

Research on Digital Upgrading Strategy of Small and Medium Scale Household Appliance Industry in Foshan, Chinese Mainland

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Abstract: Foshan City is located in the core hinterland of Guangdong Hong Kong Macao Greater Bay District. As the world's home appliance capital, in the face of the accelerated transformation of the home appliance industry to the network, digital and intelligent direction, it promotes the small and medium-sized home appliance industry to use the latest digital technology to drive the innovation of organizational business models and the reconstruction of business ecosystems, so as to achieve business transformation, innovation and growth. The author summarizes the successful experience of digital transformation and upgrading of Large household appliance enterprises in Foshan City to promote the formation of industrial cluster effect in small and medium-sized household appliance industries, and proposes digital transformation strategies for small scale household appliances industry.

Keywords: Small and Medium-Sized Enterprises; Digital Transformation; Household Electric Appliances

1. The world economic situation continues to deteriorate, and China's industry is facing difficulties in industrial transformation

Since COVID-19 began to spread in 2020, it has become an external environmental factor that cannot be ignored in the process of enterprise development. The manufacturing model of Guangdong Province, China, which has lasted for more than 20 years, has reached the stage where it is urgent to design and construct industry standards and create a new industry ecology. In the context of technological change required by the objective market environment, China has introduced a large number of supportive policies from top to bottom to promote and encourage provinces and major industries to carry out digital enterprise transformation. At present, the world situation is moving towards a struggle storm, and the western countries represented by Russia and Ukraine are engaged in hot war conflicts. Chinese Mainland and the world's No. 1 hegemon, the United States are engaged in a trade war. Geopolitical, military and trade risks in the Pacific Ocean are increasingly debated.

2. Status quo and difficulties of digital transformation of SMEs in Chinese Mainland

In the past three decades, low-end industries and industries with low added value in China, especially in the eastern coastal areas, have been unable to support China to win in foreign international struggles. Therefore, the development of Chinese enterprises will inevitably lead to transformation, and enterprise transformation cannot be separated from industrial digitalization. In particular, a large number of small and medium-sized enterprises in the east coast are facing the urgent need of industrial digital transformation. According to the data of China's fourth national economic census in 2018, Most enterprises in Chinese Mainland under medium-sized scale have contributed nearly 50% of tax, 60% of GDP, 70% of technological innovation and 80% of jobs to China. According to the Report on the Digital Transformation Path of SMEs released by Tencent Social Research Center, more than 70% of SMEs have urgent needs for digital transformation. Enterprises need to accelerate the pace of transformation, and constantly enhance their competitiveness in the wave of digitalization, networking and intelligence.

I think the above enterprises, as the largest group of enterprises with the most active capital in China, are the foundation of

China's real economy and the core pillar supporting the construction of China's modern industrial system and shaping its position in the global value chain. At the same time, the digital transformation of SMEs affects whether the company itself can win in the fierce market competition. At present, many enterprises do have many pain points in the transformation of digital intelligence. Specifically, first, small and medium-sized enterprises may have a weak management foundation, which is not easy to change, limiting the development of enterprises. Second, it is not easy for such enterprises to improve product delivery efficiency, so that when the number of orders increases sharply, the product quality is difficult to guarantee. Third, this is a common factor, that is, most small and medium-sized enterprises have a one-sided and stereotyped understanding of digital transformation, and believe that it is nothing more than using computers in more production scenarios. This makes SMEs unable to achieve the expected results. Once the digital transformation of an enterprise begins, it is bound to change the overall business process of the enterprise, and it is bound to urge the decision-making level and the executive level to make corresponding changes. This is a systematic project involving the whole process business. In this process, there are corresponding requirements for the proportion of R&D funds invested, the reserve of relevant digital talents within the company, and the infrastructure of various production links. However, there are many difficulties faced by SMEs at the financial level, and they cannot have convenient financing channels like large enterprises. Therefore, small and medium-sized enterprises cannot easily move towards digital transformation under the huge pressure of capital withdrawal and profit income and expenditure.

