

The Impact of The Success of Midea Group's Digital Transformation on The Development of Enterprises

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Abstract: Accelerating the digital transformation of enterprises is the only way to achieve high-quality economic development under the new development pattern. With the advent of the digital age, the scientific and technological revolution and the industrial revolution have changed the pattern of world development and also brought earth-shaking changes to the development mode of enterprises. With the rapid development of mobile networks, cloud computing and AI, the intelligent transformation of traditional manufacturing has become an inevitable choice to comply with the development trend of The Times, and it is also a key measure to build a digital power. This paper makes a case study of Midea Group, explores the value of Midea Group's digital transformation to enterprises, provides powerful empirical evidence for enterprises to promote digital transformation, and expands relevant researches on enterprises' digital transformation.

Keywords: Digital transformation, Enterprise performance, Enterprise development.

1. Introduction

Under the influence of global digitalization, the new generation of digital technologies such as mobile networks and cloud computing have been further innovated, and the digital economy has become a new driving force. The report of the 19th National Congress of the Communist Party of China pointed out that it is necessary to accelerate the building of a manufacturing power and develop modern advanced manufacturing [1]. In 2021, the "14th Five-Year Plan" for Intelligent Manufacturing Development proposed: The overall path to promote intelligent manufacturing is to base on the nature of manufacturing, closely follow the intelligent characteristics, take process and equipment as the core, take data as the basis, and rely on manufacturing units, workshops, factories, supply chains and other carriers. Build an intelligent manufacturing system that integrates virtual-real, knowledge-driven, dynamically optimized, safe and efficient, green and low-carbon, and promote the digital transformation, networked collaboration, and intelligent transformation of the manufacturing industry. Midea Group actively responds to the policy call, advances to intelligent manufacturing based on digital technology, and continuously deepens the digital transformation of enterprises [2]. As a leading enterprise in the home appliance industry, the successful experience achieved in the implementation of intelligent transformation can not only provide reference for the same type of home appliance enterprises, but also provide reference for other industries to implement digital transformation and upgrading. Therefore, this paper analyzes the digital transformation of Midea Group as a case study.

2. Related Concepts

Digital economic activity is an economic activity that uses digital technologies and digital production, production, circulation, consumption and services. It is a fast economy where information and economic activities are transmitted directly through online platforms, overcoming the limitations of time and space. It includes digital industries, digital

business models and digital ecosystems. The digital economy is characterized by rapid growth. In the digital economy, the flexible use of modern network technologies can overcome traditional time and local constraints in order to collect, process and apply information in a short period of time in order to facilitate economic exchange and transmission of information. Second, it's a number. One of the main indicators of the digital economy is digitization. Big data can provide powerful technical support, promote business digitization, improve information and storage efficiency, and enable companies to review and effectively control business in a timely manner. Finally, stability. The digital economy can effectively avoid excessive consumption of energy and resources in the production process of enterprises, partially protect the environment, and promote the coordinated and sustainable development of enterprises and the environment.

3. Case Introduction

The United States Group was founded in 1968, initially focused on plastics and auto parts manufacturing, with the promotion of reform and opening up policy, the United States officially entered the home appliance industry, began to produce electric fans, air conditioners, refrigerators and small appliances production and sales, the United States group has been committed to expand product categories, expand domestic and foreign markets, improve sales channels, expand market share. And cooperate with well-known home appliance enterprises at home and abroad to acquire Hualing, Rongzhida and Cygnet and other home appliance enterprises. In the current Internet era, society is characterized by variability, uncertainty, complexity and fuzziness. At the same time, under the influence of the COVID-19 pandemic, social uncertainty is increasing, and it is urgent for every company to internalize external pressure into a driving force for change. Midea Kitchen Electronics focuses on digital transformation in three directions: First, business innovation, digital business model and digital venture capital and incubation; The second is the main revenue increase, product and service innovation, digital channels and marketing; Third, intelligent operation,

