

Innovation Research on Digital Transformation of Guangxi Manufacturing Enterprises——Case Analysis Based on Several Manufacturing Enterprises in Guangxi, Including Liugang, Wuling, and Liqun

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Abstract: As a typical representative of heavy industry in the southwest region, the development of Guangxi's manufacturing industry is constrained and limited by advanced manufacturing enterprises from both domestic and foreign sources. Therefore, it is crucial to consider a new path of development. In the context of Digital transformation of China's economy, this paper takes Guangxi Liuzhou Iron and Steel Co., Ltd., Yanjing Brewery (Guilin Liqun) Co., Ltd. and SAIC GM Wuling Automobile Co., Ltd. as representatives to analyze how manufacturing enterprises can complete Digital transformation through technological change, and then analyzes the path of Digital transformation for manufacturing enterprises to digitize Provide reference and support for intelligent transformation and upgrading.

Keywords: Guangxi; Manufacturing enterprises; Digital transformation

1. Introduction

In the 14th Five Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of Vision Goals for 2035, China proposed to actively promote digital development, build a digital China, promote Digital transformation of the manufacturing industry, and promote the transformation and upgrading from "Made in China" to "Smart Manufacturing in China". With the rapid development of artificial intelligence, big data, cloud computing and other emerging information technologies, manufacturing enterprises must carry out Digital transformation to achieve sustainable development. In the context of Digital transformation, the global competitiveness pattern of enterprise groups and competitive industries has undergone major changes, the consumption standards and quality required by consumers have been further upgraded, and new forms and models have flourished; On the other hand, after years of development, China's manufacturing industry has made tremendous strides in terms of technological content and overall scale. At the same time, the "Industrial Internet" plan of the United States and the "Industry 4.0" plan of Germany mark the arrival of a new round of industrial transformation. The deep integration of digital technology and traditional manufacturing will greatly change the business model, industrial chain and value chain of traditional manufacturing industry.^[1]

Some manufacturing enterprises in China, such as Haier, TBEA, Sany Heavy Industry and Kute Intelligent, have actively explored Digital transformation and achieved great success. However, in fact, the practice of Digital transformation of manufacturing enterprises in China is not optimistic, and manufacturing enterprises are faced with the realistic problems of insufficient power of Digital transformation and poor transformation performance. On the one hand, the high cost of digital reconstruction and fierce digital competition have caused many enterprises to stagnate. According to McKinsey's survey of more than 800 traditional manufacturing enterprises around the world, more than 85% of enterprises have not made substantial progress in Digital transformation. Manufacturing enterprises have the common phenomenon of "not turning, unwilling to turn, dare not turn" because of their weak Digital transformation capability, high cost and high risk. On the other hand, for many manufacturing enterprises in the early stage of Digital transformation, it has become a fact that little effect has been achieved. The report "Research on the Digital Transformation Index of Accenture Chinese

Enterprises in 2021" shows that only about 16% of digital leading enterprises can continue to make profits by virtue of their perfect digital capabilities, but for the vast majority of non leading enterprises, Digital transformation has put them in a dilemma of "not transforming and waiting for death, transforming and looking for death". In this context, how to enhance the power of Digital transformation of manufacturing enterprises, improve the economic benefits of manufacturing enterprises after Digital transformation, and help manufacturing enterprises achieve high-quality sustainable development has become an important task of economic development at this stage.

So how can traditional manufacturing enterprises innovate and seek new development paths in the Digital transformation environment? As a typical representative of Southwest Heavy Industry, the development of Guangxi's manufacturing industry is constrained and restricted by advanced manufacturing enterprises both domestically and internationally. Considering that opening up a new development path in the changing situation is very important. If the Digital transformation is appropriate, it will greatly improve the industry competitiveness of enterprises and regions and maintain a high level of development for a long time. Based on this, this paper takes China's Digital transformation environment as the background, and takes Guangxi Liuzhou Iron and Steel Co., Ltd., Yanjing Beer (Guilin Liquan) Co., Ltd. and SAIC GM Wuling Automobile Co., Ltd. as the representatives to study how manufacturing enterprises complete Digital transformation with the help of technological change under the guidance of national strategic policies, and then analyze the path of Digital transformation of enterprises, Deepen the application of big data in manufacturing enterprise innovation, and provide reference and support for manufacturing enterprises to carry out Digital transformation and intelligent upgrading.

