, digital government development, digital financial environment and digital market environment. We analyze the statistical data of each element and calculate the development level of the digital business environment in different regions. Taking enterprise vitality, enterprise innovation ability, and enterprise competitiveness as the main indicators, we evaluate the development status of enterprises. Based on the calculation results, we compared the levels and development status of digital business environments in different regions, and identified the impact of the digital business environment on enterprise development. Subsequently, based on theoretical analysis, we comprehensively evaluated the promoting effect of the digital business environment on the high-quality development of enterprises.

2. Conceptual Definition and Theoretical Foundation

2.1 Business Environment and Digital Business Environment

Digital business environment refers to the process of promoting the digital transformation of traditional business environment through the construction of digital infrastructure and the application of digital technological innovations. It aims to facilitate the digitalization of industries and the development of digital industries, and has core advantages such as breaking through time and space limitations, improving efficiency, and promoting fairness. Its essence is to empower government services, market management, and enterprise collaboration through digitalization, providing institutional and technical dual support for economic high-quality development.

Business environment refers to the institutional factors and conditions involved in the economic activities of enterprises and other market entities. Business environment includes social, economic, political, and legal elements that affect business activities. It is a systematic project covering numerous fields such as economic and social reforms and opening up. The business environment of a region directly affects the operation and development of enterprises within the region and ultimately has a significant impact on economic development status, fiscal revenue, and social employment. In summary, it includes legal, political, economic, and social elements that affect business activities. A good business environment is an important manifestation of a country or region's economic soft power and an important aspect of improving comprehensive competitiveness.

The connotation of the legalization of business environment refers to a set of effective, fair, and transparent specific laws, regulations, and regulatory procedures; the connotation of the internationalization of business environment refers to the establishment of a market economy operation mechanism and system that conforms to international practices and WTO rules. In the construction of business environment, factors such as market environment, policy and administrative environment, social service environment, financing environment, and legal environment should be considered to promote the realization of investment liberalization and greater convenience in foreign trade and investment. Digital business environment can be understood as an innovative and upgraded transformation of traditional business environment under the rapid progress of digital economy and digital technology.

2.2 The theory of productivity and production relations

The theory of productivity and production relations is the core content of Marxist materialist historical view, revealing the fundamental driving force of social development. Productivity refers to the objective material force by which humans transform nature and reflects the relationship between humans and nature. The basic elements include laborers (the subject), labor tools (production tools, etc.), and labor objects (raw materials, etc.). Science and technology are the first productive force, permeating all elements and enhancing the overall efficiency.

Production relations are economic relations formed in the production process that do not depend

on will. They reflect the social relations between people. The core components are: ownership of production materials (the decisive factor); position and mutual relationship in production; distribution of products. The basic types are: based on public ownership, and based on private ownership.

The dialectical relationship between productivity and production relations, and the dynamic relationship of contradictory movement. Productivity determines production relations, and the nature and level of productivity determine the nature and form of production relations. The development of productivity promotes the transformation of production relations. When the old production relations cannot accommodate the new productivity, they will inevitably be replaced. Production relations have an effect on productivity, and a reasonable production relation stimulates production enthusiasm, such as public ownership stimulating collaboration efficiency. Inadaptability hinders it, and lagging or advanced production relations will restrict the development of productivity, such as private ownership causing distribution contradictions. The highest standard of social progress is the development of productivity, and the development of productivity is the fundamental measure for evaluating social systems. Policies need to adjust production relations, such as ownership reform and optimization of distribution systems, to meet the needs of productivity development.

The rapid development of new-generation information technology promotes the renewal of productivity, and at the same time, it requires the renewal of existing production relations to adapt to the development of new quality productivity. Digital business environment affects and changes productivity, including laborers, labor tools, and labor objects, and influences the production and operation activities of enterprises. The digital business environment promotes industrial transformation and social progress through enhancing production efficiency, promoting technological innovation, optimizing resource allocation, improving customer service, and optimizing the ecological environment. At the same time, this also puts higher requirements on enterprise development, requiring continuous adaptation to changes, seizing opportunities, and overcoming challenges.