intelligent production and manufacturing, intelligent support and control. Third, anchoring: Build a smart factory with flexible delivery ability through technology integration lean foundation, on the basis of the company's continuous information construction and intelligent transformation in the early stage, around the process, planning, production, logistics, quality, resources and other fields of construction, with big data application as the core, combined with intelligent manufacturing technology, Realize the interconnection of the whole value chain such as market, users, product research and development, supply chain and manufacturing, and build a smart factory with flexible delivery capabilities to meet the increasingly personalized needs of users. In 2011, Midea Group officially put forward a new strategy, that is, "product leadership, efficiency driven, global operation", enterprise growth from a single, extensive scale growth to quality growth, enterprises began to seek product upgrades, function upgrades and value chain upgrades. In the 21st century, with the rapid development of digital technology, digital industries such as cloud computing, big data, Internet of Things, industrial Internet and artificial intelligence have evolved and grown, bringing opportunities to traditional enterprises in development difficulties. The emergence and development of digital technology has accelerated the transformation of enterprises from industrialization to intelligence, and the period of technological change is a good opportunity for late-developing enterprises to catch up and surpass, and it is also a rare opportunity for late-developing enterprises to stand on the same starting line with developed countries. The global intelligent manufacturing based on digital technology is still in the exploration stage, and the technology paradigm has not yet been finalized. If the latecomer enterprises seize the opportunity of this technological change, it will form a strong push to catch up with the enterprises in developed countries, and even exceed the enterprises in developed countries. Midea Group recognized the window of opportunity of this technological change, followed the development trend of the global manufacturing industry, and decided to implement digital transformation to achieve the catch-up and transcendence of late-comer enterprises.

4. The Digital Transformation Process

4.1. Digital 1.0 - Establishing a Unified Data Standard

From 2012 to 2015, in the digital 1.0 era, Midea began to build a foundation. Before 2012, the United States is a highly decentralized organization, each division of its own, the dilemma faced by the United States at that time, is the process is not unified, management is not unified, data is not unified. For the home appliance sector, there are more than 100 IT systems alone. Without unity, it is impossible to form a group and develop uniformly upward. In 2012, the United States Group listed, from the original more dispersed secondary industry group unified into a group. In order to break the dilemma of isolation and dispersion between various business units, Midea set a determination to change "one beauty, one system, one standard", thus opening the prelude to digital transformation. Based on this strategy, Midea rebuilt all its processes, IT systems and unified data standards, which are the foundation of Midea's digital transformation. The building was not completed until the first half of 2015. In order to achieve digital transformation, commodity development,

order distribution, etc., the United States has reconstructed all processes, IT systems, and unified data standards, which is the basis of the United States digital transformation. The work was not fully completed until the first half of 2015. In order to carry out digital transformation, Midea will standardize many business processes such as product development and order delivery, and standardize suppliers and customers, even at the expense of ERP and other systems to open up the data system.

