На рынок жилья оказывает влияние множество факторов - факторы государственного регулирования рынка недвижимости, общеэкономическая ситуация, микроэкономическая ситуация, социальное положение, экологическое положение на местности. Основные составляющие рыночной цены жилья - это затраты на строительно-монтажные работы (СМР), подключение к инженерным сетям, получение разрешительной документации, аренду или покупку земельного участка, прибыль застройщиков. В связи с этим, основные способы активизации жилищного строительства в Республике Беларусь будут основаны на разработке эффективных механизмов их решения – снижении стоимости жилья в процессе строительства и активизации рынка усадебной застройки, привлечение инвесторов в реализацию строительства объектов недвижимости и использование кредитных ресурсов банков, банковских программ по умеренным процентным ставкам.

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APPLICATION AND CHALLENGES OF DIGITAL TRANSFORMATION IN GREEN SUPPLY CHAIN MANAGEMENT

Abstract: In the context of global climate change, green supply chain management (GSCM) has become an important strategy for enterprises to improve environmental performance, optimize resource allocation, and reduce operational costs. Digital transformation, as a core driver to improve the efficiency and transparency of supply chain management, is driving supply chain innovation and green development globally with the help of technologies such as big data, Internet of Things (IoT), and Artificial Intelligence (AI). However, enterprises face multiple challenges such as technology integration, capital investment and data security in the process of implementing digital transformation. In this paper, we analyze how digital transformation can help the implementation of green supply chain management, and discuss

the main challenges and solution strategies in the current application by combining domestic and international cases from multiple industries. The study shows that digital transformation can effectively promote the efficient operation of green supply chain, help enterprises reduce carbon emissions, improve resource utilization efficiency, and play an important role in sustainable development strategy.

Keywords: Digital transformation; green supply chain management; big data; internet of things; artificial intelligence; carbon emissions; sustainable development; technological innovation

1. Introduction

With the aggravation of global climate change and the increasingly serious problems of resource shortage and environmental pollution, the concept of green economy has been widely promoted worldwide. In this context, Green Supply Chain Management (GSCM), as a management model integrating environmental protection requirements and supply chain optimization, has gradually become an important strategy for enterprises in various countries to cope with environmental pressure and enhance competitiveness. The core of green supply chain lies in the efficient use of resources and minimization of environmental pollution through low-carbon, energy-saving and environmentally friendly technical means in all aspects from production, distribution to waste recycling.

Meanwhile, digital transformation plays an important role in green supply chain management as an important way for enterprises to improve management efficiency and enhance competitiveness. Digital technology, especially the application of big data, Internet of Things (IoT) and artificial intelligence (AI), can provide real-time data support and intelligent decision-making in all aspects of the supply chain, and provide technological guarantee for enterprises to achieve green goals. However, in the process of digital transformation, enterprises still face many challenges such as technology adaptation, initial capital investment, and data security. Therefore, it is of great significance to discuss the current situation, challenges and solutions of digital transformation in green supply chain to promote the sustainable development of global green supply chain.

2. Relationship between digital transformation and green supply chain management

Digital transformation greatly improves the efficiency and transparency of green supply chain management through the application of emerging technologies. Big data technology helps enterprises extract valuable information from large amounts of complex data to provide decision support for green supply chain management. For example, Amazon uses big data analysis to predict consumer demand so as to optimize the warehousing and dis-

tribution process and reduce the waste of resources in the transportation process. According to Amazon's 2019 report, its carbon emissions were reduced by about 13% by optimizing logistics through big data technology [1]. Unilever and other multinational companies also use big data to track and analyze the whole process of products from production to transportation, accurately calculate the carbon footprint, and optimize supply chain links through data to effectively reduce resource consumption and environmental impact [2]. IoT technology deploys sensors in each link of the supply chain to realize real-time monitoring and data collection of environmental impact and resource consumption, which provides timely data support for green supply chain management and enables companies to make more accurate decisions. For example, FedEx, the world's leading express delivery company, introduced IoT technology in its transportation network to achieve intelligent distribution. FedEx's data shows that its transportation efficiency has been improved by 15% and carbon emissions have been reduced by about 12% through IoT technology [3]. The application of artificial intelligence technology in the production process makes the production process more delicate and efficient. Siemens optimizes its production line through AI and is able to intelligently adjust the operation of equipment according to production demand, thus reducing energy consumption and waste emissions. According to Siemens' data in 2018, the introduction of artificial intelligence technology has reduced energy consumption in the production process by about 10% and waste emissions by 15% [4]. In summary, the widespread application of digital technologies such as big data, IoT and AI significantly improves the efficiency of green supply chain management, reduces resource waste, and lowers environmental impacts, fully demonstrating the key role of digital transformation in advancing the Sustainable Development Goals (SDGs).