2.3 Enterprise Innovation Theory

Enterprise innovation is an important part of enterprise management and is a key factor determining the direction, scale and speed of a company's development. From the overall company management to the specific business operations, enterprise innovation runs through every department and every detail. Enterprise innovation involves issues such as organizational innovation, technological innovation, management innovation, and strategic innovation, and these aspects are not considered independently but rather comprehensively considering the development of the entire enterprise because the innovations in all aspects are highly correlated.

The theory of enterprise innovation emphasizes the importance of innovation for economic growth and competitiveness. Innovation can promote the improvement of productivity and the optimization of resource allocation, thereby promoting long-term economic growth and development. Moreover, innovation also brings competitive advantages to enterprises. By continuously launching new products, providing high-quality services, or implementing efficient production processes, enterprises can gain a larger market share, attract more customers, and consolidate their competitive advantages. The driving factors of innovation include technological progress, market demand, resource investment, and knowledge accumulation. Technological progress provides new tools and opportunities for innovation, market demand guides enterprises to develop innovative products and services that meet market demands, resource investment and knowledge accumulation provide necessary support for innovation. In addition, intellectual property protection plays an important role in the innovation process, encouraging enterprises to invest in innovation, ensuring the uniqueness and property rights of innovation results, and thereby providing economic returns and competitive advantages.

The digital business environment significantly promotes the enhancement of enterprise innovation capabilities by reducing institutional transaction costs, optimizing factor allocation, and reshaping the innovation ecosystem. Reducing institutional transaction costs, improving administrative

efficiency, and digital government platforms achieve intelligent approval and discretionary acceptance, such as shortening the approval time for enterprise licenses to 1 day, releasing enterprise time for R&D activities. Non-contact supervision, such as the nationwide recognition of electronic seals, reduces compliance costs and promotes cross-regional collaboration. The cost of technology application is reduced, cloud computing and AI technologies lower the cost of innovation trial and error, such as Xianjing tungsten industry introducing an AI visual inspection system, with computing power costs dropping by 60%, and funds shifting to R&D. Low-code platforms provide technical interfaces for small and medium-sized enterprises, reducing the threshold for digital innovation.

Optimizing the allocation of innovation factors, data-driven resource integration, and digital infrastructure (5G, gigabit fiber) support efficient collaboration: Build intelligent production lines and promote enterprises to go cloud-based. Industrial internet platforms restructure the industrial chain and achieve an efficient model of "organizing production according to products" (such as the reorganization of the supply chain of tens of thousands of enterprises by the cloud factory platform). Accelerate technology transformation, data flow promotes the integration of industry-university-research, such as Sanyi Jingong successfully overcoming the nanometer microcrystalline electromagnetic relay technology through cooperation on a digital platform. Precise matching of scientific and technological resources, the Zhejiang "Friendly and Clean" online platform increases the utilization rate of enterprise policies by 30%.

Reconstructing the innovation ecosystem, policy precise empowerment, actively pushing suitable policies, fulfilling enterprise rewards, driving the intelligent transformation of traditional industries. Guangzhou benchmarks international standards and provides enterprises with digital services throughout their life cycle. Open and collaborative innovation, digital platforms break market access barriers and help small and medium-sized enterprises obtain equal innovation opportunities. Open data interfaces attract private enterprises to participate in emerging fields such as satellite internet.

Existing challenges and optimization directions, bottleneck issues: Data silos and fragmented rules hinder cross-regional collaboration; insufficient digital technology application capabilities of small and medium-sized enterprises and uneven access to innovation resources. Breakthrough paths: Improve data rights legislation, establish a non-site intelligent supervision system; expand the pilot program for value-added telecommunications services, strengthen the inclusiveness of digital infrastructure.

The creation of a market-oriented, law-based, and international business environment also requires digitalization as a support: Optimize the business environment, create a fairer and more dynamic market environment, achieve the optimization and maximization of resource allocation efficiency. Building a digital business environment is a key measure for creating a first-class business environment that is market-oriented, law-based, and internationalized.

2.4 The relevant theories in Western economics

Transaction cost theory is defined as the costs associated with using the price mechanism, including costs for identifying the transaction object, negotiating and signing contracts, and resolving disputes. Transaction costs are the costs of interpersonal relationships and correspond to the production costs of human-nature relationships, covering all institutional operation costs.

Pre-event costs: information search, negotiation signing, and contract guarantee costs.