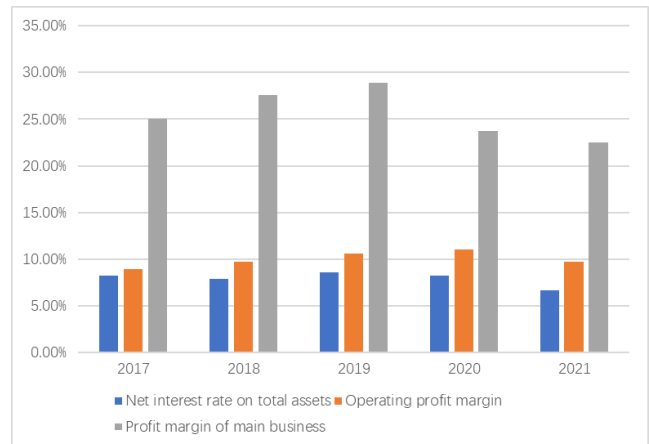


Figure 1. Changes in Midea Group's profitability from 2017 to 2021

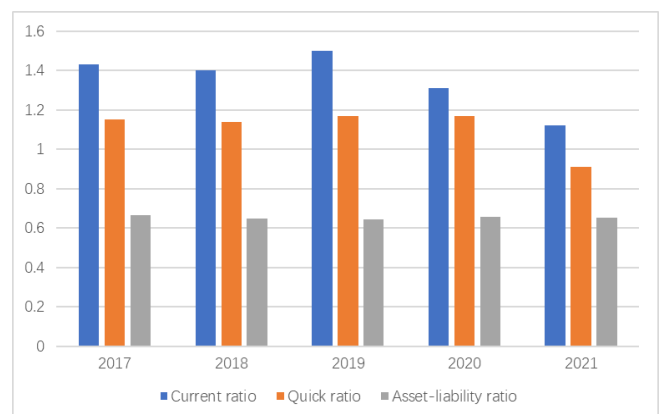


Figure 2. Changes of Midea Group's solvency from 2017 to 2021

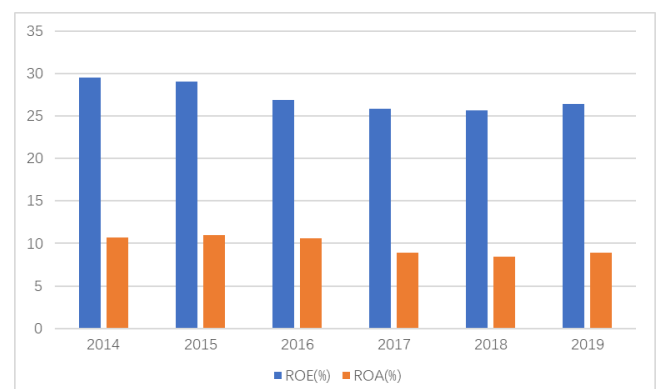


Figure 3. Changes of enterprise assets before and after the digital transformation of Midea Group from 2014 to 2019

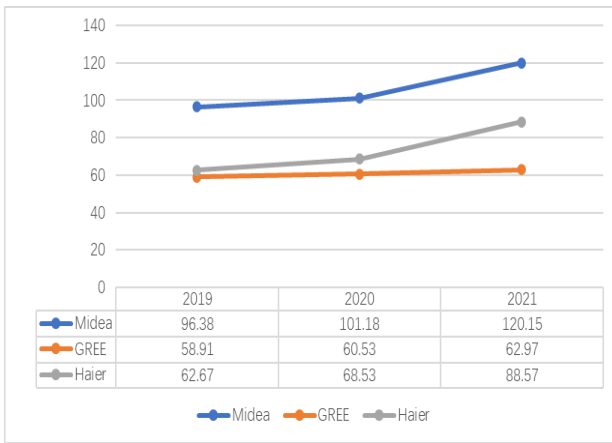


Figure 4. Comparative analysis of R&D expenditure

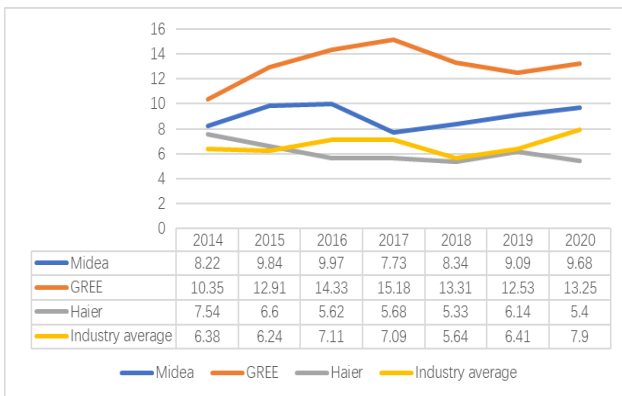


Figure 5. Midea Group sales net profit rate and industry average from 2014 to 2020