3. Analysis on the Current Situation of Transformation of Foshan Small and Medium Household Appliance Enterprises

At present, the home appliance industry is accelerating its transformation towards networking, digitalization and intelligence. The digitalization transformation is to use the latest network production technology, such as cloud services, high-speed big data computing, and artificial intelligence technology etc. and capabilities to drive the ways and methods of organizational business model innovation and business ecosystem reconstruction to achieve business transformation, innovation and growth. According to the existing household appliance industry, it is divided into two main use scenarios according to the participants: the first is the factory scenario with household appliance manufacturing enterprises as the core, covering R&D design, production and manufacturing, logistics warehousing, sales and other links; The second is the off-site scene with household appliance consumers as the core, including user interaction, value-added services, reverse logistics and other links. Specifically, in the production process, household appliances enterprises carry out various processes of the production line through high-speed networks, cloud services, etc., such as through the input of production line process robots such as picture detection, to improve production efficiency. With the transformation and upgrading of consumption, consumers require products to have personality, and put forward differentiated requirements for product shape and function. Therefore, the ability to make a variety of rigid products in the household appliance industry has become a difficult point in the effective configuration of equipment in the Internet era. The emergence of high-speed networks, cloud computing services and other technologies provides a great possibility of innovation for the "variety" combination of production equipment, Promote the change of resource allocation mode of production line. Support product control in the field of quality inspection. At present, with the improvement of quality control awareness and production standards, major household appliance manufacturers have very strict control over their own product quality. Often, a product requires nearly 100 quality control tests. If they still use the method of manual defect identification on external assembly lines, they can no longer meet the quality control needs of today's household appliance industry. In the field of production monitoring, intelligent monitoring is realized. Household appliance manufacturers need to install high-definition cameras in industrial parks, workshops, key production lines, R&D red areas and other areas for regional monitoring, security inspection, etc. At present, the monitoring equipment is installed in scattered locations, and more Wi Fi transmission is used. Multiple wireless access points need to be deployed, with high cost and low utilization. Under the high-speed network, the combination of multiple networks in the plant area makes it possible to conduct high-definition real-time monitoring. At the same time, it effectively manages monitoring equipment with higher density and large range, and provides support for high-speed computing and artificial intelligence identification technology through cloud services, so as to achieve remote monitoring, fault early warning, data analysis, and even remote diagnosis functions. In the field of back-end warehousing and logistics, efficient process

processing is realized. At present, the successful experience of digital transformation in the household appliance industry is mostly concentrated in the field of back-end warehousing and logistics, such as the AGV trolley working system of material delivery group, industrial sorting robot, and electronic warehousing management system. At present, in the field of household appliances, AGV dollies are used to realize joint production links such as distribution, transportation, finished products, and output of production materials, and to realize the wide application of AGV industrial robots to manage key production materials. In the field of terminal product monitoring, tens of thousands of large-scale equipment are being put into use in major factories around the world. How to monitor the status of these intelligent devices with the Internet of Things technology when they are authorized. If the appliance industry can achieve this in the digital era, it will greatly improve customer satisfaction. At the same time, the service cost can be greatly reduced by timely monitoring the use of products. Now, Chinese home appliance giants have begun to adopt the Internet of Things technology to realize the transmission and update of terminal product use status data. In the field of remote maintenance, there are a large number of production equipment in various power plants. However, the number of existing maintenance engineers is very limited, unable to meet the increasing demand for product wear and tear maintenance. At present, most home appliance factories have problems such as production line stoppage and production delay due to shortage of maintenance engineers. The industrial digital transformation of the household appliance industry must solve the problem of equipment maintenance. How to realize remote maintenance of engineers and equipment through intelligent network technology. Through the Internet of Things technology, maintenance engineers can establish a stable connection with the factory remotely, realize remote maintenance through high-speed network technology and virtual reality technology, and timely provide core technical guidance and technical consultation.