Post-event costs: supervision of performance, dispute handling, and contract adjustment costs. Or it can be summarized as: induction, information search, negotiation decision-making, contract formulation, supervision execution, and conversion costs.

From a macro perspective: it is defined as "all coordination costs in social interactions", including the costs of establishing, maintaining, and adjusting systems. From a micro perspective: enterprises exist to save market transaction costs, and the essence is the alternative mechanism of the market.

The concept is ambiguous, and transaction costs are difficult to be precisely quantified and uniformly defined; they are static in nature, ignoring the dynamic impact of technological changes on transaction costs, such as blockchain reducing the cost of trust.

Transaction cost theory reveals the underlying logic of economic organization evolution,

emphasizing the decisive role of institutional costs in resource allocation, providing a core analytical framework for understanding enterprise structure, market failure, and policy design. Transaction cost theory: is an important theoretical framework in new institutional economics, used to explain and analyze the costs and efficiency issues in economic transactions. Transaction costs refer to various costs and expenses generated in economic transactions, mainly including search costs, negotiation costs, contract costs, supervision costs, information asymmetry costs, and execution costs. Transaction costs have an impact on the economic decisions and behaviors of participants, and also affect market structure, organizational form, and economic efficiency, etc. The core of transaction cost theory lies in how to reduce these transaction costs to promote economic activities and the effective allocation of resources. By understanding and reducing transaction costs, the efficiency of transactions can be improved, and the development of the market and economic prosperity can be promoted.

Network economics theory is a discipline field that studies the impact of digital networks and information communication technologies on economic activities and market behaviors. It explores how digital networks, the Internet, and information communication technologies change industrial structure, business models, market competition, and economic growth. Digital construction can improve the production efficiency of enterprises, create new business models, promote innovation and disruptive changes, strengthen market competition and globalization. And enterprises can optimize business processes, expand market channels, achieve personalized marketing, and utilize data analysis and technological innovation to gain competitive advantages.

Traditional industrial organization theory mainly focuses on the impact of market structure and external environment on enterprise performance, but fails to fully explain why some enterprises can achieve significant competitive advantages under the same market conditions. In this context, scholars began to focus on internal resources and capabilities of enterprises, believing that these internal factors have a crucial impact on enterprise competitive advantages and performance, thereby promoting the development of the enterprise resource-based theory.

3. Improving the digital business environment promotes business development

3.1 Enterprise high-quality development

Enterprise high-quality development indicators: Economic benefits, innovation development, green development, social benefits, operational efficiency.

Efficiency development indicators, revenue and profit growth rate, reflecting scale expansion and profitability (continuous growth of over 20% is a quality benchmark).

Cost control and profit margin, examples of technology cost reduction such as manufacturing enterprises reducing production costs by 15%. Return on asset and cash flow health, healthy cash flow is the core guarantee for sustainable development.

IThere is a certain relationship between innovation development indicators, the proportion of R&D investment, R&D intensity and the potential for technological breakthroughs. Parameters such as the conversion efficiency of innovation outcomes, the shortening of the innovation cycle, the number of patents, and the speed of new product development can reflect the situation of technology enterprises seizing market opportunities. The level of digitalization, the coverage rate of intelligent production lines, and the proportion of enterprises that have gone online can reflect the development level of the digital business environment. Green development indicators, resource utilization, energy/material consumption intensity, etc., represent the energy utilization rate of manufacturing enterprises. Environmental protection investment and emission control, the amount of pollutants per unit output, and waste recovery rate, etc., represent green development indicators.

Social responsibility indicators: Employee satisfaction and welfare guarantee, investment in employee development, salary competitiveness. Customer value creation, customer retention rate, such as a 30% increase in repeat purchase rate for a catering brand, CSAT satisfaction score. Social contribution, environmental protection investment, proportion of public welfare expenditure.

Operational efficiency indicators, production efficiency and delivery cycle, lean management

shortening delivery cycle (such as manufacturing industries shortening by 20%). Management efficiency, proportion of management expenses, quality loss rate. Industry collaboration ability, efficiency of industrial internet platform reorganization (the "organizing production by products" model).

Industry differentiation focus: Manufacturing, production efficiency, cost control, technology transformation. Services, customer experience, response speed, model innovation. Technology industry, R&D cycle, intellectual property, product iteration speed.

