

Research on Dual Innovation Development Mechanism of Digitally Enabled Manufacturing Enterprises

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Abstract

Digitalization is the key driving force in today's world to promote innovation and optimize the development of high performance, digital integration as well as high-quality development has long been the center of gravity of the development of manufacturing enterprises. With the continuous development of digital technology, digital empowerment of manufacturing enterprises dual innovation and development is facing important challenges, mainly manifested in the technical application of the landing is not strong, the lack of policy uncertainty and support, the scarcity of digital composite talents, digital empowerment of the manufacturing industry feedback response delays and other aspects. Based on this, this paper describes the internal mechanism of digital empowerment and dual innovation development, from the digital empowerment of manufacturing enterprises dual innovation development mechanism implementation strategy and the development of the mechanism of the effect of the evaluation system in two aspects, to explain the digital empowerment of how to promote dual innovation by enhancing the ability of the enterprise; based on the innovation behavior of the enterprise, explore the digital empowerment of manufacturing enterprises under the development of dual innovation path for the development of a more practical and feasible program. Based on the innovation behavior of enterprises, we explore the development path of dual innovation in manufacturing enterprises under digital empowerment, and develop more practical programs for enterprises.

Keywords: digital empowerment; manufacturing enterprises; dual innovation; mechanism exploration

1. Introduction

The "14th Five-Year Plan" and the vision of 2035 put forward to accelerate digital development, that is, digital transformation, emphasizing the deep integration of digital technology and the real economy, the reform of new enterprises, science and technology and industrial change, and the enhancement of digital literacy of the entire population in the national development business focus. Coinciding with high-quality development, the integration of digital empowerment and dual innovation is an effective driving force for the realization of high-quality development, and is also the country's top priority, while the high-quality development of manufacturing enterprises is the foundation of high-quality economic development, digital transformation for manufacturing enterprises to bring disruptive value creation capabilities. In terms of the value fit relationship between digital technology-enabled manufacturing enterprises' high-quality development, its concept and function are consistent, and it plays an important role in the development of enterprises and improves their value[1]. With the development of science and technology, digitalization has become an important driving force for the innovation and development of manufacturing enterprises, and digital empowerment helps enterprises to improve production efficiency and play a role in optimizing product design, improving product quality, reducing production costs, and enhancing market

competitiveness in various aspects. According to the existing research, scholars focus on the data elements driven, the underlying technology to promote, new business models and industrial organizational change and other directions of research. In addition, in the field of intelligent manufacturing, digital empowerment has a significant role in promoting product intelligence, management intelligence and equipment intelligence. It acts as a fuel and a lever in the enhancement of technological innovation capability, in order to promote continuous innovation and pry disruptive innovation[2] . At the same time, digital empowerment becomes the driving force for the efficiency of manufacturing technology innovation, which is one of the basic logics of digital technology empowerment. Different from the traditional mode, it takes the pivotal enterprise or organization as the core, enhances the intensity of industry-university-research synergy between manufacturing enterprises and other innovation subjects, and in this way significantly improves the level of digital empowerment, so as to improve the efficiency of manufacturing technological innovation[3] . It can be seen that the previous research on the development of digital empowerment in the field of manufacturing enterprises is more mature. From the viewpoint of existing literature, the development path of manufacturing enterprises and dual innovation under digital empowerment is still a "black box" problem. The mechanism and effect of digital empowerment in different fields and objects are not understood deeply enough, and there is a lack of in-depth understanding of how digital empowerment affects the dual innovation ability of manufacturing enterprises, leaving a gap in the exploration of dual innovation in enterprises driven by digital technology. To address these issues, this paper will start with the background of digital empowerment, analyze the development of dual innovation, explore the mechanism of digital empowerment for the development of dual innovation in manufacturing enterprises, explain how digital empowerment affects the dual innovation ability of manufacturing enterprises, elaborate on the realization of dual innovation in manufacturing enterprises to cope with the rapidly changing market and technological environment, provide guidance for the digital transformation of manufacturing enterprises, and lay the foundation for the further enhancement of their innovation capability and sustainable development.

