Population, Resources & Environmental Economics (2025)
Clausius Scientific Press, Canada

DOI: 10.23977/pree.2025.060101
ISSN 2616-2253 Vol. 6 Num. 1

Research on the Pathways for Digital Economy Empowering High-Quality Development of the Real Economy

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Keywords: Digital economy; Real economy; High-quality development; Technological empowerment; Organizational innovation

Abstract: With the rapid development of the digital economy, the real economy is facing an urgent need for transformation and upgrading. This paper explores how the digital economy can promote high-quality development of the real economy through pathways such as technological empowerment, organizational innovation, and talent cultivation. First, it analyzes the relationship between the digital economy and the real economy, clarifying the impact mechanisms of digital technologies on traditional industries. Second, several enabling pathways are proposed, which are validated through case analyses. Finally, the challenges faced during the transformation process and corresponding countermeasures are discussed, providing references and suggestions for enterprises and policymakers.

1. Introduction

As the global digitalization process accelerates, the digital economy has become a significant driving force for economic growth and social development. The digital economy not only changes business models and consumer behaviors but also presents new challenges and opportunities for the traditional real economy. Against this backdrop, how to effectively integrate the advantages of the digital economy with the real economy has become a focal point for both academia and industry. As the foundation of the national economy, the high-quality development of the real economy is crucial for optimizing economic structure, ensuring social stability, and achieving sustainable development. However, traditional industries often struggle to adapt to rapidly changing market environments. Therefore, exploring pathways for the digital economy to empower the real economy is not only of significant theoretical value but also beneficial for practical applications. This paper aims to delve into the interactive relationship between the digital economy and the real economy, analyzing how digital technologies can promote the transformation and upgrading of the real economy through various enabling pathways, with the hope of providing valuable references for research and policy formulation in related fields[1].

2. The Relationship Between Digital Economy and Real Economy

2.1. Definition and Characteristics of the Digital Economy

The digital economy refers to a new economic form driven by digital technologies, which promotes economic activities through the generation, storage, processing, and application of data. Its emergence and development are closely linked to the rapid advancements in information and communication technologies (ICT), particularly the widespread applications of technologies such as the internet, big data, artificial intelligence, and blockchain. These technologies not only transform the ways information is disseminated but also redefine business models, production processes, and consumer behaviors. The core characteristics of the digital economy mainly include the following points. First, data has become a new production factor. Unlike the traditional economy, which relies on land, labor, and capital as production factors, the growth of the digital economy depends on the collection, analysis, and utilization of data. Through big data analysis, enterprises can gain insights into market trends and consumer preferences, thereby enhancing decision-making efficiency and business agility. Second, digitization and networking blur market boundaries, leading to more frequent and efficient interactions between enterprises and consumers[2]. The proliferation of technologies such as e-commerce, social media, and mobile payments allows businesses to communicate directly with consumers, providing personalized services and products, thus enhancing customer experience and loyalty. Furthermore, the digital economy exhibits strong flexibility and adaptability. Enterprises can quickly respond to market changes and technological advancements, driving innovation in products and services. Through digital platforms, companies can rapidly allocate resources, optimizing their utilization. Additionally, the digital economy fosters the development of emerging industries such as the sharing economy and digital finance, facilitating the transformation and upgrading of traditional sectors. Finally, the globalized nature of the digital economy is significant. Information transmission is no longer limited by geographic constraints, allowing businesses to expand their markets on a global scale. This globalization trend accelerates the flow of resources and promotes cross-border cooperation and competition. Therefore, the digital economy not only reshapes the competitive landscape of traditional industries but also provides new momentum and direction for the high-quality development of the real economy[3].

2.2. Current Status and Challenges of the Real Economy

The real economy is the foundation of a country's economy, mainly comprising traditional industries such as manufacturing, agriculture, and construction. Currently, with the changing global economic landscape and the acceleration of technological progress, the real economy faces multiple challenges and opportunities for transformation. First, the acceleration of globalization has intensified international competition[4]. Many countries and regions are enhancing their technological capabilities and the competitiveness of their industrial chains to seize market share, putting immense pressure on traditional real economies. Secondly, changes in market demand are becoming increasingly pronounced, with consumer preferences becoming more diverse and personalized, often leaving traditional enterprises insufficiently responsive in terms of speed and product innovation. Moreover, the real economy is confronted with the urgency of technological upgrades. Despite achieving significant scale in Chinese manufacturing, there is still a lack of self-innovation in technology and product added value. The prevalent phenomenon of "low-end lock-in" restricts the transition to high-quality development. Additionally, many enterprises lack the necessary technical reserves and talent support for digital transformation, leading to an ineffective conversion of the dividends of the digital economy into productivity[5].Environmental protection and sustainable development have also emerged as significant challenges for the real economy.