Foshan is an important node city in the Greater Bay Area of Guangdong, Hong Kong and Macao in China, with a GDP of more than one trillion yuan, ranking the third in Guangdong Province in terms of comprehensive strength, and the 17th city in China with a GDP of more than one trillion yuan. It is currently accelerating its construction into a model city of reform and opening up at a new stage. As the epitome of the development of China's industrial manufacturing city, Foshan has always played a model role in the industrial development of coastal cities in eastern China. As a big manufacturing city in China and the home appliance capital in the world, Foshan is one of the first cities in China to promote the digital transformation of enterprises. According to the public data of Guangdong Provincial Government, as of June 2022, there are 8000 industrial enterprises above designated size in Foshan City, of which more than 2800 have started the road of industrial digital transformation. In July 2021, Foshan Municipal Government released a policy document specifically promoting the upgrading and transformation of the manufacturing industry, and proposed that Foshan major cities and districts should jointly invest 10 billion yuan in the next three years to support the digital transformation of enterprises. Nanhai District and Shunde District also put forward to allocate 6.5 billion yuan and 5.5 billion yuan for digital manufacturing of manufacturing industry in three years on the basis of municipal policies. Last year, after consulting the public literature of the government, Foshan's annual public budget was 106.3 billion yuan, and 10 billion yuan should be allocated, which is 10% of the city's annual financial expenditure

The household appliance industry is an important pillar consumer goods industry in China's national economy. According to the data disclosed by the Ministry of Industry and Information Technology in July 2022, the operating income of China's household appliance industry in 2021 will exceed 1.7 trillion yuan, equivalent to 247.4 billion dollars, of which the export value will exceed 100 billion dollars, with a year-on-year growth of more than 4%; The total profit increased by more than 10% year on year, accounting for more than 50% of the world's product output in the fields of refrigerators, air conditioners, washing machines and color televisions. From January to September 2022, the total retail sales of consumer goods will be 32030.5 billion yuan, up 0.7% year on year. At the same time, with the popularization of the Internet in China and the rapid development of the Internet of Things and mobile terminals, the degree of digitalization of consumers in China has increased year by year, with nearly 1.1 billion Internet users, which is undoubtedly the largest consumer group in the smart home appliance market. The acceleration of urbanization in China has provided a strong market growth space for the household appliance industry. With the further promotion of urbanization, the overall household appliances have provided an extremely broad growth space for the development of the home appliance industry with more high-tech content.

From the perspective of the measures taken by Foshan Municipal Government to promote the household appliance manufacturing

industry, the first step is to start with large household appliance enterprises, such as Midea and Galanz, the world's top 500 household appliance leading enterprises, and then to Weiling, Rongsheng and Hisense Kelon, to carry out industrial digital transformation and upgrading in such large and medium-sized enterprises. We attach great importance to the leading and exemplary role of this type of enterprises in the household appliance industry. For example, Midea, one of the world's top 500 household appliances enterprises, Encouragement from local governments, has become a national industrial Internet platform in China. Assist small and medium-sized household appliance enterprises in transforming digital production. This will undoubtedly greatly promote the overall comprehensive reform of the household appliance industry in Foshan, promote companies with weak digital production strength to integrate into the wave of transformation and upgrading, and accelerate the large-scale application of digital technology. Midea Group, by building a "digital and intelligent demonstration factory", also conducts real-time monitoring and management of the major production divisions within the group through the information system on the front-end marketing end, production middle end, back-end logistics, capital end, application end, etc. Realize full resource sharing and effective collaboration of internal and external production, supply, sales and other chains. Finally, a set of digital AI manufacturing production system involving planning, decision-making and execution will be created to achieve full process and full scope business integration. Take Midea Kitchen Appliance Manufacturing Co., Ltd., a large and medium-sized household appliance manufacturer in Foshan, and Weite Vacuum Electronics Manufacturing Co., Ltd. as examples. Both of them are driven by technology to achieve digital transformation and upgrading. For example, they integrate 5G+industrial robots, cloud server energy and other intelligent manufacturing technologies to participate in production, and use intelligent industrial software systems to process huge production data. Midea Group has a voice in Foshan City and even in China with its strong economic capital and advanced digital production and management technology. It has become a model for the digital transformation of China's home appliance industry. Midea can assist thousands of middle and downstream suppliers and distributors in Foshan City to enter the digital field, and greatly improve the efficiency of production, sales, operation and logistics. Xiaoxiong Electric is a household appliance manufacturing enterprise located in Leliu Street, Shunde District, Foshan City. As early as 2008, Xiaoxiong Electric has seen that the advent of the Internet era will cause huge changes in the household appliance industry. Therefore, through the cooperation of the network and large e-commerce platforms, it has established a very perfect front-end marketing system. Xiaoxiong Electric conducts precise marketing for customers through big data analysis technology, and successfully explores young customer groups. On the production side, by paying close attention to the transformation of industrial digitalization, we also pay attention to the introduction of industrial Internet to connect the data of its major production bases, and fully integrate front-end marketing with back-end R&D, assembly, production, upstream and downstream supply chains to achieve intelligent production, digital decision-making, and accurate marketing. Create a very demonstrative digital factory, and realize the interaction between upstream and downstream suppliers of small household appliances industry. In a word, through the successful experience of digital transformation and upgrading of large and medium-sized household appliance enterprises, Foshan has successfully promoted the household appliance industry to form an industrial cluster effect, which is the advantage of the digitalization of Foshan's household appliance manufacturing industry and an example of the digitalization transformation of other cities in China.