2. Case Analysis

2.1 *Organizational structure tends to be networked and flattened*

Compared to traditional linear functional or departmental organizational structures, under the promotion of digitization, forming a networked organization can more effectively achieve information flow, reduce communication barriers, and further improve office efficiency. Liugang Group adopts an integrated ERP system based on intensive sharing and actively promotes it, enabling the entire group to be digitally empowered. This project provides a business interface that integrates various business processes and their corresponding resources, allowing each business operation to be directly carried out on the system.^[2] Allowing relevant employees to work on the pages they need greatly improves office efficiency. Due to the unified interface, managers can also effectively supervise and control the handling of business in a timely manner, and evaluate the work performance of each employee based on the records left by the platform, allowing employees to more seriously and rigorously participate in their work, and providing a basis for salary allocation for leaders. At the same time, it also facilitates real-time control of each business, providing an effective factual basis for managers to make decisions on the development direction of the enterprise. Under the guidance of digitalization, a networked organizational structure can more effectively slow down the approval process, enable organizations to handle various business and related conflicts more flexibly, reduce the cost of obtaining information, effectively avoid information asymmetry, and help business leaders take a holistic view and make decisions that are more conducive to the company's sustainable competitiveness.

At the same time, digital technology has also accelerated the trend of flattening the organizational structure of manufacturing enterprises in Guangxi. The IoT data of Liugang Group is connected to Jiandaoyun through API, and relevant reminder functions are set up to further improve the emergency mechanism of the enterprise. Once a situation occurs, the relevant person in charge can be directly contacted to take relevant measures and response plans. To avoid missing the best opportunity. For example, in the past, the application for a hazardous work permit could take as little as two to three hours, and as much as one or two days. And it will also generate a large number of documents. The storage of documents also consumes a lot of costs. Now, it only takes thirty minutes to complete a series of business transactions. Enable the staff to enter production as soon as possible. Moreover, the paperless process improves work efficiency, alleviates resource consumption to a certain extent, and effectively solves the problem of keeping relevant documents. Through digital technology, information can be directly delivered to relevant personnel to prevent serious consequences caused by delayed messages due to layers of approval, absence of approvers, etc.^[3]

Organizational structure is a major characteristic of an enterprise, which not only highlights the division of labor and processes, but also reflects the corporate culture and comprehensive strength. ^[4]A

good corporate structure can improve office efficiency and improve office quality. Digital technology can meet lower cost office needs through the sharing and rapid transmission of information, as well as paperless office work, thereby ensuring the cohesion of enterprise funds.

2.2 Marketing models tend to be more precise and refined

In addition to being more in line with market demand, the application of digital technology can also meet more personalized consumers. ^[5]As a core business module, Wuling Automobile relies on continuous research and development of key components to continuously retain and attract consumers. On this basis, Wuling Motors gradually adds different seats and models according to consumer needs, and different seats and models do not affect the overall quality of the vehicle, but rather better meet the personalized needs of consumers. At the same time, Wuling Automobile has turned its attention to new energy vehicles, matching the development of intelligent networking and autonomous driving technology, actively responding to market and policy needs, and establishing a good corporate image. At the same time, Wuling has independently designed a car networking cloud platform. This cloud platform can implement safety monitoring of vehicles and also enable customers to better enjoy related services. Whether users have charging needs, want to know the condition of the car, or need to schedule maintenance services, they can operate through this platform. Driven by digital technology, enterprises can better understand customer needs and develop and manufacture more personalized products tailored to different customer needs. Additionally, customers can rely on digital technology to provide feedback on their products, achieving a virtuous cycle of continuous product optimization. Let Wuling Automobile continue to grow, strengthen, and do well.