Trend indication: With the deepening of the new quality productivity concept, enterprises need to take the integration of innovation + green + collaborative indicators as the development direction, and dynamically adjust the assessment weights.

The innovation ability of enterprises is the driving force for the high-quality development of enterprises: The innovation ability of enterprises refers to the innovation capabilities of enterprises in products, technology, management and markets, and is an important means for enterprises to continuously enhance vitality and gain advantages in market competition. The innovation ability is the core capability for enterprises to obtain advantages in industrial competition. Product innovation is an important way for enterprises to gain competitive advantages, meet market demands and enhance market competitiveness. The research and development of new products and the improvement and upgrading of existing products to meet changing customer and market demands. Technological innovation is the guarantee for enterprises to improve production efficiency, reduce production costs and improve product performance. Management innovation helps to improve the operational efficiency of enterprises, optimize resource allocation, strengthen corporate culture construction, and enhance the enthusiasm and creativity of employees. Including innovations in leadership style, human resources, quality management, etc., can effectively improve the operational efficiency and business benefits of enterprises. Enterprises not only need to pay attention to market demands and technological progress, but also need to choose the best innovation path based on their own conditions and market environment, and establish an innovation mechanism to form an enterprise culture that encourages innovation and rewards innovation, stimulating the innovation potential of the entire enterprise. It can be seen that the combination of digital business environment optimization and the internal cycle development of enterprises is the key to promoting the high-quality development of enterprises through the digital business environment. Moreover, focusing on the vitality, innovation ability and competitiveness of enterprises can comprehensively grasp the path for promoting their development.

3.2 Digital Business Environment and Enterprise Vitality

A favorable digital business environment directly affects enterprises' ability to obtain the latest information from the market and the government, as well as their efficiency in self-updating and improvement in response to external changes. For instance, digital technologies have brought about innovative technologies such as big data analysis and the Internet of Things, enabling enterprises to obtain market information, user feedback, and industry trends more conveniently through digital technologies and platforms. They can promptly adjust their production and management processes, models, and product characteristics, thereby enhancing production efficiency and quality. At the same time, innovative cooperation and open innovation platforms in the digital business environment also provide enterprises with opportunities for cross-border cooperation and joint innovation, promoting communication and exchanges among enterprises and releasing their production vitality.

The development level of the digital business environment determines the completeness of digital infrastructure. A good digital infrastructure can provide stable and reliable digital connections and data storage services, offering enterprises efficient communication and operation platforms, thereby enhancing the vitality and business development of enterprises. Specifically, one aspect is the coverage and speed of broadband networks, which are an important part of digital infrastructure. The popularization and speed-up of high-speed broadband networks can provide enterprises with an efficient data transmission and information exchange environment. Another aspect is the construction and development of data centers. The construction of data centers can provide secure

and reliable data storage and processing capabilities, allowing enterprises to efficiently manage and utilize data, promoting business innovation and development.

Under the background of the digital business environment, relatively complete e-commerce platforms and digital markets can provide enterprises with broader sales channels and market opportunities. Good e-commerce platforms and digital markets help expand the sales channels of enterprises, thereby forcing enterprises to expand production scale, innovate products and services, and improve production efficiency from the demand side. E-commerce platforms are an important part of modern business. Through e-commerce platforms, enterprises can build their own online stores and achieve synchronous online sales and offline delivery. E-commerce platforms provide an open and fair trading platform for enterprises, allowing them to conveniently contact and cooperate with suppliers, partners, and customers, enabling them to communicate and trade with customers worldwide, expand market share, and improve sales efficiency.

In the digital business environment reform, government digital services represented by e-government have a significant impact on the vitality of enterprises. First, a good government digital service can promote the government to accelerate functional transformation, simplify administrative procedures and transaction processes for enterprises, and reduce enterprise operating costs. Digital government services can provide more convenient and efficient administrative services. Through digital means, the government realizes the online, automated, and intelligentization of government services, allowing enterprises to handle administrative procedures independently through government websites and mobile applications, greatly avoiding the offline "back-and-forth" processing procedures and the repetitive submission of materials and documents, greatly enhancing the convenience of obtaining government services and improving the operational efficiency of enterprises.