With increasingly stringent environmental policies, traditional industries must urgently address high pollution and high energy consumption issues in their production processes. Enterprises must consider environmental protection and resource conservation while meeting market demands to promote green transformation. Finally, the problems of capital shortages and financing difficulties continue to plague many real enterprises, especially small and medium-sized enterprises. Although the government has implemented a series of policies to facilitate financing, in practice, enterprises still face high financing costs and risks. In summary, the real economy currently faces multiple challenges, including intensified international competition, urgent technological upgrades, environmental protection pressures, and financing difficulties. Addressing these challenges is crucial for promoting the transformation and high-quality development of the real economy[6].

3. Path Analysis of Digital Economy Empowering the Real Economy

3.1. Technology Empowerment Path

Technology empowerment is one of the crucial avenues through which the digital economy enhances the real economy, boosting the efficiency and competitiveness of traditional industries through advanced digital technologies. Several key technologies play a central role in this process. Firstly, the application of cloud computing and big data provides robust support for the real economy. Cloud computing enables companies to access powerful computing and storage capabilities at a lower cost, facilitating rapid information processing and analysis. Through big data technologies, businesses can extract valuable insights from vast amounts of data, gaining insights into market trends, consumer behavior, and production efficiency, allowing for more precise decision-making[7]. This data-driven approach enables companies to gain competitive advantages and improve overall operational efficiency. Secondly, the use of artificial intelligence (AI) and machine learning technologies has achieved intelligent upgrades across multiple industries. AI analyzes large datasets through algorithms, recognizing patterns and predicting trends, helping companies optimize production processes, enhance product quality, and reduce costs. In manufacturing, the introduction of intelligent robots and automated production lines enables high-efficiency production while minimizing human error. In the service sector, AI chatbots and intelligent customer service systems enhance response speed and customer satisfaction. Moreover, the widespread application of Internet of Things (IoT) technology drives the digital transformation of the real economy[8]. By installing sensors on equipment, companies can monitor operational status, production environments, and inventory levels in real-time, creating an intelligent production and management system. This real-time monitoring not only boosts production efficiency but also reduces equipment failure rates and maintenance costs, ensuring continuity and stability in production. Finally, the application of blockchain technology introduces new transparency and trust mechanisms to the real economy. Through decentralized ledger technology, companies can ensure the security and immutability of transactions. This is particularly crucial in fields like supply chain management and financial services, effectively preventing fraud and reducing transaction costs. In summary, the technology empowerment path promotes the transformation and upgrading of the real economy through the application of advanced technologies like cloud computing, big data, artificial intelligence, IoT, and blockchain. These technologies not only enhance production efficiency and market competitiveness but also provide new impetus and direction for innovative development[9].

3.2. Organizational and Management Innovation Path

Organizational and management innovation represents another important path for the digital economy to empower the real economy, enhancing a company's flexibility and adaptability through

the optimization of internal structures and management processes. The following aspects illustrate this path's specifics. Firstly, digital transformation encourages enterprises to implement flattening reforms in their organizational structures. Traditional hierarchical management often leads to slow information transmission and inefficient decision-making, whereas the application of digital technologies enables rapid information flow, promoting organizational flattening. By reducing management levels, companies can respond more swiftly to market changes, improving decision-making flexibility and efficiency. Secondly, the digital transformation of supply chain management is a significant manifestation of organizational innovation. By adopting supply chain management systems and information-sharing platforms, companies can monitor every aspect of the supply chain in real time, enhancing resource allocation efficiency. This transparent supply chain management not only reduces inventory costs but also strengthens the company's risk management capabilities, effectively addressing market volatility and uncertainty. Moreover, innovation in management models is particularly crucial in the digital economy era. The application of digital tools allows companies to focus more on data-driven decision-making, assessing business performance and market demand based on data analysis to achieve refined management. Additionally, adopting agile management methods enables companies to maintain a competitive edge in rapidly changing market environments, encouraging cross-departmental collaboration among teams and improving overall work efficiency. Finally, talent management and development are also vital components of organizational and management innovation. In the context of the digital economy, companies need talent capable of mastering new technologies. Therefore, organizations should enhance training for employees' digital skills, encouraging innovation and interdisciplinary collaboration. Simultaneously, establishing flexible work mechanisms, such as remote work and flexible hours, can boost employee job satisfaction and creativity. In conclusion, the organizational and management innovation path facilitates the high-quality development of the real economy through measures like flattening structures, digital supply chain management, data-driven management models, and talent cultivation. These innovations not only enhance operational efficiency but also provide new momentum for companies to maintain a competitive advantage in a rapidly evolving market[10].