Due to the continuous improvement of material living standards, the current market has gradually become aligned with consumers. And consumers are also more focused on their own needs and personalized pursuits. This is a manifestation of the continuous progress of society. Utilize digital technology to enhance communication with consumers and provide them with sufficient platforms to provide feedback. ^[6]This not only makes products more in line with consumer needs, but also better ensures product quality, thereby occupying a more favorable position in the market and enabling enterprises to obtain sustainable competitive advantages.

2.3 The production mode tends to be modular and flexible

Due to the precision and refinement of marketing models, enterprises will pay more attention to consumer needs in the production process of products. Due to the varying demands of different consumers for products, there are also new requirements for the production process, which has prompted the production model to continuously move towards flexibility and modularity. ^[7]In recent times, Liugang Group has achieved intelligent equipment, intelligent production, and digital management through a digital chemical plant with full process and production line. For example, at the Liuzhou base, emphasis is placed on the construction of intelligent scenarios, including the use of AI technology to identify flames, the addition of automatic welding robots, and the use of the country's first medium plate intelligent welding robotic arm. The application of these technologies not only improves production efficiency, but also greatly improves product quality, effectively avoiding high-risk operations for workers, and greatly ensuring the safety of employees' lives. At the same time, the base can also control production, adjust the quantity of production according to different needs, and prevent waste of resources and costs. This is production capacity flexibility. Among them, the 5G unmanned driving system, 5G+AI intelligent loader, weld seam "cloud eye" intelligent inspection, cloud AI predictive maintenance, and 5G solid waste cloud recognition adopted by Liugang are all pioneers. This is an important breakthrough in the combination of heavy industry enterprises and digital technology. This not only enhances Liugang's development ability, but also its inevitable choice in responding to market competition. The operational risks in the steel industry cannot be underestimated, and there are very strict regulations for the ability requirements and job protection of relevant personnel. The approach of Liugang Group to promote flexible maintenance of production systems is not only to improve production efficiency through digital technology, but also to greatly protect the safety of employees, make enterprise management more humane, and establish a good image for the enterprise.

Digital technology promotes not only flexibility, but also modularity. The R platform launched by Wuling Automobile is based on eight major module systems, including front suspension, front-end module, front cabin, and front floor. Although these eight modules together constitute the structure of Wuling Automobile, they are not inseparable, but can all be designed independently and flexibly. Flexible architecture and separated focus enable efficient completion of work without interference from other

parties during the process of multi person collaboration. Due to the decomposition of modules, maintenance, debugging, and upgrading of each module can be freely carried out, effectively reducing related costs. ^[8]At the same time, each module can make relevant production adjustments based on consumers' wishes, fully meeting consumers' pursuit of personalization. Moreover, in the process of modular production, the same emphasis is placed on the safety configuration of the platform, which can provide consumers with greater protection during the use of cars.

In summary, both Liugang and Wuling's digital technology can make their production process more flexible and modular. Not only can enterprises better adapt to market demand and policy development, but they can also bring products closer to consumers to a greater extent, better meet their needs, and thus enhance the brand and corporate image of the enterprise.

2.4 Product design tends towards version and iteration

Digitalization of enterprises promotes the trend of version and iteration in enterprise product design. By utilizing digital technology to deeply mine data based on the needs of target customers and obtain more accurate user profiles, enterprises can further enhance their understanding of customer needs and provide higher quality and more diverse products. It can also change the blind pursuit of customer needs in product design in the past, while ignoring the differences in customer groups, and failing to timely respond to the needs of different customer groups, leading to differentiated design and production. Faced with the uncertainty of market demand, the manufacturing industry can enhance its ability to adapt to external environmental changes by utilizing digital technology for user identification, agile learning, and iterative trial and error. ^[9]But if enterprises excessively pursue perfect products, it will actually delay the best time to enter the market, which is not conducive to increasing the market share of products in promotion. And digital technology can enable enterprises to quickly provide a more feasible product with limited resource expenditures after discovering market vacancies. ^[10]

By using the DRP system, Liugang can comprehensively and multilayered promote the product design reform that meets the market demand, and can conduct in-depth mining of information on order management, transportation management, inventory management, after-sales service management, sales forecast, decision analysis support and other aspects to design products that meet the market demand; Timely adjust product design according to market demand and iterate the product. Through Digital transformation, Liugang Beer has occupied nearly 80% of the market share in Guangxi.

