A CONCEPTUAL FRAMEWORK EXPLORATION: DIGITAL TRANSFORMATION AND ENTERPRISE PERFORMANCE

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ABSTRACT

The relationship between Digital Transformation and Enterprise Performance has been a recent focus of scholars both domestically and internationally. One significant reason for this is the varying results found by many scholars when exploring the impact of Digital Transformation on Enterprise Performance. This article aims to further consolidate the conclusions of previous studies, restructure the dimensions of Digital Transformation and Enterprise Performance, and propose a new conceptual model for the relationship between Digital Transformation and Enterprise Performance, taking into account the current state of digital economic development, thus providing a theoretical basis and reference for future research.

Keywords: Digital Transformation; Enterprise Performance; digital economy; digital technology

INTRODUCTION

The process of enterprise Digital Transformation is essentially a transformation from "industrial management mode" to "digital management mode". By introducing digital technology into the existing enterprise management architecture, it promotes systematic reshaping of information structure, management methods, operation mechanisms, production processes, etc. compared to the industrial system. Objectively, it requires enterprises to break the path dependence under traditional industrial management situations (Huang Qunhui et al., 2019; Xiao Jinghua, 2020); Firk et al. (2022) [1-3], changing the original logic of enterprise management thinking (Chen Jian et al., 2020)[4], bring about disruptive innovation in enterprise management paradigms and even management systems.

At the macro level, research has found that digital technology and digital platforms can break through geographical limitations and bridge the "digital divide" (An Tongliang and Yang Chen, 2020; Zhang Xun et al., 2019; Zhao Tao et al., 2020) [5-7]. At the micro level, digital, intelligent, and automated production methods can improve operational efficiency, cash flow, and return on investment capital for enterprises (Mikalef and Pateli, 2017; Yang, 2022) [8-9]. Enterprises promoting Digital Transformation can promote local innovation by specialized division of labor, enabling each employee to focus on their strengths, and utilizing digital technology for module restructuring and interaction to improve overall innovation performance (Zheng Shuai et al., 2022) [10]. However, scholars have different perspectives on the impact of Digital Transformation in their research. Industrial robots empowered by digital technology may also lag behind the speed of technological iteration (Qi Yudong and Cai Chengwei, 2020) [11]. The term "Digital Transformation paradox" has emerged after the "Solow paradox" or "IT

productivity paradox". From this, it can be seen that the results of "Digital Transformation" have significant uncertainty and are an important topic of research in the current academic community, as well as one of the starting points for the discussion of this topic.

LITERATURE REVIEW

1. Digital Transformation in Enterprises

1.1 The definition of Digital Transformation

There is no unified standard for the definition of Digital Transformation due to its diversity of manifestations. In 2011, the United States proposed the concept of "digital twins", and a large amount of literature subsequently defined Digital Transformation. Digital Transformation is the use of new digital technologies to achieve significant business improvements and changes, such as improving customer experience, simplifying operations, or building new business models, achieving organizational structure changes, fundamentally changing Enterprise Performance, and creating value for customers. However, there is also significant controversy among scholars regarding the scope of digital technology. The commonly used definition currently includes new generation technologies such as social media, cloud computing, mobile technology, and the Internet of Things, such as big data and embedded devices. Domestic scholars have formed a relatively unified consensus that Digital Transformation involves three aspects, first of all, the application of one or more digital technologies to improve the operational efficiency of companies. Secondly, digital technology has fundamentally changed the production, organizational, and business models of enterprises, with the goal of making management decisions more effective. According to Wang Hecheng et al. (2021)[12], from the perspective of enterprises, the digital process of enterprises requires new technological applications, ecological positioning, business models, business and organizational processes, as well as good corporate culture, leadership, and risk tolerance, and improves the relationship between organizations and employees, customers, suppliers, partners, and stakeholders, in order to compete more effectively in the constantly changing digital economy. This process is the Digital Transformation of enterprises. Finally, the company applies digital technology to make strategic behavioral changes by balancing its resources and external environment, in order to gain a competitive advantage (Verhoef et al., 2021)[13].