3.3 Digital business environment and enterprise innovation capacity

Enterprise digital transformation not only enhances the innovation capabilities of enterprises, but also enables them to better adapt to market changes and seize market development opportunities. In recent years, the new model of government governance has been prominently reflected in the digitalization and intelligence of government services, which has facilitated the information integration between the government and enterprises, encouraged enterprises to adapt to the digital economy era, and actively introduced digital technologies to achieve digital transformation. The promotion of e-government models has achieved information transparency and efficient transmission among government departments, created a favorable government service environment, reduced the institutional transaction costs of enterprises, enabled enterprises to focus on production and operation, improved the efficiency of resource integration and investment, and encouraged enterprises to invest more funds and time in digital technology research and development and digital transformation, reducing the risks of digital transformation. At the same time, the digital business environment pays more attention to the ownership and use of data elements, ensuring the security of the entire process of data generation, data analysis, data element investment, and data update, promoting enterprises to actively introduce data elements, innovate digital technologies, and achieve digital transformation.

Enterprise digital transformation and enterprise innovation capabilities: The typical way of enterprise digital transformation is to introduce industrial robots or intelligent production processes, thereby promoting enterprises to match highly educated and skilled labor, strengthening training, achieving the upgrading of human capital, and promoting research and development efficiency. Secondly, digital transformation can effectively improve the existing operation system, making information communication between departments simple and efficient, promoting the improvement of dynamic capabilities such as knowledge learning, absorption, and output of enterprises, helping enterprises reduce costs and increase efficiency, and investing more redundant funds, human resources, and time resources in innovation activities. Finally, when enterprises achieve digital transformation, they create a digital business environment, especially establishing a digital simulation environment for R&D investment and output. Simulation programs based on digital technology not only reduce the cost of product development for enterprises but also help enterprises

understand whether the direction of R&D investment is correct, the specific form of innovation output is how, whether the input-output ratio of R&D meets expectations, thereby reducing the R&D costs and trial-and-error risks of enterprises and increasing their willingness to invest in innovation. In addition, the development of digital technology has made the interaction between enterprises and the outside world more closely, and the channels for enterprises to obtain information and be obtained have become more extensive, with the convenience and accuracy of information acquisition significantly improved, and communication efficiency enhanced.

4. Digital Business Environment Evaluation Indicators and Measurement

4.1 Method for Constructing a Digital Business Environment Evaluation Index System

The six dimensions for constructing the digital business environment index system: First, digital infrastructure construction: Digital infrastructure is the solid foundation for optimizing the digital trade business environment; the development of digital trade relies on the improvement of digital infrastructure. Second, digital legal environment: The good development of the digital business environment requires a fair competitive market environment. Third, digital talent supply: Digital talent supply directly participates in the production and innovation process of enterprises and is the intellectual and labor support for enterprises' production activities. Fourth, digital government development: Digital government environment is an important guarantee for the digital trade business environment. Fifth, digital financial environment: Digital financial environment is a key link in optimizing the digital trade business environment. Sixth, digital market environment: Digital markets can break the traditional geographical and temporal restrictions, allowing enterprises to enter new markets more conveniently and expand their market scale and scope.

Determining weights using principal component analysis method: There are many methods for dimension reduction of the index system. Considering the specific situation of the index system, this paper mainly adopts the principal component analysis method and the entropy value method for dimension reduction processing. Due to space limitations, the analysis is mainly based on the calculation results of the principal component analysis method. The calculation process of the entropy value method is explained in the appendix. Through the dimension reduction processing of the indicators using the principal component analysis method, multiple indicators are transformed into a few comprehensive indicators. The score coefficient matrix of each factor is calculated by software.

4.2 Method for Constructing Evaluation Index System for High-Quality Development of Enterprises

The four dimensions for constructing the enterprise vitality evaluation index system: Based on the research by the "Evaluation Model of the Vitality of Large and Medium-sized State-owned Enterprises" research group and Ma Shuang et al., this article starts from the competitiveness and growth capacity of enterprises, comprehensively considers three dimensions including their output, survival ability and operating conditions, and constructs a measurement index system for the vitality status of enterprises. Under the scale factor, it is divided into three sub-indicators: sales revenue, net profit, and net assets; under the growth factor, it is divided into two sub-indicators: revenue growth rate and net profit growth rate; under the efficiency factor, it is divided into three sub-indicators: net asset profit rate, total asset profit rate, and total labor efficiency.