2. Literature review

2.1 Digitally Enabling Manufacturing Companies

Digital empowerment is not only the application of technology, but also a means to comprehensively improve enterprise performance. Digital empowerment has the ability to connect, analyze and control in various aspects. The ability to connect means that enterprises can realize efficient connection between internal and external resources through digital technology, including supply chain, customer relationship and collaborative work between partners. Along with the continuous optimization and scene application of digital empowerment connection ability, digital empowerment promotes the diversified development of manufacturing enterprises, and at the same time lays the foundation for the cultivation of digital talents in manufacturing enterprises. In addition, digital empowerment realizes the agility, intelligence and precision of manufacturing enterprises' supply chain resource integration, virtualizes and standardizes enterprise assets through information and communication technology, promotes manufacturing service supply chain resource integration and collaborative management, improves the response speed of manufacturing enterprises to customers' needs[4] , and builds up a "end" to "end" cooperation between manufacturing enterprises. To build a bridge from "end" to "end", it can be seen that digital empowerment plays an important role in the field of enterprise services. Analytical capability refers to the use of big data and intelligent analytical tools to gain insight into market trends, consumer behavior and operational efficiency, so as to make more accurate decisions. As mentioned in the Financial Transformation and Value Creation of Manufacturing Enterprises in the Age of Digital Intelligence, the financial decision-making of enterprises under the level of digital intelligence has been greatly improved, and the application of digital thinking in the field of management accounting on the one hand, efficiently and accurately classifies and processes data information, and on the other hand, it can deeply excavate the relevant data information, and on the basis of which it can formulate a more appropriate and feasible plan for the use of data, which makes the analysis of financial

data more comprehensive and enterprise decision-making data more accurate, and makes financial data analysis more comprehensive. This makes the financial data analysis and processing more comprehensive, the enterprise decision-making data more accurate, and improves the competitiveness of the enterprise market[5]. The control ability refers to the use of digital technology for risk management, process optimization and resource allocation, in order to improve the overall management efficiency and effectiveness. From the viewpoint of manifestation, digital empowerment exists in the form of direct or indirect empowerment: from the theoretical point of view, direct empowerment can be analyzed as the direct empowerment mechanism of the digital economy on the development of manufacturing enterprises at a high level and standard, and indirect empowerment refers to the indirect impact on the development of the manufacturing industry through intermediary variables. According to the previous research, the direct enabling mechanism can be attributed to the improvement of production efficiency, promotion of product innovation, optimization of resource allocation, upgrading of industries, market competitiveness, decision-making efficiency and other aspects. From the perspective of data empowerment dimension division, it is divided into the perspective based on data capability and the perspective based on value creation[6]. Scholars categorize digital empowerment differently, but there are still common points. Direct empowerment utilizes digital tools to enhance the core competitiveness of the enterprise and create value under the data capability; indirect empowerment plays a supporting role for the enterprise on the means of direct empowerment and brings value under the perspective of value creation. For example, total factor productivity improvement, environmental sustainability, talent cultivation and attraction, and other intangible value effects. Combined with the different forms of expression in the enterprise, digital empowerment in manufacturing enterprises as a multi-faceted, in connection, analysis, control and other aspects of entry, to play the innovation ability of digital empowerment in manufacturing enterprises. In summary, the core of digital empowerment lies in the integration and application of technology to enhance the ability of enterprises in connection, analysis and control, and then promote the innovation of business models and the overall development of enterprises.

2.2 Digital Empowerment and Dual Innovation

Combined with the summaries of previous researchers, dual innovation is divided into exploratory innovation and exploitative innovation. Exploratory innovation activities involve searching for and experimenting with new knowledge, technologies, markets, and business models, and are essential for long-term growth and adaptation to rapidly changing environments, helping companies to explore new opportunities. Exploitative innovation focuses on improving and enhancing existing products, services, and processes to bring short-term benefits and efficiency gains to firms, helping them gain competitive advantage in existing markets and technology areas. In the existing literature, the research conclusions on the relationship between digital empowerment and enterprise value have not yet reached a consensus, mainly in terms of whether digital transformation is linked to enterprise value enhancement, and the manifestation of its correlation is controversial; secondly, the research on the association between digital empowerment and enterprises as well as the value system of manufacturing enterprises and bi-dimensional innovation has been relatively mature, but for the bi-dimensional innovation behaviors brought to the manufacturing enterprises under the digital empowerment The effect of digital empowerment is still uncertain, and whether there are other external factors under this performance, for this reason on the basis of the existing further research.