1.2 The Dimensions of Digital Transformation

Currently, research on digital maturity in China is generally led by government agencies, in collaboration with authoritative consulting agencies, to evaluate the digital status of industries or enterprises. Based on the collection and organization of relevant literature and research reports at home and abroad, this article ultimately selected several representative maturity models as the main reference basis. Westerman (2014) believes that a company's Digital Transformation can be measured by the intensity of digital technology and transformation[14]. With the deepening of research on Digital Transformation and the increasing impact of Digital Transformation on enterprises, many scholars have begun to further enrich the connotation and dimensions of Digital Transformation into four aspects, including value chain, business processes, products and services, digital technology platforms, etc. (Yu Feifei, 2022)[15]. Scholars such as Wang Hecheng et al. (2021) have added strategic dimensions, leadership dimensions, and organizational culture dimensions to this foundation. In addition, some scholars have subdivided the dimensions of Digital Transformation into more detailed and specific ones, focusing on the hardware output of Digital Transformation, such as digital

technology output, digital operation platforms, and digital product delivery [12]. Based on the above research results and actual situation, I believe that the four dimensions of value chain digitization, business process digitization, product and service digitization, and digital technology application demonstrated by Yu Feifei can more comprehensively measure the Digital Transformation of enterprises.

1.3 Explanation of dimensions

1.3.1 Value chain digitization: Value chain digitization refers to the use of digital technology and information systems to optimize and improve the value chain activities of enterprises. The traditional value chain includes a series of links from raw material procurement to production, marketing, sales, and after-sales service. Through the application of digital technology, the digital value chain can achieve real-time monitoring and management of the supply chain, improve the transparency and efficiency of the supply chain, and reduce inventory and operational costs.

1.3.2 Business process digitization: Business process digitization refers to the use of digital technology and information systems to optimize and improve various business processes within an enterprise. This Digital Transformation can help businesses improve efficiency, reduce costs, accelerate decision-making processes, and enhance customer experience.

1.3.3 Digitization of products and services: Digitization of products and services refers to the use of digital technology and information systems to improve and optimize the products and services provided by enterprises. This Digital Transformation can help businesses improve the functionality, performance, and user experience of their products, while also enhancing the quality and efficiency of their services.

1.3.4 Digital technology application: Digital technology application refers to a series of applications including the Internet of Things, cloud computing, big data, blockchain, and other artificial intelligence technologies.

ENTERPRISE PERFORMANCE

2.1 Definition of Enterprise Performance

According to the definition of the Ministry of Finance, Enterprise Performance reflects the performance of operators within a certain business cycle and the operational efficiency of the enterprise itself. Scholars such as Jia Jun and Zhang Zhuo (2013) [16], Wang Wenhua et al. (2015) [17], Li Sihai and Zou Ping (2016) [18], and Xu Juan (2017) [19] use the return on equity (i.e. net profit divided by average net asset) to represent a company's financial performance. Meanwhile, other scholars comprehensively evaluate the financial condition of high-tech enterprises by integrating multiple financial indicators, often using indicators such as return on assets (ROA), return on equity (ROE), and return on sales (ROS) for evaluation. Li Huicong et al. (2019) [20] used the growth rate of main business revenue as an indicator to measure the growth of enterprises, and replaced it with the net profit growth rate in robustness testing to verify the reliability of the research results.