The weights are also calculated using the principal component analysis method. Before calculating the total index, this article also performed processing on the original data such as filling in missing values, handling outliers, and eliminating dimensions. Since detailed explanations have already been given when calculating the total index of the digital business environment, there is no need to repeat it here.

4.3 The Relationship between High-Quality Enterprise Development and Numerical Business Environment

The digital business environment, by reducing institutional costs, reconfiguring factor allocation and innovating the ecosystem, forms the foundation for the high-quality development of enterprises.

The digital business environment is the fundamental support for the high-quality development of enterprises. Cost reduction and efficiency enhancement release the innovative momentum, with intelligent approval and non-contact supervision reducing institutional transaction costs, enabling enterprises to prioritize their resources towards research and development; the application of technologies such as AI and cloud computing lowers the cost of innovation trial and error. The optimization of factor allocation enhances efficiency, with 5G and gigabit fiber optic digital infrastructure supporting the construction of intelligent production lines and accelerating industrial chain collaboration, and reorganizing over ten thousand supply chains through industrial internet platforms; data flow promotes the integration of research, education and production.

The path to promoting high-quality development of enterprises lies in reconfiguring the innovation ecosystem, which involves precise policy implementation, building enabling platforms, and aligning with international standards to achieve full-chain connection of enterprise services. We can upgrade of operational models, digitalization promoting the "organizing production by products" model, shortening the manufacturing delivery cycle; enterprises move to the cloud, optimize management efficiency, and reduce quality loss rates.

The high-quality development of enterprises drives the optimization of the digital business environment. The excellence of the digital infrastructure and institutional innovation determines the quality of enterprise development (innovation capacity, greenness, and collaboration).

5. Empirical Analysis of the Utility of Digital Business Environment

5.1 Data source

This article mainly focuses on the mechanism by which the digital business environment promotes the high-quality development of enterprises, and the data used are micro and macro matching data. Among them, the micro data in this article selects Chinese A-share listed companies from 2013 to 2020 as the research sample, and the macro indicators mainly include the development level of digital business environment, economic development level, and urbanization level, etc., mainly sourced from the "China Statistical Yearbook", "Government Transparency Index Report of China", the official website of the National Bureau of Statistics, etc.

Enterprise vitality: This article comprehensively evaluates enterprise vitality from three dimensions: output (per capita net profit, per capita operating revenue), survival ability (operating leverage, current ratio, current asset ratio), and operating conditions, and calculates the enterprise vitality index using the principal component analysis method.

Enterprise innovation ability: This article selects the natural logarithm of the sum of the number of independent patent applications (inventions, utility models, and designs) by listed companies plus 1 as the measurement indicator of enterprise innovation ability. In the robustness test, this article also uses R&D investment as the measurement indicator.

Enterprise competitiveness: This article measures enterprise competitiveness by asset contribution rate, and the calculation method is: (total profit + total tax + interest expense) / average total assets. In the robustness test, this article also draws on the "China Enterprise Competitiveness Monitoring System", constructing a comprehensive evaluation index system from three dimensions of enterprise competitiveness evaluation factors: scale factors, growth factors, and efficiency factors, and calculating the comprehensive index using the principal component analysis method.

5.2 Empirical analysis

The estimation was conducted using the two-way fixed effects model formula. To ensure the robustness of the estimation results, this paper adopts the stepwise regression form. The benchmark model of this paper was established. Considering that the benchmark model of this paper is a double

logarithmic model, this means that for every one percent increase in the development level of the digital business environment in a region, the enterprise competitiveness increases by approximately eight percentage points. The improvement of the digital business environment can significantly enhance the vitality of enterprises.

Handling endogeneity issues: The setting of the benchmark model may have endogeneity problems due to omitted variables and two-way causal relationships, resulting in certain biases in the estimation results. On one hand, among the many factors affecting the enterprise vitality, there may be some unobservable factors that also have an impact on the development of the digital business environment in the region, thus leading to the problem of omitted variables. For example, factors such as the region's system and culture, which are difficult to measure accurately in quantitative analysis; on the other hand, the enterprise vitality may also affect the attitude and intervention behavior of the government towards enterprises, and then reverse-act to promote the development of the digital business environment in the region. Therefore, the reverse causal problem may still exist. To address these issues, this paper adopts two methods to alleviate the endogeneity problem. One is to directly select the lagged digital business environment level as the core explanatory variable, and the other is to introduce a tool variable and use the two-stage instrumental variable method for estimation.