4.2. Digital 2.0 era - Implementation of Innovative "Double Intelligence" Strategy

2015 - The Internet era, began to talk about Internet + to subvert traditional industries. After the internal discussion of the United States set a "double wisdom" strategy - intelligent products, intelligent manufacturing. Through these two directions, the United States will give the "Internet + capability" to the United States with digital transformation, such as the establishment of intelligent manufacturing factories, the construction of big data platforms, and the mobility of all systems. In 2016, the business of the United States has undergone a major change, from the previous layer of distribution, the model of production and sales to sales model; From the original large order supply mode to the fragmented order mode. The uncertainty of customer orders puts a high demand on the flexibility and efficiency of delivery. In this regard, Midea has made a digital 2.0 transformation to support business transformation, applying digital to cooperate with the company's business transformation, and carrying out digital upgrading of its manufacturing and supply chain. Subsequently, the Group decided to fully implement C2M (user directly connected manufacturing) internally, transforming from the traditional "production to sales" to "sales to production", so that consumer data drive the operation and production of enterprises. Within Midea, this customer-oriented production and marketing model is known as the "T+3" model.

4.3. Digital 3.0 era - be at the Forefront of Digital

Beginning in 2017, in the industrial Internet era, with the

maturity of Internet of Things technology, Midea began to develop networked home appliances. Through Mercure APP, products such as air conditioners and refrigerators can be centrally controlled by consumers to achieve scenario-based applications; At the same time, it also collects data to understand consumer behavior, so as to develop products more accurately and provide better services to customers. From 2019 to 2020, the industrial Internet, comprehensive digitalization, and comprehensive intelligence have been completed, and the intelligent functions of products have also been completed at this stage. In order to fully cope with the challenges of the digital economy era, Midea Group will upgrade its three strategic spindles to four strategic spindles at the end of 2020 - "leading technology, direct user access, digital intelligence drive, global breakthrough". And the four business segments were adjusted into five business segments - "Smart Home Business Group, electrical and mechanical business Group, HVAC and Building Business Group, Robotics and Automation business Group and digital innovation business" [3]. Since 2011, the three stages of Midea Group's development have been centered on digital transformation. The first stage is a learning process based on "practicing internal skills", which mainly explores and transforms the internal organizational structure, operation mode and production and marketing mode to lay a solid foundation for the smooth progress of digital transformation. This stage focuses on exploratory learning. The second stage is a learning process based on external mergers and acquisitions. The main targets of mergers and acquisitions are overseas high-end household appliance brands and leading enterprises in the robotics and automation industry, with the main purpose of seeking external resources and existing assets. On the one hand, with the help of the brand effect of the acquired enterprises, the company can "expand its territory" on a global scale. On the other hand, through acquisition of robotics and automation industry and technology of leading home appliance enterprises with strong research and development strength, to contribute to the digital transformation of home appliance industry, this stage is mainly based on utilization learning; The third stage is the endogenous growth process based on digestion, absorption and internal research and development. While digesting and absorbing knowledge acquired from outside, it forms a research and development system of the enterprise according to the strategy and development status of the enterprise, providing a steady stream of technical support for the upgrading of products, processes, functions and value chains. This stage focuses on exploratory learning, which has deepened the reform of the enterprise.

5. Accelerate the Construction of Smart Factories for The Five Major Links

5.1. Industrial Intelligent Big Data System

Build from the perspective of the whole value chain, build an industrial intelligent big data analysis system, realize the popularization and application of large screen to PC-based and mobile systems, and build a refined and systematic digital operation. The project realizes a complete process of communication, transparency and comprehensive monitoring, thus establishing a total control center of big data that can be used and analyzed. Using the total control center, combined with a wide range of big data analysis, rapid early warning,

rapid response, closed management, the implementation of real-time monitoring of the production process, abnormal equipment status and inventory and material alignment, etc., the overall efficiency of the operation is improved.

5.2. Logistics Digitization Conclusion

With T+3 as the main axis, logistics and pull integration, from the production and marketing connection, prenatal logistics, production logistics, postnatal logistics landing four dimensions, to achieve end-to-end value chain intelligent logistics. Build an intelligent logistics platform of the full value stream chain, realize the logistics plan management mode, implement the Milk-Run circular pickup mode, and realize the efficient collaboration of suppliers; At the same time, improve the vehicle loading rate, unloading resources allocation, reduce transportation costs, improve the overall logistics efficiency.