Dual innovation plays an intermediary role in digital empowerment and enterprise value, and is the basis for promoting dual innovation in manufacturing enterprises. First, using digital tools as well as decision-making suggestions, exploratory innovation provides basic support for information interpretation and output, helping manufacturing enterprises to obtain market behavior data, digging out the gap between enterprise products and the market, and providing further support in technological innovation, enterprise competitiveness, etc., thus laying the foundation for enterprise value growth; second, exploitative innovation

helps to build an intelligent production system, enhancing enterprise innovation elements Secondly, utilized innovation helps to build intelligent production system, enhance the flow of enterprise innovation elements, and increase the production value; thirdly, technological innovation increases the amount of information obtained by enterprises, enhances transparency, makes managers more rational in the production decision-making process, and the sharing of knowledge also makes the enterprise value have an amplification as well as accelerating effect, which has a positive impact on technological innovation.[7] . Technological innovation improves efficiency and quality and creates new market demand by utilizing new technologies, processes and methods in products and services. Dual innovation is expressed as a balanced activity between two aspects in the perspective of the organizational management field, and the two are closely linked. The further development of dual innovation cannot be achieved without technological diversification, and the two are complementary and facilitating. Combined with the manifestation of digital empowerment in manufacturing enterprises, digital empowerment provides support for enterprises to explore new areas and thus promotes dual innovation through its multidimensional ability to enhance their information processing capability, knowledge management capability and external cooperation capability.

3. Digitally Enabling Dual Innovation in Manufacturing Firms Key Challenges Faced

3.1 Difficulty in getting technology applications off the ground

The digital transformation of manufacturing enterprises cannot be separated from the organization and sharing of large amounts of data, while the enterprise data organization system is still not mature enough. The small size of the data trading market, the lack of data standards and data retrieval and access system is not mature enough and other issues that make it difficult for manufacturing enterprises to land technology applications. Enterprises are difficult to generate a standardized system, making data more standardized and three-dimensional. In the digital era, although the development of digital technologies such as the Internet of Things, big data, cloud computing and other new-generation technologies for the manufacturing industry to provide a strong technical support, but the practical application of these technologies to the production process, to achieve a deep integration with the manufacturing industry is still the current digital empowerment of the manufacturing enterprise dual innovation and development of the main problems faced by the main problem.

3.2 Policy uncertainty and lack of support

In the face of enterprise failure in the market, the government plays a regulatory role as the invisible hand. It is not difficult to see that government and policy support and changes in the market environment have an important impact on the digital transformation of manufacturing enterprises. In manufacturing enterprises, the uncertainty of policy affects the dual innovation behavior of enterprises[11] . Under the development of globalization, the government's popularization of enterprise policy trends is still insufficient, and the control of market trends is still an unknown. At the same time, the "digital divide" is still a problem in the current development. In order to bridge the "digital divide", how to optimize the regional layout, better use of digital technology, etc. need the government to form a perfect planning and deployment system; Third, the development of digital empowerment of manufacturing enterprises dual innovation on the development of enterprises to put forward higher requirements, the government for the investment of enterprise funds to be strengthened, which includes the upgrading of hardware facilities, Software system acquisition, etc., and how to maximize the return on investment in the limited resources will be one of the key choices faced by enterprises.

3.3 Digital composites are scarce

Manufacturing enterprises realize the combination of digitalization and dual innovation, and the digital way of working is the necessary literacy of enterprise personnel. In the existing market research study found that digital composite talent resources are scarce. The support of the digital system is combined with the

corporate cultural atmosphere, and corporate personnel need to have the appropriate digital skills, and pay attention to the training of talents as well as the introduction of talents, which not only includes technical personnel, but also management personnel who can manage and promote digital transformation; secondly, the construction of the digital talent team is unable to meet the needs of the digital construction, which is specifically manifested in the structural mismatch of talents and human capital[8] . For example, the contradiction between the demand for new positions and the elimination of old positions, resulting in human resource cost vacancies. In the process of a large amount of equity investment in education enterprises, the mismatch problem also greatly reduces the allocation efficiency. In addition, the gap of composite financial talents is also a major problem faced by enterprises[5] . The provision of composite talents can not be separated from the needs of digital transformation, the imperfections of the talent digital skills reserves, career development path is not clear, the lack of industry insight and so on make the development of digital composite talents more challenging, digital composite talent training time and capital costs are also difficult for the development of manufacturing enterprises.