To further ensure the robustness of the estimation results, this paper also conducted a series of robustness tests, including replacing the measurement method of the core explanatory variable, replacing the measurement method of the dependent variable, adding industry and year joint fixed effects, converting the data into a balanced panel, excluding Beijing and Shanghai, and conducting regression year by year, etc.

Finally, this paper empirically tested the impact of the digital business environment on the high-quality development of enterprises. The research found that the coefficients of the digital business environment were all significantly positive, that is, the improvement of the digital business environment would significantly enhance the vitality, innovation ability, and competitiveness of enterprises, and thereby promote the high-quality development of enterprises. The above conclusion, after being tested and processed by methods such as endogeneity handling and robustness tests, remains robust. To more accurately judge the effect of digital business environment construction in promoting the high-quality development of enterprises, this paper uses the "Internet + government services" pilot policy, which can cause a positive impact on the digital business environment, as a "quasi-natural experiment" to further verify the role of the digital business environment in promoting the high-quality development of enterprises. After introducing the policy shock and using the double difference model to test the effect of the digital business environment on promoting the high-quality development of enterprises, it was found that the core conclusion of this paper still holds.

6. Conclusion

The digital business environment achieves a three-dimensional linkage of reducing transaction costs through technology embedding, reconfiguring the rule system through institutional innovation, and stimulating multiplier effects through market collaboration, forming a systematic ecosystem that supports the high-quality development of enterprises.

When comparing regions, the average values of digital business environment indices among different regions show significant differences, but the gap in the total index of digital business environment among different provinces is narrowing year by year.

The digital business environment is the foundation for the high-quality development of enterprises. The excellence of digital infrastructure and institutional innovation determines the quality of enterprise development (innovation ability, green development, and collaboration).

Improvement in the digital business environment can significantly promote the high-quality development of enterprises. Improvement in the digital business environment can significantly enhance the vitality of enterprises, the innovation ability of enterprises, and the competitiveness of enterprises, thereby promoting the high-quality development of enterprises.

The improvement of the digital business environment has the greatest effect on enhancing the

innovation ability of enterprises, the second greatest effect on enhancing the vitality of enterprises, and the least effect on enhancing the competitiveness of enterprises. The digital business environment can enhance the vitality of enterprises through two channels: improving the quality of internal enterprise control and alleviating the financing constraints of enterprises. The digital business environment can enhance the innovation ability of enterprises through two channels: promoting enterprise digital transformation and stimulating the adventurous tendency of entrepreneurs.

The optimization of the digital business environment is a systematic and long-term project. There is always room for improvement. Innovate digital government services, improve relevant laws and regulations, develop and utilize government data, expand circulation and sharing, strengthen the government network security guarantee system, protect data and user privacy, and cultivate digital technology talents.

Acknowledgment

The author would like to express his gratitude to the following sponsors for their support of this research: 25RCYJ0011, which is a high-end talent introduction project under the Sichuan Provincial Science and Technology Department's "Innovation Talent Program": Research on Intelligent Networked Physical Entity Numerical Control System Based on Physical Motion Laws (2024 - 2025)

References

[1] Li Zhijun, Zhang Shiguo, Li Yifei, et al. Evaluation of China's Urban Business Environment and Relevant Suggestions [J]. Jiangsu Social Sciences, 2019(2): 30-42 + 257.

[2] Sun Ping, Chen Shiyi. Elements and Influencing Paths of Business and Government Administrative Environment: A Structural Equation Model Analysis Based on 669 Sample Data [J]. Journal of Liaoning University (Philosophy and Social Sciences Edition), 2020, 48(04): 59-66.

[3] Xie Shouxiang, Tian Mengming. Construction of the Business Environment Evaluation Index System under the "Dual Circulation" Pattern - Taking Coastal Provinces as an Example [J]. Commercial Economics Research, 2021(08): 180-183.

[4] Wang Xiaoming, Li Zheng. Digital Business Environment and Enterprise Vitality - From the Dual Perspectives of Internal Control and Financing Constraints [J]. Economic Development Research, 2023(02): 56-75..