5.3. Digitalization of Finished Products

As the first small electricity group to achieve digital management of finished products, pull through the whole process management of T+3, production and marketing, warehousing, warehousing and warehousing. With the WMS system as the carrier, the manufacturing, marketing, logistics, quality system interaction, to achieve the open data flow. Through the digital management of the whole process, WMS/QMS/OMS/GLS/MES multi-system comprehensive interaction is realized.

5.4. Quality Digitization

Quality digitization takes TQB as the main axis, based on comprehensive digitization, to achieve product compliance, reliability, and high-end quality services to satisfy users. The purpose of establishing quality process control intelligence is to apply computer technology, automation technology, communication network technology and signal processing technology to automatically monitor the production process to obtain the status of the monitored object accurately, comprehensively and in real time, and control the quality data in the production process. Through the application of AI detection, face recognition, SCADA online and other technology applications, to achieve comprehensive defect collection, local inspection intelligent, mobile inspection paperless, quality data transparent and visible.

5.5. Intelligent Scheduling

Build an intelligent scheduling APS system, support the fine scheduling from production scheduling to key processes through the establishment of process scheduling tables, and support the visibility of the production progress of key processes and the transparency of process parts inventory combined with the completion of processes; Intelligent algorithms such as heuristic rule constraint, population optimization, genetic algorithm and one-key matching model are integrated. Build the scheduling "product family" function, effectively solve the pain point that the export order code cannot precipitate the product history, and improve the accuracy of T+3 short-cycle scheduling.

5.6. Process Digitization

Build a DPM process digital system, carry a unified process standard library, and automatically invoke standard information in product scheme design, process route design, process simulation, manufacturability review and other nodes;

Realize the digital scene design of the whole process from product development to product production, shorten the development cycle, reduce the number of modification modes, and improve the product pass-through rate and production efficiency.

6. Performance Analysis of Midea Group Before and After Digital Transformation

As can be seen in Figure 1, the net interest rate of total assets and the profit rate of main business of Midea Group show an upward trend in 2017-2019, and a downward trend in 2020-2021. Operating margin and net margin on sales are on an upward trend, declining slightly in 2021, but generally above the industry average. Regarding the short-term solvency of enterprises, the main reasons are as follows: First, Midea Group implements the strategy of "man-machine new generation" to step into the intelligent transformation stage. On the one hand, through the layout of e-commerce channels and the launch of mobile APP to achieve online sales scenarios, consumers can customize home appliances without leaving home to meet the personalized and intelligent needs of customers; On the other hand, the use of the whole house appliance experience, enrich the offline store, bring a more intelligent and comfortable home life experience for customers, and the transformation effect has begun to bear fruit. Second, according to the relevant data analysis of the annual report, the non-recurring profit and loss amount of the enterprise in 2020 is 26.083 billion yuan, an increase of 75.43% over the previous year, with a large growth rate, which is highly likely to lead to the increase of the core profit of the enterprise, thereby promoting the increase of the operating profit margin and net profit rate of the enterprise. Third, Midea Group's main business is air conditioning, refrigerators, 2020-2021 affected by the epidemic, the above business cannot provide door-to-door installation services, resulting in a decrease in sales volume of its main business, and during the epidemic period, the entire consumer market performance is poor, the decline in market demand makes the bargaining power of dealers increased, the production cost of enterprises increased. The main business profit margin and the net interest rate on total assets decreased.