3.4 Digital Enabled Manufacturing Feedback Response Latency

Digital empowerment manufacturing industry to achieve dual innovation and development process, enterprise operation digitalization, intelligent feedback response delay. Along with the increasingly widespread application of data in manufacturing enterprises, data and information have become the lifeblood of manufacturing enterprise innovation and development. In the final analysis, the delay in the feedback response of manufacturing enterprises is closely related to the current challenges faced by manufacturing enterprises in digitalization and dual innovation. Technology application is difficult to land, the uncertainty brought by the policy, the high requirements of the talent digital literacy greatly reduces the flow of information and the operation of the enterprise. At the same time, a large amount of information on the enterprise's security risks also put forward certain requirements.

4. Countermeasures and Suggestions for Dual Innovation in Digitally Enabled Manufacturing Enterprises

4.1 Implementation Strategies of Dual Innovation Development Mechanisms for Digitally Enabled Manufacturing Enterprises

With the development of the digital era, the technology application can not be separated from the establishment and improvement of the digital transformation strategy in order to land. Enterprises should focus on the optimization of the data collation system, realize the technology application scenario, and integrate with manufacturing enterprises. From the perspectives of resource pooling of all parties, enterprise costs, and employee knowledge literacy, digital transformation enhances the quality of enterprise innovation and improves the innovation efficiency of enterprises, which is a powerful driving force for dual innovation[9] . At present, digital transformation is more or less put into implementation in large and small enterprises, but generating a more mature and perfect system is a long process, for this reason, on the basis of the previous ones, the following points are proposed.

First of all, the definition of digital transformation needs to establish a clear and unambiguous direction, digital transformation is a must for the high-quality development of manufacturing enterprises, essentially covering digital technology in the enterprise design, production, management, sales and service links, so as to carry out the production process, product form, business model, organizational structure and other aspects of the change[10] . Secondly, the empirical analysis of different enterprises, assessing the existing technological infrastructure, data management capabilities, etc. as an entry point, in order to make up for the shortcomings of enterprise limitations and singularity, and expand the influence of corporate culture, to verify that digital empowerment can indeed significantly enhance the dual innovation capability of manufacturing enterprises. In addition, further planning for technology deployment and organization, combined with the previous digital transformation process, to form a more complete system. Optimize the

organization and business adjustment to adapt to the new development mode, so that "digital empowerment - dual innovation & enterprise development" can be put into practice. Finally, further integration of Chinese and foreign cooperation, cultural propaganda, etc., to do a good job in the late deployment of the digital transformation strategy, to help the digital transformation strategy to complete the transformation from a driving force - effect force - effect force, to complete the integration of dual innovation development. Sustainable development is still a part of the transformation strategy that should not be ignored. Participating in or building digital ecosystems, sharing resources, common services and creating the future together is the ultimate goal of the digital transformation strategy.

4.2 Combination of hard and soft skills

In the face of a series of problems such as the uncertainty of policy changes, the digital divide, and insufficient funding, the government needs to establish a comprehensive planning and deployment system. However, policy changes become uncertainties in the path of dual innovation of enterprises. On the basis of dual innovation R&D investment with risk, its own resources are limited, arbitrary innovation R&D investment each will produce crowding out effect, from the perspective of enterprise R&D heterogeneity, the changes within the government brings policy uncertainty, the enterprise's external environment drastic changes, will certainly have an important impact on the enterprise's dual innovation behavior choice[11]. Thus, the development of dual innovation in digitally empowered manufacturing enterprises cannot be realized without strong support from top-level construction. On the one hand, for the limitations of enterprise resources and the uncertainty of policy changes, the effective guarantee of infrastructure should be done. On the basis of the perfect digital transformation strategy, make good use of the effective window of digital transformation, for the change of officials, do a good job of effective backward adjustment work, set up the three banners of digital empowerment, dual innovation and enterprise development. In addition, in the process of building digital infrastructure, innovative new infrastructure investment and financing methods can be incorporated to further expand and attract capital, and at the same time, the credit standard of enterprises has also put forward further requirements. Finally, as internationalization deepens, external cooperation becomes a key element. The government should further establish solid partnerships, take technology suppliers and service providers as entry points, use big data centers and artificial intelligence as the underlying technology to promote, and continue to invest in R&D to enhance core competitiveness. In summary, the support aspects for top-level design can be summarized as follows: first, reverse use of digital transformation infrastructure to bridge the gap of resource limitations as well as policy uncertainty; second, investment in innovative investment and financing models to attract external capital; and third, strengthening external partners as well as improving core competitiveness to maintain the vitality of enterprises through learning and adaptation.