3.3. Talent and Capability Building Path

In the process of the digital economy empowering the real economy, talent and capability building are key factors for ensuring successful transformation. With rapid technological advancements and constantly changing market environments, companies need a workforce that can adapt to new situations to drive innovation and enhance competitiveness. The following are several important aspects of this path. Firstly, digital skills training is the primary task in talent development. Companies should establish systematic training frameworks to provide relevant training in digital technologies and tools tailored to the varying needs of different job positions. For example, by regularly organizing training sessions in areas such as big data analysis, AI applications, and cloud computing, employees can become proficient in new technologies, thereby improving overall work efficiency. Additionally, companies can leverage online learning platforms to offer flexible learning opportunities, allowing employees to pursue self-improvement at their own pace. This approach not only fosters individual growth but also creates a culture of continuous learning, which is essential in a fast-evolving digital landscape. Moreover, cross-industry collaboration and open innovation play significant roles in talent development. The digital economy emphasizes the integration of knowledge from diverse fields, enabling companies to establish partnerships with universities, research institutions, and other enterprises to collaboratively pursue research and technological innovations. Through such collaborations, employees can engage with cutting-edge

technologies and emerging industry trends, broadening their perspectives and enhancing their overall competencies. This exposure can lead to the development of new skills and ideas, fueling creativity and fostering an environment where innovative solutions thrive. Furthermore, open innovation encourages employees to share their insights and propose new ideas, which can drive the company's continuous growth and adaptability in a competitive market. In addition, building a positive corporate culture is crucial in talent and capability development. In the context of the digital economy, companies should cultivate an inclusive and open cultural atmosphere that encourages employees to share diverse viewpoints and suggestions. This environment not only motivates employees to actively participate in innovation but also enhances team cohesion, fostering collaboration across departments. A positive corporate culture can improve overall work efficiency, as employees feel valued and empowered to contribute their unique insights. Regular team-building activities and recognition programs can further strengthen interpersonal relationships and create a sense of belonging, which is essential for sustaining employee engagement. Lastly, companies should implement effective talent acquisition and incentive mechanisms to attract and retain high-quality talent. In an increasingly competitive talent market, offering competitive salaries and benefits, along with clear career development opportunities and robust training options, is vital for attracting outstanding candidates. Additionally, establishing innovation awards and performance bonuses can incentivize employees to take initiative, be creative, and strive for excellence. By recognizing and rewarding innovative contributions, companies can motivate employees to push boundaries and enhance the overall capability of the team. In summary, the talent and capability building path provides a solid foundation for the high-quality development of the real economy through systematic digital skills training, fostering cross-industry collaboration and open innovation, cultivating a proactive corporate culture, and implementing effective talent acquisition and incentive mechanisms. This comprehensive approach not only enhances a company's technological capabilities but also strengthens its competitiveness in the digital economy era. By investing in talent and capability development, organizations can better navigate the complexities of the digital landscape, ensuring sustained growth and innovation in an ever-evolving market.

4. Case Analysis

Among the many successful cases of the digital economy empowering the real economy, the transformation practices of Haier Group, a renowned manufacturing enterprise, stand out for their innovative approach and tangible results. In an era marked by intense market competition and rapidly changing consumer demands, Haier has demonstrated how digital transformation and intelligent manufacturing can lead to significant performance improvements and expanded market share. Firstly, Haier established an intelligent production system by integrating Internet of Things (IoT) technology across its operations. Each production device is interconnected with the cloud, allowing for real-time data collection and analysis. This capability enables the company to continuously monitor production processes, quickly identify and resolve issues, which significantly enhances overall production efficiency. For instance, in its smart factories, Haier employs "unmanned" production lines that rely on advanced automated equipment and intelligent robots for product assembly. This approach not only reduces labor costs but also shortens production cycles, making the company more agile and responsive to market needs. Secondly, Haier actively promotes user-centered product innovation as a core strategy. By leveraging a "user interaction platform," Haier is able to gather direct consumer feedback and insights, facilitating rapid product iteration. For example, during the development of new home appliance products, Haier invites consumers to participate in both the design and testing phases. This collaborative approach ensures that the final products align closely with market demands and consumer preferences. By adopting this