As for the short-term solvency of Midea Group, it can be seen from Figure 2 that the current ratio and quick ratio of Midea Group have basically the same trend, that is, they first decrease, then increase, and then gradually decrease. Although their values have certain fluctuations, they have little change compared with those before the transformation. Mainly because: First, in 2018 for the intelligent transformation, enterprise 00.20.40.60.811.21.41.620172018201920202021 liquidity ratio quick ratio asset-liability ratio for people a lot of money is used to optimize the product structure, construction of intelligent logistics base and increase financial support for online, etc., Resulting in a significant reduction in monetary funds, so that the current ratio and quick ratio appeared a downward trend. Second, in the process of intelligent transformation, in order to seize the market, enterprises implemented relatively loose credit policies, resulting in an increase in current assets. According to the report data, in 2019, the current assets of Midea Group increased by 18.68% year-on-year, and ultimately made the short-term debt repayment ability of enterprises rise. In 2020 and 2021, the

current ratio and quick ratio of Midea Group are lower than the industry average, the capital turnover rate is slowed down, and indicators of short-term solvency have declined.

Regarding the long-term solvency of enterprises, the assets and liabilities of Midea Group fell first and then rose, and the overall maintained at about 60%-65%, always higher than the industry average, but relatively stable. The main reasons are as follows: First, in the process of intelligent transformation of Midea Group, the continuous expansion of business scale and the increase of merger and acquisition financing projects make the enterprise's operating liabilities rise, resulting in the increase of asset-liability ratio. Second, due to the impact of the epidemic in 2020 and 2021, Midea Group is relatively short of funds, and the implementation of intelligent models has driven the growth of sales performance, so that the enterprise's asset-liability ratio can maintain a relatively stable level, and to a certain extent, it can avoid the risks brought by the epidemic and industry competition.

Present the slow decline, midea group of ROA and digital transformation in 2017 before the decline of Ming 05101520253035201420152016201720182019 roe (%) ROA (%) than after the digital transition rate of descent. The reasons can be explained from two aspects: First, its asset scale has increased by more than 30% for two consecutive years since 2016, in addition, after 2018, affected by the fierce competition in the global economic environment, its sales revenue and net profit growth slowed down. However, on the whole, after digital transformation, the decline trend of ROA and ROE of Midea Group has been greatly slowed down, indicating that digital transformation can stabilize the decline of corporate earnings under the adverse impact of fierce global competition and the impact of the epidemic. It also shows that digital transformation can stabilize corporate development and improve corporate profitability [4].

7. Comparative Analysis Between Midea and Enterprises in The Same Industry

Midea's spending on research and development is obviously higher than that of similar home appliance companies, which is enough to show the extent of Midea's emphasis on technology and innovation.

Compared with Gree Electric Appliances, there is still a gap, but it is higher than Haier Zhijia and the industry average level, indicating that the profitability of the United States Group still has room to improve. In 2017, the first year of the digital economy, the net profit rate of Gree Electric Appliances, Haier Zhijia and the industry average all increased briefly and then entered a downward trend. Only in the same year, Midea Group [5], after undergoing digital transformation, entered a growth trend after experiencing a brief silence, indicating that the net profit level of enterprises after digital transformation has been steadily improved. Corporate profitability is gradually improving and becoming stable.

After the beginning of digital transformation, Midea Group through T+3 production and marketing model, 632 project and other digital remedial course to reduce operating costs, improve operational efficiency, net profit growth rate has rebounded, but still unstable, 2015 by the impact of the home appliance industry winter, the growth rate has declined. After 2015, Midea Group's net profit growth rate tends to be stable. After experiencing rapid growth of China's home appliances from the incremental era into the stock era, before this, to find

a strong power engine, to achieve sustained growth and rapid development of enterprises, has long become the industry's insightful problems. It is against this background that in 2010, the revenue scale of Midea exceeded 100 billion "after the mark". Midea started the transformation strategy of intelligent manufacturing in 2011. Before the transformation of intelligent production, the production model of the United States is mass production in order to quickly occupy the market. However, with the rapid changes in consumption growth and market demand, the broad expansion strategy, with its main advantages in terms of scale and price, is no longer effective, unsalable inventory oversupply and product problems are becoming more and more obvious and need to be improved. At the same time, the rapid development and application of new generation information technologies such as mobile Internet, big data, object Internet and artificial intelligence also enable enterprises to achieve change.