The resource base of an enterprise has a positive moderating effect on the exploratory innovation of digital transformation, and plays a role in the area of business decision-making and strategic choices. Enterprises with a relatively weak resource base are often limited by their own endowments, and are less willing to carry out digital transformation due to concerns about the expected benefits and risks of digital transformation[12], which can be seen in the supportive role played by resources in the context of digital empowerment. Manufacturing enterprises need to establish a data-driven decision-making mechanism in the path of innovation and development, the use of data analysis to guide the business decision-making process, regardless of the existence of existing enterprises to establish a mechanism to further determine is the right direction for the development of the enterprise. It can involve facts, metrics and data system analysis to ensure that the data is verified true as well as non-hypothetical. The use of big data and analytical tools to support decision-making, improve decision-making accuracy; the establishment of a data management system to ensure that the data management system, the quality and availability of data. In the context of digitization, big data-driven management decision-making plays a role in analytics (A), resource governance (G) and enabling innovation (E), and is practically applied in scientific research in different industries and

fields, which has a profound impact on decision modeling and solving problems. In addition, data-driven decision-making is further embedded in the domain expertise, exploring and expanding the formation of a comprehensive new research paradigm to lay the foundation for future development[13], and in the long run, the establishment of data-driven decision-making empowers the enterprise and enhances the vitality of the enterprise in the competitive market. In the process of realizing the establishment of data-driven decision-making mechanisms, enterprises need to collect, clean, integrate and analyze data from digital enterprise management systems. At the same time, combined with the provision of the former infrastructure, the use of reasonable data tools to ensure high efficiency, high quality and multi-dimensional, to facilitate the future of accurate analysis and prediction.

4.3 Cultivate and introduce digital composite talents

In view of the scarcity of digital composite talents, manufacturing enterprises should start from the cultivation of digital skills, digital talent team building and other aspects. Enterprise science and technology talent innovation is not only as a key factor of whether enterprises can successfully realize the market value, but also a key link in determining whether enterprises can obtain core competitiveness[14]. According to the existing literature, in the exploration of enterprise digital talent training mode in the era of big data, we further locate the digital strategic awareness, digital thinking and digital execution ability of digital composite talents, propose that the digital composite talent training in the context of the new era is an important component in the era of digital transformation, which is closely related to enterprise management, and put forward the promotion of the digital transformation of talent cultivation, talent cultivation, and the combination with enterprise digital strategic management, talent cultivation and enterprise management. To combine with the enterprise digital strategy management, build digital composite talent training base, build digital composite talent training mechanism, build digital composite talent training guarantee system and other ideal blueprints[15]. Cultivate and introduce digital composite talents, on the basis of excellent pro-life digital talents, absorb key core digital talents as well as practical digital talents to more optimize the structure of composite talents, so that the enterprise is more comprehensive in the field of management, technology and application, and to ensure that the digital empowerment of the dual innovation is carried out on the ground. In summary, digital skills to enhance the adaptability of digital tools and innovation is very important. Improving the digital skills reserve of talents, clear career development planning, and improving the industry insight of talents have become the key to cultivating digital composite talents. At the same time, encouraging open thinking and cross-border cooperation also provides a source of dual innovation. Enterprises are not limited by time pressure or network capacity to establish external networks through social as well as economic transactions, and at the same time build trust with external partners, build bridges, share technology, market knowledge and other resources, and improve their own openness[16], thus contributing to the dual innovation of manufacturing enterprises.