2.2 The dimensions of Enterprise Performance

At present, there are two main methods in the academic community to measure Enterprise Performance: one is to obtain cognitive performance through self-evaluation, and the other is to use financial indicators to evaluate Enterprise Performance. Zhu Yan and Zhang

Mengchang（2013）[21] evaluated Enterprise Performance from both long-term and short-term dimensions, using ROA as the short-term performance evaluation indicator and Tobin Q value as the long-term performance evaluation indicator. Wu Yong et al.（2013）[22] drew on foreign scale designs and considered the completion of financial and market goals（such as market share and customer satisfaction）by enterprises to comprehensively measure Enterprise Performance. Wu Xiaobo et al.（2015）[23] measured Enterprise Performance in five aspects: sales revenue, market share, pre tax profit, post tax profit, and investment income. Based on the research findings of Li Yu et al.（2014）[24] and Wu Xiaobo et al.（2015）[23], Ren Yizhong（2020）[25] evaluated Enterprise Performance in six aspects: user satisfaction, product and service innovation, market share, sales revenue, profit margin, theoretical scale, and investment return rate. Financial indicators have broad applicability in Enterprise Performance evaluation, and existing literature mostly uses a combination of single or multiple financial indicators to evaluate Enterprise Performance. Sun Hui and Guo Qiuqiu（2021）[26] used the return on equity to measure Enterprise Performance. Lin Xinyi and Wu Dong（2021）[27] believe that Tobin's Q value can truly measure a company's future development potential and investment benefits from the perspective of investors, so Tobin's Q value is used to measure company performance. Wang Yaqi et al.（2021）[28] measure a company's performance based on its sales revenue and total factor productivity. Wang Xuekai et al.（2021）[29] simultaneously introduced return on investment capital, return on human capital, return on equity, and return on total assets to reflect Enterprise Performance. However, there are also different views that suggest that the approach of measuring Enterprise Performance based on accounting profitability needs to be optimized, as accounting profitability indicators cannot reflect a company's future profitability. Therefore, stock market based measurement methods can be used to evaluate Enterprise Performance. In summary, the composition of Enterprise Performance can be summarized into four dimensions, namely finance, customers, market, and learning and growth.

2.3 Explanation of dimensions

2.3.1 Finance: The financial indicators of a company are a series of numerical values used to measure the financial condition and operational effectiveness of the company. These indicators can help investors, managers, creditors, and other stakeholders evaluate a company's profitability, solvency, operational efficiency, and market performance. Such as operating income, return on investment, profit margin, etc.

2.3.2 Customer: The customer indicator of a company is a series of numerical values used to measure the activities and relationships related to the company and its customers. These indicators can help businesses understand customer needs, satisfaction, and loyalty, as well as evaluate the effectiveness of marketing and sales activities. Such as customer satisfaction, customer loyalty, etc.

2.3.3 Market: The market indicators of a company are a series of numerical values used to measure its performance and impact in the market. These indicators can help companies understand the size, growth trends, competitive situation, and market share of the market, as well as evaluate the effectiveness of marketing strategies and product positioning. Such as market share, market growth rate, and speed of new product exit.

2.3.4 Learning and Growth: The learning and growth indicators of a company are a series of numerical values used to measure internal learning and development. These indicators can help companies understand the learning progress of employees, the innovation ability and

development potential of the organization. Such as the innovation capability, research and development capability, patent growth, and organizational culture of the enterprise.