3. Examples of the application of digital transformation in green supply chain management

Examples of the application of digital transformation in green supply chain management are rich and diverse, fully demonstrating the key role played by emerging technologies in promoting sustainable development. Alibaba's Cainiao Network has significantly reduced logistics costs and environmental impacts by applying big data and artificial intelligence technologies to intelligent scheduling and path optimization of its global logistics network. According to Cainiao Network, carbon emissions from its transportation have been reduced by 20% through intelligent scheduling, while the overall operational efficiency of the supply chain has been improved [5]. Similarly, Jingdong has introduced AI and big data technologies into its logistics system to optimize delivery routes and reduce idling rates. in 2019, Jingdong successfully reduced transportation costs by 15% and cut carbon emissions by about 18% through its intelligent logistics platform [6]. This

innovative practice not only improves Jingdong's operational efficiency in logistics, but also provides solid support for the realization of a green supply chain. In addition, European multinational corporations have similarly focused on the sustainable development of green supply chains in the process of promoting digital transformation. According to a report by the European Commission, Philips in the Netherlands has successfully reduced resource consumption by 10% and lowered carbon emissions in its supply chain by 17% through real-time monitoring of the product life cycle with IoT technology [7]. These cases show that digital technologies are remarkably effective in optimizing supply chain management, reducing resource wastage and lowering environmental impacts, and driving enterprises to transition to a greener and more sustainable development model.

4. Key challenges to digital transformation

Digital transformation shows great potential in green supply chain management, however, there are still many challenges in its implementation. Supply chain management systems vary significantly across enterprises, which makes the adaptation and integration of digital technologies complicated, especially in small and medium-sized enterprises, where new digital technologies (e.g., big data, artificial intelligence) have a longer adaptation cycle due to the obsolescence of existing management systems [8]. In addition, the high initial investment required for digital transformation is an important hurdle for enterprises to overcome. The introduction of big data platforms, IoT devices, and AI technologies requires a large amount of initial capital, which can constitute a heavy financial burden for many enterprises, especially small and medium-sized enterprises [9]. At the same time, with the widespread use of digital technologies, data security and privacy protection issues are becoming increasingly prominent. How to ensure data security and privacy protection when enterprises process and store massive amounts of data has become an urgent challenge, and data leakage or misuse not only seriously affects the reputation of the enterprise, but also may bring huge economic losses [10].

In addition, despite the many opportunities brought by digital transformation, enterprises still face the dilemma of shortage of technical talents in the implementation process. Especially in the field of emerging technologies such as artificial intelligence and big data, the demand for qualified talents far exceeds the supply, which has become a major bottleneck in enterprise transformation [11].

In summary, technology adaptation and integration, high initial investment, data security and privacy protection, and talent shortage are the main challenges faced by digital transformation in green supply chain management, and enterprises need to attach great importance to the process of digital transformation and take effective countermeasures.

5. Policy recommendations and future perspectives

In order to accelerate the implementation of digital transformation in green supply chain management, policy makers should take the following measures:

Policy support from governments

Governments should support enterprises to make digital transformation, especially investment in green areas, through tax incentives and financial subsidies. In addition, governments should help enterprises assess the transformation effect and improvement direction through a standardized green supply chain assessment system [12].

Technological Innovation and International Cooperation

Technological innovation is a key driver of digital transformation, and the government should increase its support for green technology research and development. At the same time, international technology sharing and cooperation can accelerate the promotion of digital technology on a global scale [13].

Strengthening Talent Cultivation and Introduction

The government and enterprises should make joint efforts to solve the shortage of technical talents. By strengthening education and training and career development programs, a group of composite talents familiar with digital transformation and green supply chain should be cultivated to support the transformation process of enterprises [14].

6 Conclusion

Digital transformation provides unprecedented opportunities for green supply chain management, however, it still faces various challenges in the application process, such as technology adaptation, capital investment, data security and talents. Through policy support, technological innovation and international cooperation, enterprises can achieve green goals in digital transformation, thus promoting the development of global supply chains in a more sustainable direction. In the future, with the continuous advancement of technology and the deepening of global cooperation, digital transformation will play an even more important role in green supply chain management.

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ВЛИЯНИЕ СИСТЕМЫ УПРАВЛЕНИЯ ЧЕЛОВЕЧЕСКИМИ РЕСУРСАМИ НА ПРОИЗВОДИТЕЛЬНОСТЬ И РЕЗУЛЬТАТИВНОСТЬ РАБОТЫ

Влияние управления человеческими ресурсами на изменение общей эффективности работы предприятия совершенно очевидно. Если меняются человеческие ресурсы предприятия, то эффективность работы обязательно изменится.