4. Transformation Strategy of Foshan Small and Medium Household Appliance Enterprises

Promote the overall transformation and upgrading of China's home appliance industry through digital upgrading. This transformation is not partial, but to achieve all-round coverage and promote the overall digital transformation of the main body of the home appliance industry. The use of digitalization further integrates the construction, service and management of enterprises, markets, production, ecology, Internet of Things and scenes. Taking digital transformation as a main direction of the development of the household appliance industry requires new ideas and practical paths, which may be the right starting point. On the one hand, giving full play to the construction of digital platform is conducive to promoting the development and improvement of the unified large market of the domestic household appliance industry. On the other hand, it is conducive to horizontal dislocation competition, and improves the overall efficiency of development.

4.1 Change the concept of enterprise management and promote the formulation of transformation strategy

In the process of transformation and upgrading, it is inevitable to be hindered by inert forces. The key to the success of transformation is to change and break through the existing strategy and development model within the enterprise. The success of Midea Group's digital transformation depends on the management and relevant departments' understanding of the macro and micro environment and their determination to carry out digital transformation. As the strategy maker of an enterprise, you should first have advanced conceptual awareness, understand the current situation of the enterprise, integrate Internet thinking into your work, transfer all links and activities in enterprise management from offline to online, and change traditional manual management into digital management. The enterprise should also strengthen the publicity of digital transformation and path, and create a transformation atmosphere within the enterprise, Ensure that all employees establish digital thinking and Internet thinking in their ideas.

4.2 Increase the capital investment of R&D department and absorb and cultivate high-end scientific research talents

The digital transformation of enterprises can not be separated from capital investment and talent support. In order to introduce digital and intelligent production and operation mode as soon as possible. Since the practice of digital transformation, Midea has been increasing its R&D investment and focusing on investment. Put it in scientific and technological innovation, quality improvement, robot and industrial automation, digital capability improvement, e-commerce channel expansion and new retail channel construction, new brand marketing, global operation capability improvement, and overall smart home strategy implementation to effectively guarantee the implementation of the transformation strategy.

4.3 Actively apply for government subsidies for industrial digital transformation

Government subsidies can stimulate and promote enterprises' R&D investment, and enterprises can apply for government subsidies to carry out R&D innovation projects. Select employees with low resistance to change and high innovation, regularly conduct skills training for employees involved in digital transformation, develop and retain high-end talents to improve production automation, and adapt to the development of industrial Internet. At present, the downward pressure on the economy is increasing, the demographic dividend is gradually decreasing, and consumer demand is increasingly diversified. Faced with this situation, it is an inevitable choice for household appliance manufacturers to improve production efficiency, introduce robot manufacturing technology and improve automation level to adapt to the development of the times. Automation and intelligent improvement of factory production can reduce the time to produce products, save costs, and provide opportunities and possibilities for creating flexible production business.

5. References

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