2.5 The employment model tends to be diversified and flexible

For manufacturing enterprises, labor input is an extremely important part of enterprise costs. ^[11] With the expansion of enterprise scale, the demand for labor under the traditional manufacturing development model continues to increase, causing a significant burden on manufacturing enterprises due to the increasing labor costs. ^[12] Take Guangxi Liugang Group before the Digital transformation as an example. At that time, the workers' production reports of Liugang were submitted in the form of a pyramid. At the bottom, the workers submitted data reports respectively, and then submitted them layer by layer, which was inefficient. However, the data collaboration tools in the market at that time were heavily coded and not flexible enough. To this end, Liugang launched a Digital transformation with the original intention of solving the labor problem. Among them, the main focus is on the collection of data reports in the manufacturing workshop. Liugang connects the workshop data with nails, enabling real-time updates of data and real-time feedback on anomalies, facilitating managers to understand the production situation in the manufacturing workshop in real time and adjust production.

Especially during the outbreak of the epidemic, Liugang will continue to extend its Digital transformation to reduce labor costs. As a steel production enterprise, the three major links of "manual code copying, daily inspection, and equipment maintenance" are the largest labor cost investment of Liugang Group. Taking the cold rolling plant of Liugang as an example, there are a total of 8 workshops and 11 departments in the plant. However, in the five processes of producing cold rolled products, the production information generated by each process needs to be passed down to the next level by workers through manual code copying. This manual code copying is highly prone to data errors, which can lead to subsequent product delivery errors. Therefore, in order to reduce data errors, the workshop often replaces new employees to input information at regular intervals. After using the nail system, Liugang Group has achieved the unmanned operation of some positions, greatly saving labor. Liugang Group uses unmanned vehicles to transport products; In the process of labeling, robots are used to automatically label; In terms of steel coil storage and delivery, the PES system has successfully connected the nails,

which can avoid the phenomenon of manual errors leading to incorrect shipment.

At the same time, in the current context of industrial transformation and upgrading, and the urgent need for transformation and upgrading of labor knowledge structure, the traditional employment mode of manufacturing enterprises has exacerbated the development difficulties.^[13] At the same time, the contradiction between this labor structure and the technology required by enterprises will prolong the time for manufacturing enterprises to promote new technologies and reduce labor productivity. Liugang Group matches manufacturing enterprises with the required high-tech labor force/high-tech enterprises through the Internet, and cooperates with enterprises such as Alibaba Cloud, Liuzhou Mobile, Huawei, and China Soft International. By establishing flexible cooperative relationships, it has built a distinctive talent training center through the "5G+Craftsman School Alliance and Research Base Cooperation Framework Agreement", It also enables the effective flow of technical talents between cooperative enterprises and maximizes their effectiveness. Ultimately, the employment model will become more diversified and flexible.

2.6 The research and development model tends to be open-source

In the era of digital economy, open and open-source R&D models can enable enterprises to better adapt to the needs of market development and achieve greater development.^[14] By gathering diverse knowledge, exploring innovation potential, and building an innovation ecosystem. In a dynamic and uncertain market environment, the diversification of participants within the ecosystem provides more options and solutions for information sharing and problem-solving, as well as improves the stability of the system and its ability to cope with unknown risks.^[15] Enterprises can reduce the cost of innovation, improve the quality of innovation, better adapt to changes in user needs, and be more sensitive to market opportunities through the professional knowledge information provided by internal personnel in the ecosystem.^[16]