8. Inspiration from the Success of Midea Group's Digital Transformation

8.1. Adhere to the Strategy of Adapting to Local Conditions and The Times

When promoting the digital transformation of enterprises, it is not necessary to blindly promote it, but to formulate appropriate digital development strategies according to the digital foundation, ability and development level of the enterprise's own development. At the same time, it is also necessary to pay attention to the impact of digital transformation on enterprise performance. Finally, it is necessary to combine the characteristics of the home appliance manufacturing industry, pay attention to the home appliance products themselves, and realize the intelligent transformation of the home appliance industry by strengthening the research and development investment of digital technology and building a smart experience platform [6]. At the organizational level, determine the leading departments and construction models, and carry out top-down change communication and organizational mobilization; At the strategic level, the digital strategy is connected with the enterprise vision and business strategy to perfectly realize the digital transformation of the manufacturing industry.

8.2. Strengthen Digital Empowerment and Find the Right Path

First of all, we must adhere to the digital empowerment of the enterprise's network sales and market development, promote the intelligent docking management of the market and customers, and empower the digital in all aspects of enterprise sales, production, management, finance, etc., promote the intelligent operation and management of enterprises, and improve enterprise efficiency. Secondly, it is necessary to make full use of the connectivity of the Internet and the inclusiveness and sharing of digital technology, strengthen strategic cooperation and technical mutual assistance of enterprises, lay out a globalization strategy, and fully exert strategic synergies in the whole value chain such as brand, channel, research and development innovation, supply chain, and quality manufacturing. Finally, it is necessary to adhere to the digital empowerment of the whole value chain, and use digital platforms and technologies to empower all aspects of the whole value chain, such as

innovative research and development, order booking, intelligent management, flexible manufacturing, collaborative supply, logistics tracking, quality monitoring, and customer service installation, so as to improve the overall performance of the enterprise.

8.3. Promote Online and Offline Linkage and Integration of Sales Systems

Enterprises should establish a sales system for online and offline collaborative promotion, establish a complete market coverage system with "primary and secondary markets as the main, and third and fourth markets as the auxiliary", combine smart network and intelligent AI with offline physical stores, promote offline sales channels, drive offline development through online channels, and coordinate online channels through offline sales [7]. At the same time, we should also pay attention to making full use of the opportunity of digital transformation, with the help of digital technology, to create digital market research program, continuous tracking and monitoring of the whole process of product production and marketing, and improvement and optimization at any time. In addition, it is necessary to strengthen the ability of enterprises to meet the personalized needs and customization of different customers, open up the online and offline sales system, and achieve the integrated development of the sales system.

9. Research Implications

The intelligent transformation of Midea Group can provide reference and reference for other enterprises to carry out intelligent transformation and upgrading. First of all, enterprises should predict the changes in the internal and external environment, and combine their own resource advantages to determine whether the enterprise has the ability to promote intelligent transformation. Secondly, "intelligent manufacturing" is the only way for traditional home appliance enterprises to upgrade. In order to implement intelligent manufacturing into product manufacturing, it is necessary to increase support for research and development and innovation, understand consumer needs, and create more competitive products. Finally, in the process of intelligent transformation, enterprises should always pay attention to the needs of customers and changes in the market, make strategic adjustments in time, maintain the dynamic and effective information, and prevent from deviating from the strategic goal or difficult to implement the transformation. In short, the purpose of intelligent transformation is to enhance the core competitiveness of enterprises, for enterprises to find new profit growth points, but the transformation is a long transformation process, should steadily move forward, always maintain dynamic and effective, to ensure that enterprises can achieve long-term stable development goal.

10. Research Insufficient

Due to some objective limitations, there are many shortcomings in this paper, and it is difficult to grasp comprehensive data because there is no field investigation of enterprises. The successful digital transformation of Midea Group has set a demonstration case for enterprises to improve

performance, but its general applicability needs further testing. Different stages in the process of digital transformation have different characteristics, and the degree of digital transformation is also different. Midea Group explores methods suitable for different stages according to the specific situation of the enterprise.

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