Relationship between Digital Transformation and Enterprise Performance

Digital Transformation can drive enterprises to innovate business models through digital management of key businesses and processes, thereby enhancing their speed and ability to adapt to market changes (Mikalef and Pateli, 2017)[8]. In theory, Digital Transformation is expected to significantly improve Enterprise Performance. Firstly, the deepening of Digital Transformation has made data a more important factor of production, breaking the "data silos" and achieving practical scenarios of "dialogue between people and data" and "dialogue between data and data" (He Da'an, 2018) [30]. Internal production processes within enterprises can share real-time dynamic information, enabling upstream and downstream supply chains to also share and communicate, significantly reducing transaction and search costs for businesses (Hu et al., 2022; Chen Deqiu and Hu Qing, 2022) [31-32]. Secondly, Digital Transformation will drive the transformation of enterprise production methods towards intelligence and digitization. The use of intelligent machines can avoid human errors, reduce error rates, and enable long-term, high-intensity refined production work, thereby significantly improving operational efficiency. Third, Digital Transformation means integrating digital technology and core business, restructuring all aspects of the enterprise with Internet thinking and digital technology, forming an information service architecture of "cloud+network+end", promoting enterprise innovation capability, and then improving Enterprise Performance. From the perspective of internal production processes, Digital Transformation will improve operational efficiency through demand forecasting, product design, pricing and inventory management, and supply chain management (Chen Jian et al., 2020)[3]. Although there may be biases in predicting future market preferences based on historical data, big data technology can be used to obtain massive amounts of data information (including user search keywords, page duration, price range, etc.), and visualize and analyze the data, enabling intuitive observation of user behavior characteristics, preference habits, and potential needs (Simsek et al., 2019) [33]. Enterprises can improve and upgrade product designs based on user needs (He et al., 2019) [34], and even provide personalized services to users. After obtaining user consumption behavior through digital technology, enterprises can dynamically adjust product prices (Cohen et al., 2018) [35], implement differentiated pricing strategies for products that are highly sought after by users and relatively unsold products, and price them differently in different sales channels and time periods to attract more potential users and prevent unsold products. Digital technology also provides convenience for product supply. In the traditional mode, machines on the production line operate simultaneously. Once technical failures occur, they need to be stopped and checked one by one, which not only consumes manpower but also delays production progress. With the support of digital technology, production data can be obtained in real-time. When encountering production faults, the intelligent management system can quickly identify the faulty link and promptly stop other machines that may be affected, arrange professional personnel for maintenance, and improve and ensure production efficiency. Qi Yudong and Xiao Xu (2020)[11] also pointed out from a theoretical perspective that Digital Transformation has innovated the internal management mode of enterprises, mainly manifested as: organizational structure tends to be networked and flat, product design tends to be version and iteration, production mode tends to

be modular and flexible, marketing mode tends to be precise and refined, employment mode tends to be diversified and flexible, and R&D mode tends to be open and open-source.Based on the above relationship, the article can assume that Digital Transformation of enterprises has a significant positive impact (H1)on Enterprise Performance, and construct the following conceptual model:

Figure 1 Conceptual Framework of Digital Transformation and Enterprise Performance
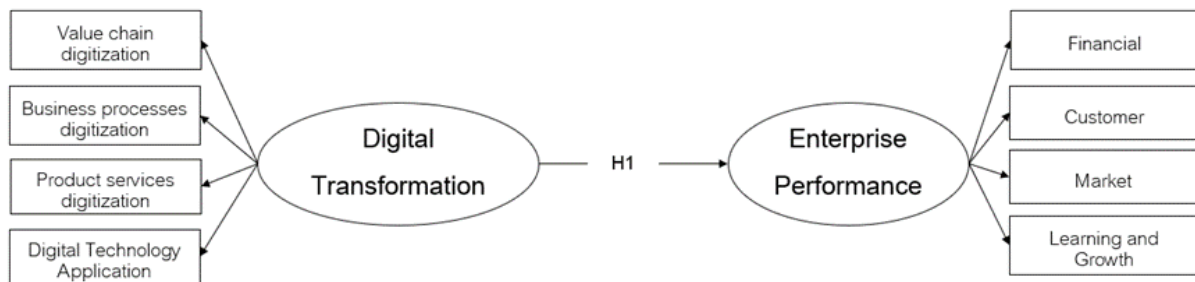
CONCLUSION AND FUTURE WORK

In summary, scholars have two main focuses on defining Digital Transformation in existing research. Some viewpoints emphasize the supporting role of digital technology, believing that Digital Transformation is an upgraded transformation after information technology transformation. It is the integration of digital technology into the internal business model of enterprises, and the intelligent collection of information in the market through digital technology, providing decision-making support for stakeholders, and ultimately fundamentally affecting Enterprise Performance. Other viewpoints emphasize the organizational changes brought about by Digital Transformation. These scholars believe that Digital Transformation is the introduction of digital technology by enterprises to fundamentally reshape their business models, organizational structures, and management methods, in order to build new business models and improve production efficiency. However, in the era of digital economy, the academic community has not yet reached a consistent conclusion on the economic consequences of enterprise Digital Transformation in existing research.

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