Based on the integration and analysis of millions of user demand data using digital technology, Wuling has proposed the "One, Two, Five" strategy, with the aim of using Guangxi New Energy Vehicle Laboratory as the source to drive the construction of two million level product clusters of pure electricity and hybrid, as well as five billion level industrial clusters of batteries, electronic control, electric drive, robots, and commercial services, fully tapping and integrating advantageous resources for collaborative development. At the same time, Wuling also proposed the "1+3+N" model of research engine with enterprises as the main body, investing 10.2 billion yuan to build a full chain research and development system of "applied basic research - development of common key technologies in industrialization - transfer and transformation of achievements - industrial incubation - market promotion", and establish the Guangxi New Energy Vehicle Laboratory. The laboratory gathers academicians, doctoral students, graduate students, experts, and industry research and development personnel, with a complete talent base. The first batch of metal material forming laboratories, controller and chip application laboratories, smart voice laboratories, and power batteries and key materials laboratories constructed by this laboratory have comprehensively explored the high-quality automotive steel technology and process applications, independent development of software and hardware, smart voice interaction, and tackling core battery issues that need to be faced in the development of new energy vehicles. On the basis of innovative research and development models, SAIC GM Wuling's cumulative sales in 2021 were 1760176 vehicles, a year-on-year increase of 13.5%. Among them, the sales of Wuling brand reached 1449367 units, a year-on-year increase of 17%, making it the top selling single car company for national brands. Wuling Motors has now become one of the most valuable brands in the Chinese automotive industry.

3. Current Situation and Countermeasures of Digital Transformation of Manufacturing Enterprises in Guangxi

3.1 Establish a model of Digital transformation and lead the development of SMEs

At present, some manufacturing enterprises in Guangxi often face the trend of digitization and are at a loss, especially small and medium-sized manufacturing enterprises. They are often unable to cope with such challenges alone, resulting in a disadvantage in the digital market competition, which is not conducive to the overall development of society. Therefore, the government and relevant industry institutions or associations should play a regulatory role, and form a demonstration effect by setting up a typical Digital transformation enterprise in the province, providing a model for other SMEs' Digital transformation, and leading the digital development of SMEs. For example, Fangcheng Hong Kong,

Macao and Canada Cereals and Oils Industry Co., Ltd., which won the title of "2021 Intelligent Manufacturing Demonstration Factory", is a model of intelligent manufacturing in enterprise Digital transformation, and uses Kingdee Cloud Star Sky as the integrated cloud platform of intelligent manufacturing data for Australia and Canada Cereals and Oils. Through the reasonable layout and process settings of financial ERP, supply chain, production manufacturing, direct connection between banks and enterprises, cloud home collaboration, and enterprise customization (such as bulk commodity futures trading, unmanned intelligent weighing system, production line data, etc.) modules, lean production management, intelligent warehousing, production plan optimization, precise quality traceability, sales driven business optimization, and supply chain visualization are ultimately achieved.

At the same time, the government of Guangxi Zhuang Autonomous Region has established Digital Guangxi Group, an enterprise that promotes Digital transformation of enterprises, to help small and medium-sized enterprises carry out Digital transformation. Digital Guangxi Group has been endowed with the strategic positioning of being a "platform enterprise for the Party Committee and Government of the Autonomous Region in the field of digital economy" by the Autonomous Region government, namely the main body for the operation and development of Guangxi government big data, the investment platform, cooperation platform, and incubation platform for Guangxi's digital economy industry; And shoulder the special mission and responsibility of ensuring data security, operating data assets, and unleashing data value, we are committed to building a collaborative and win-win big data industry chain and digital economy ecosystem, cultivating Guangxi's "unicorn" enterprises, assisting the digitization of small and medium-sized enterprises in Guangxi, and promoting high-quality social and economic development in Guangxi. In the field of sugar industry, the Guangxi Sugar Big Data Cloud Platform operated by Digital Guangxi Group, as the only official sugar industry cloud platform, is the first "economic industry cloud" in Guangxi. The platform covers various links related to sugar agriculture, industry, commerce, and finance, with over 320000 registered enterprises, helping Guangxi's traditional industries achieve digitization and the secondary takeoff of related industries. In the field of information technology application innovation industry, we will work together with multiple forces to jointly build the China ASEAN Digital Economy Industrial Park and strive to create the "China's First Information and Innovation Park". As of March 2023, the first batch of companies in the industrial park to sign contracts has reached 34, covering multiple fields such as intelligent manufacturing, domestic operating systems, databases, middleware, and commercial passwords. Among them, Zhongke Alpha, the first batch of companies to enter the park, has officially put into operation in the industrial park and built four wireless chip SIP packaging production lines. The products are exported to both domestic and foreign markets, and are expected to drive the landing of several billion yuan electronic information industry projects in the industrial park. Digital Guangxi Group also collaborated with Shenzhen Baode Computer Company to build a self controlled computer production base with an annual output value of over 600 million yuan, achieving a "zero breakthrough" in Guangxi's independent production of computers and servers. Next, Digital Guangxi Group will continue to build and improve industrial parks, continuously provide modern standard factories and professional factories, and fully provide strong infrastructure support for the development of the entire industry chain of Xinchuang. It is expected that by 2025, there will be over 150 enterprises settled in the industrial park, driving investment of over 7 billion yuan, direct revenue contribution of over 30 billion yuan, introduction and incubation of over 3 listed companies, and guidance to accelerate the construction of digital economy industry innovation clusters. ^[17]