4.4 Constructing a system for evaluating the effect of dual innovation and development mechanism of digitally empowered manufacturing enterprises

In view of the current situation of delayed feedback response of manufacturing enterprises, enterprises should establish a perfect effect assessment system for manufacturing enterprises. By comparing the productivity, product quality, market share and other indicators before and after digital transformation, the effect of the dual innovation development mechanism of digitally empowered manufacturing enterprises can be assessed. The effect assessment of dual innovation development mechanism can be combined with the digital transformation strategy, the strong support of the top layer that is the promotion of the underlying technology, the establishment of data-driven decision-making mechanism, and the cultivation and introduction of digital talents, to help enterprises to fully understand the role of digital empowerment in the development of dual innovation in the manufacturing industry intermediary role and effect, and at the same time, to provide enterprises with improvement and optimization programs, to further consolidate the digitalization of the manufacturing industry as well as the dual innovation. Innovation. Digital

empowerment of manufacturing enterprises' technological innovation ability to enhance the level of manufacturing intelligence, intelligent transformation of the manufacturing industry to provide a new transformation ideas, manufacturing sectors can reduce the single increase in R & D investment brought about by the uncertainty and high cost of nature, through the depth of the integration of digital technology and manufacturing technology for the manufacturing enterprise's innovation output and intelligent transformation to provide a convenient "breakthrough method", which for the technological innovation of manufacturing enterprises and intelligent transformation. Through the deep integration of digital technology and manufacturing technology, it provides a convenient "breakthrough method" for the innovation output and intelligent transformation of manufacturing enterprises, which provides a solution to the bottleneck problem of technological innovation[17] . To summarize, the assessment system penetrates into all aspects of enterprises and opens up the veins of all levels and fields. At the same time, manufacturing enterprises can also assess the impact of digital transformation on the internal and external environment of the enterprise through user satisfaction surveys, employee satisfaction surveys, etc., which can provide support for policy making by the government and related organizations, bringing a circular effect. As shown in Figure 1 below:

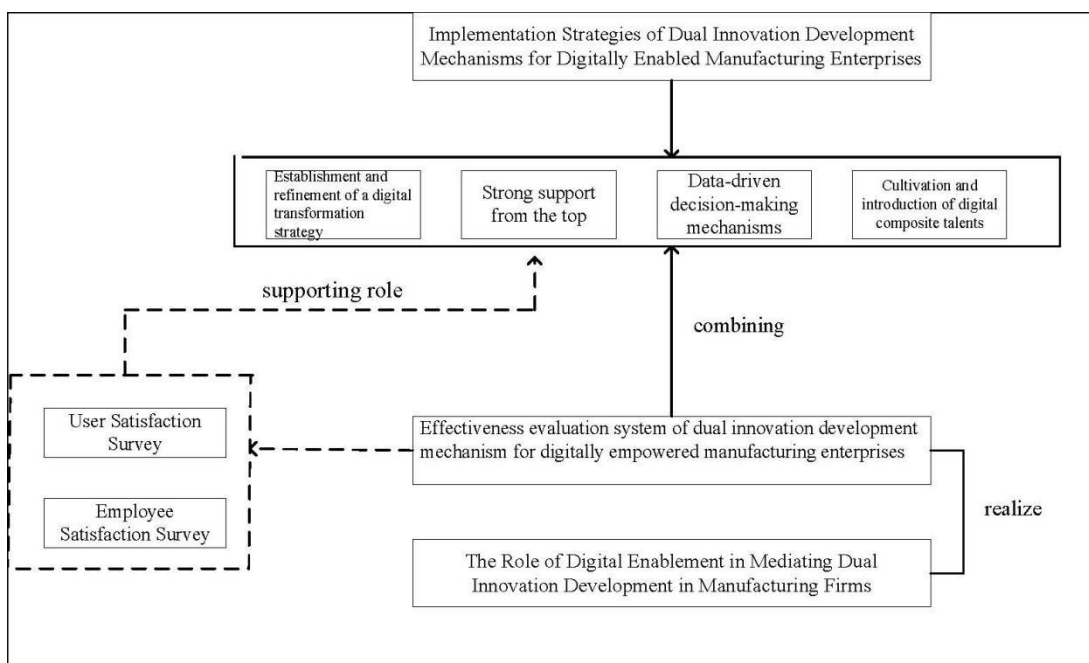


Fig. 1 Implementation strategy of dual innovation development mechanism for digitally empowered manufacturing enterprises