consumer-oriented innovation model, Haier not only enhances product quality but also fosters greater brand loyalty, as customers feel more connected to the products they help create. Additionally, Haier has undertaken significant reforms in its organizational structure by implementing a flatter hierarchy and creating "self-organizing" teams. Each team is empowered with greater autonomy, enabling them to respond swiftly and effectively to market changes. This flexible management model enhances decision-making efficiency, allowing the company to adapt quickly to the dynamics of a rapidly changing market environment. Such a structure fosters creativity and innovation, as teams can operate independently while still aligning with the company's strategic goals. Finally, Haier places a strong emphasis on training employees in digital skills, recognizing that a knowledgeable workforce is essential for successful transformation. The company utilizes a variety of online learning platforms and internal training programs to enhance employees' digital literacy and technical capabilities. This investment in talent development ensures that employees are well-equipped to adapt to new work models and meet evolving technological requirements. By prioritizing continuous learning and skill enhancement, Haier strengthens its core competitiveness and positions itself as a leader in the digital landscape. In summary, Haier Group has successfully achieved digital economy empowerment of the real economy through a multifaceted approach that includes the application of IoT technology, user-oriented innovation, a flexible organizational structure, and a robust focus on talent training. This case not only illustrates the profound impact of the digital economy on traditional manufacturing but also provides valuable insights and best practices for other enterprises navigating their own transformation journeys. As industries continue to evolve in the digital age, Haier’s experience serves as a compelling example of how strategic adaptation and innovation can drive success and sustain growth.

5. Challenges and Countermeasures

Although the digital economy offers numerous opportunities for the transformation and upgrading of the real economy, enterprises still face a series of challenges during actual implementation. Below are these challenges along with corresponding countermeasures. Firstly, insufficient technological adaptability is a major obstacle many enterprises encounter during digital transformation. Some traditional companies lack the necessary technological infrastructure and digital skills, resulting in slow transformation progress. In response, enterprises should increase investments in digital technologies and gradually introduce advanced technologies such as cloud computing, big data, and artificial intelligence. Additionally, developing systematic training programs to enhance employees' digital skills and technological adaptability is essential. Secondly, data security and privacy protection issues are becoming increasingly prominent. As enterprises accumulate vast amounts of user and business data during the digitalization process, safeguarding this data becomes a critical challenge. Companies need to establish robust data security management systems, utilizing advanced encryption technologies and access control measures to ensure data security during storage and transmission. Furthermore, regular security assessments and risk management should be conducted to identify potential security threats. Moreover, the transformation of organizational culture poses a significant challenge in digital transformation. Traditional corporate cultures often emphasize hierarchy and control, which contradicts the flexibility and innovation emphasized by the digital economy. To address this challenge, companies should actively promote cultural change, fostering an open and inclusive work environment that encourages employees to propose new ideas and participate in innovation. Additionally, leadership should set an example to guide employees in accepting and adapting to new work models. Finally, market demand uncertainty presents risks for companies undergoing digital transformation. Rapid changes in market trends and consumer preferences may lead to poor decision-making during the

transformation process. Therefore, companies should strengthen their market research and data analysis capabilities, continuously monitoring market dynamics and adjusting strategies in a timely manner. Moreover, establishing flexible business models will enable companies to quickly adapt to market changes. In summary, in facing the challenges of digital economy empowerment of the real economy, companies should adopt proactive measures across multiple aspects, including technological adaptability, data security, organizational culture, and market demand. Only through comprehensive measures can enterprises seize opportunities in the digital wave and achieve high-quality development.

6. Conclusion

In the context of the rapid development of the digital economy, the transformation and upgrading of the real economy have become an irreversible trend. The widespread application of digital technologies has injected new vitality into traditional industries, providing strong momentum for high-quality development of the real economy by enhancing production efficiency, optimizing management processes, and promoting innovation. However, companies still face numerous challenges during the transformation process, including insufficient technological adaptability, data security risks, difficulties in cultural transformation, and uncertainty in market demand. To effectively address these challenges, companies need to take proactive measures: strengthening digital skills training, establishing secure data management systems, promoting cultural change, and flexibly adjusting market strategies. By implementing comprehensive strategies, enterprises can not only successfully achieve digital transformation but also enhance their core competitiveness in a fiercely competitive market. In conclusion, the process of the digital economy empowering the real economy is not without its difficulties. However, through the effective combination of technological and management innovation, talent development, and responsive strategies, the real economy can achieve sustained and healthy growth in the new economic landscape. In the future, companies should continue to deepen their digital transformation efforts to adapt to the ever-changing market environment and secure their place in the digital economy era.

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