3.2 Strengthen top-level design

The Digital transformation of an enterprise can not be achieved only by the efforts of individuals or individual departments. Instead, it requires the whole staff to make continuous improvement in the direction of Digital transformation, constantly improve the internal development mechanism and incentive mechanism of the enterprise, so that the enterprise can truly apply digital technology to the operation of the enterprise. Taking Liugang Group as an example, during the 14th Five Year Plan period, Liugang Group emphasized the national big data strategy and the strategy of strengthening the country as important guidelines, focusing on promoting the digitalization of its steel manufacturing process. And the strategy of Digital transformation will be infiltrated into the enterprise, so that the whole enterprise will take digitalization as the key point from strategic planning, enterprise management, operation process and other aspects, and promote the whole enterprise to achieve Digital transformation.

In the report of the 20th National Congress of the Communist Party of China, it was pointed out that "accelerate the development of the digital economy, promote the deep integration of the digital economy and the real economy, and create a digital industry cluster with international competitiveness." However, the overall level of digitalization of enterprises in Guangxi is relatively low, and it is even more necessary

to respond to national policies and directions. Strengthen the cultivation and introduction of relevant talents, accelerate the research and application of relevant core technologies, combine digital technology with the production and operation of manufacturing enterprises, enterprise management, and even corporate governance, and establish a digital benchmark enterprise.

3.3 Emphasize talent cultivation and optimize the labor structure of enterprises

For a long time, low-skilled personnel have occupied a dominant position in the skilled talent team of the manufacturing industry in Guangxi region, while highly skilled personnel account for a relatively small proportion. However, in the context of the booming digital economy, the demand for highly skilled labor by enterprises is also constantly increasing. Therefore, only by strengthening the cultivation of multi-level talents can we effectively address the problem of mismatched supply and demand in the labor market, optimize the labor structure of enterprises, and enhance the digital level of the manufacturing industry in Guangxi region.

Firstly, we need to strengthen the cultivation of innovative talents in key technologies. Innovative talents are an important force in Digital transformation of manufacturing industry. To cultivate innovative talents, it is necessary to focus on the key technological fields and key technological links of the manufacturing industry development. Enterprises are required to increase their R&D investment internally, improve the innovation ability of R&D personnel, and attract talents from all over the world externally. Secondly, we need to strengthen the cultivation of highly skilled talents. Skilled talents are an important support for promoting the digital transformation of modern manufacturing industry and achieving high-quality development. To cultivate skilled talents, enterprises need to actively absorb foreign talents while providing vocational and technical training for existing personnel to further improve their skill levels. Finally, it is necessary to strengthen the cultivation of international management oriented talents. Management oriented talents are an important force for the transformation and upgrading of the manufacturing industry. Enterprises can attract high-end talents in areas such as management coordination, market sales, and product research and development to the outside world; Develop a management oriented talent training plan internally, establish a talent flow mechanism and good incentive mechanism between departments, and strengthen the overall coordination role of management oriented talents in the work of various departments. At the same time, we support and encourage employees to visit and learn from multinational companies such as the Fortune 500 to deepen their understanding and mastery of international standards and advanced enterprise management systems. [18]By strengthening the cultivation of innovative, skilled, and managerial talents, we aim to form a first-class innovation team and expand the team of highly skilled talents, thereby promoting the overall construction of the talent team in Guangxi's manufacturing industry and assisting in high-quality economic development.