The establishment of dual innovation development system for manufacturing enterprises starts from the four aspects of strategy establishment, top-level design, data-driven decision-making and digital talents, pursuing new technologies and new modes while focusing on the optimal allocation of existing resources and capabilities, which is the key element that distinguishes dual innovation from ordinary innovation, and the balance between the two will help enterprises to maintain sound development in the fast-changing market environment. At the same time, the establishment and improvement of digital transformation strategy, top-level support, data-driven decision-making mechanism, and the cultivation and introduction of digital talents provide support for the dual innovation effect assessment system of manufacturing enterprises, promote the circulation of enterprise elements, and drive the high-quality development of manufacturing enterprises in a circular manner.

5. Conclusions

Digital empowerment for dual innovation and development of manufacturing enterprises can be summarized as follows: digital empowerment exists in manufacturing enterprises in a multi-dimensional form, and

according to the different forms of expression, digital empowerment in the form of direct and indirect empowerment further strengthens the enterprise's information processing ability, knowledge management ability and external cooperation ability. Following the principle of "digital empowerment - dual innovation & enterprise development", grasping the general background of digital empowerment, based on new platforms and new technologies, enterprises explore the unknown and look for market opportunities, laying the foundation for the development of dual innovation in manufacturing enterprises; at the same time, dual innovation in digital empowerment can be realized in a variety of ways. At the same time, dual innovation plays an intermediary role in digital empowerment and manufacturing enterprises, bringing new value to manufacturing enterprises and forming a closed-loop effect. Digital empowerment makes up for the lack of access to resources through big data integration, strengthens information acquisition and processing capabilities, safeguards infrastructure, digital drive and talent training, promotes organizational learning, and expands the scope of its services. The combination of Digital Enablement and Dual Innovation in both technology as well as ideas further brings new opportunities to empower manufacturing companies. In summary, the chapter explains how digital enablement can promote dual innovation by enhancing enterprise capabilities. Inheriting the foundation of the previous work on the promotion of digital empowerment in enterprises, it emphasizes the development of dual innovation in manufacturing enterprises in the context of digitization, further connects digital empowerment and dual innovation as well as distinguishes the difference between dual innovation and ordinary innovation; at the same time, this paper explains how digital empowerment promotes dual innovation in manufacturing enterprises and the principle of its innovation mechanism, and further elaborates on the dual innovation implementation strategy and dual innovation development strategy of digitally empowered manufacturing enterprises. At the same time, this paper explains how digital empowerment promotes dual innovation in manufacturing enterprises and the principle of its innovation mechanism, further explains the implementation strategy of digital empowerment and the effect evaluation system of dual innovation development mechanism, and organizes the chain of dual innovation development in manufacturing enterprises under digital empowerment. However, there are still some limitations in the enterprise research: for example, the problem of digital divide in the digitalized area is still not solved, the risk of the integration of investment and financing for innovative new enterprises is unknown, the technical implementation of the future manufacturing enterprises in the digital empowerment of the dual innovation development in the context of the road is full of challenges, and the uncertainty brought by the diversification of digital talents, and so on. For digital empowerment and dual innovation, its research theory is worth further exploration; for dual innovation exploration process, this paper is based on strong theory, for the combination of theory and practice to be further implemented, such as entering a wide range of characterization of the enterprise market, in a more grounded strategic policy to compare and analyze the performance of the operation of different enterprises; secondly, for the innovation and development process of manufacturing enterprises Secondly, the avoidance mechanism of third-party influence on manufacturing enterprises in the process of innovation development is yet to be perfected, during which the exploration involving interdisciplinary fields can be further extended to the regional scope to find the variables brought by external factors. Finally, through the integration of digital empowerment and dual innovation in the manufacturing sector, there is room for publicity on the positive impact on society; according to the viewpoint of the two sides of the coin, the dual impact on society, such as the uncertainty of whether the enterprises under the pace of digitization are digesting and absorbing, and effectively integrating, and so on.

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