3.4 Establish a systematic digital organizational structure

As one of the important manufacturing provinces in southwest China, Guangxi's enterprises have undergone Digital transformation for a shorter time than those in eastern China. Restricted by the capital, technology, talent and other conditions in this region, the transformation progress is also slower than that in eastern China, and the digital infrastructure is not complete. It is urgent to form a systematic digital organizational structure. The digital economy is a process that comprehensively utilizes information technologies such as the Internet, cloud computing, blockchain, and the Internet of Things to optimize the efficiency of enterprise resource allocation, reduce costs, and improve labor productivity. Therefore, the systematic, institutionalized and systematized digital organizational structure is particularly important in the Digital transformation of Guangxi's manufacturing industry. The construction of a digital organizational structure will provide available resources for the entire digital team, creating connection ports in multiple fields such as technology, systems, and business, thereby shaping the overall digital leadership organization. The construction of digital leadership organizations has promoted the agility and flexibility of leaders in different fields, opened up channels for information sharing and resource collaboration of digital teams, broken information silo and resource barriers, and provided a platform for communication and collaboration. Building a digital organizational structure for the team can make the collaboration of the entire team more systematic and standardized, thereby improving the team's office efficiency.

3.5 Promote Digital transformation of enterprises from agglomeration to diffusion

At present, in the Digital transformation of manufacturing enterprises in Guangxi, there is a wide gap between enterprises and cities. Manufacturing enterprises with a high degree of digitalization are often concentrated in Liuzhou, Guilin and other places. The goals and technologies of digitalization among enterprises are also different. It is difficult to connect the digital systems of different enterprises with digital technology to achieve data sharing. At the same time, because the scale of manufacturing enterprises in Guangxi also has a large gap, especially the small and medium-sized enterprises among them, due to lack of capacity and resources, it is often difficult to promote Digital transformation, unable to change the traditional model, so these small and medium-sized enterprises cooperate, concentrate capital and technology to create a networked collaboration platform, to achieve win-win. At the same time, there is also a contradiction between the distribution of colleges and universities and the distribution of manufacturing enterprises in Guangxi. The talents needed by manufacturing enterprises in Digital transformation are often far away from the city where the enterprises are located, so we should strengthen school enterprise cooperation^[19], and encourage colleges and enterprises to jointly cultivate talents. So as to further promote the process of Digital transformation of Guangxi manufacturing enterprises from agglomeration to diffusion, and further improve the overall level of digitalization of Guangxi manufacturing enterprises.

4. Conclusions

In order to solve the problem of Digital transformation of manufacturing enterprises in Guangxi, this paper investigated and analyzed several manufacturing enterprises based on Liugang, Wuling, Liquan and other manufacturing enterprises in Guangxi. Through field investigation and literature analysis, the following conclusions were obtained:

(1) Guangxi manufacturing enterprises have made full use of digital technology, which has greatly improved their internal organizational structure, production mode, and product design.

(2) With the application of digital technology, the marketing and R&D models of manufacturing enterprises in Guangxi can integrate and analyze the demand data of millions of users, fully understand market demand, and build an innovation ecosystem.

(3) In Guangxi, several manufacturing enterprises with large influence and high market share, such as Liugang, Wuling and Liquan, often benefit from the advantages of their own capital, technology and other resource endowments in the process of Digital transformation, and are ahead of the wave of digitalization of manufacturing enterprises in Guangxi.

(4) The Digital transformation of manufacturing enterprises in Guangxi has a large gap between enterprises and cities. Enterprises with high degree of digitalization are often concentrated in Liuzhou, Guilin and other places. The digitalization goals and technologies used by enterprises are also different.

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