



The Impact of Enterprise Digital Transformation on Operating Costs: A Case Study Based on Haier Group

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Abstract. With the continuous development of digital requirements and information technology, enterprise digital transformation has become a hot research topic, and at the same time, information technology is increasingly being applied to the process of enterprise digital transformation. This article takes Haier as a research case and comprehensively analyzes the entire process of Haier's information transformation, focusing on the specific application and implementation effects of information technology in Haier's enterprise information construction. This study found that Haier can achieve optimal operating costs and healthy business development by restructuring its supply chain system, improving production efficiency, and innovating business logic in the process of information transformation. At the same time, it also indicates that enterprises face various issues in promoting digitalization, such as technology investment, organizational restructuring, and human resource integration. The research results can provide certain reference basis for the application of traditional Chinese enterprises in information construction.

Keywords: Haier Enterprise, Operating Expenses, Digital Transformation.

1 Introduction

Digital transformation is an important issue facing enterprises today. With the development of emerging technologies such as cloud computing, big data, artificial intelligence, and the Internet of Things, enterprises are gradually integrating these technologies into their business processes. These technologies not only improve the operational efficiency of enterprises, but also help them reduce operating costs while driving revenue growth. In the fierce market competition, enterprises need to use digital transformation to enhance their competitiveness, optimize operating costs, and obtain higher profits. Operating costs are a crucial part of business operations, directly related to the profitability level of the enterprise [1]. With the changes in the market and the intensification of competition, enterprises need to effectively manage and reduce operating costs to ensure long-term stable development. Digital transformation has unique advantages in reducing operating costs. By adopting advanced technology, enterprises can improve production efficiency, optimize supply chain management, reduce resource waste, and thus achieve cost reduction. Digital means can accurately allocate resources,

improve productivity, and reduce losses in the manufacturing process, ultimately achieving optimization of cost management [2].

In the context of the information age, the corporate culture of enterprises has also been impacted to some extent. In traditional enterprises, a stable and hierarchical corporate culture is established. In digital transformation, it is required for enterprises to have a more flexible and creative corporate culture environment. This requires enterprises not only to carry out technological innovation, but also to carry out in-depth reforms in terms of corporate culture, organizational management, and other aspects, in order to reduce operating costs. Based on this, studying the impact of enterprise digital transformation on operating costs has certain practical significance.

Most existing research focuses on the technological applications and innovative models of digital transformation, especially how to improve production efficiency and optimize business processes. However, there is relatively little in-depth research on the impact of digital transformation on operational cost management. Although existing literature mentions that digital transformation can reduce expenses and improve efficiency, there is a lack of comprehensive analysis of specific cost management mechanisms, especially in terms of how to accurately control and manage costs through digital technology [3].

This article will explore how digital transformation can optimize operating costs in practical operations through the case of Haier Group's digital transformation. Haier has achieved intelligence in production and supply chain management by introducing the COSMOPlat industrial interconnection platform, reducing operating costs. This article will analyze how Haier reduces production costs and improves market response speed through intelligent production, precision marketing, and supply chain optimization, while increasing revenue through e-commerce platforms and personalized recommendations. By summarizing Haier's transformation experience, this article hopes to provide reference for other enterprises in implementing digital transformation processes.

The significance of this article lies in demonstrating through case analysis how digital transformation can optimize the operating costs of enterprises, providing specific operational guidelines for traditional enterprises. At the same time, this article will fill the gap in existing research, provide in-depth analysis of the relationship between digital transformation and operational cost management for the academic community, and promote the development of research in this field [4].

2 The Impact of Enterprise Digital Transformation on Operating Costs

2.1 Case Description of Haier Company

Haier Group, founded in 1984 and headquartered in Qingdao, China, is a global ecological enterprise focusing on home appliance manufacturing, covering smart homes, industrial Internet, mass health and other fields. In 2022, Haier Group's global revenue reached 350.6 billion yuan (approximately 49 billion US dollars), and it has been listed on the Fortune Global 500 list for five consecutive years. Its brand value ranks 63rd in

the global authoritative BrandZ evaluation, and it has been the only "Internet of Things ecological brand" in the world for four consecutive years.

Haier has established a localization strategy of "research and development, manufacturing, and marketing" in the global market, with 10 research and development centers, 122 manufacturing centers, and 230000 sales networks. Its products cover more than 200 countries and regions worldwide. According to Euromonitor data, Haier ranked first among global large household appliance brands for 14 consecutive years in 2022 with a retail volume share of 16.3%. Casarte, a high-end brand under its umbrella, has a market share of 38% in the Chinese home appliance market worth over 10000 yuan, firmly ranking first in the industry; The young brand Leader has seen a growth rate of over 30% among the Z-generation consumer group, demonstrating strong growth potential [5].

Haier has always driven innovation by user demand, with annual R&D investment accounting for over 4%, cumulative patent applications exceeding 100000, and leading and participating in the development of 97 international standards and 530 national standards. The world's first "lighthouse factory" benchmark it has built - Haier Central Air Conditioning Interconnected Factory, achieves a 30% increase in production efficiency and a 20% decrease in product defect rate through artificial intelligence and IoT technology. In addition, COSMOPlat, an industrial Internet platform incubated by Haier, has linked 900000 enterprises and enabled 15 industrial ecosystems. In 2022, the platform's transaction volume will exceed 460 billion yuan, ranking first in the "double crossing" platform of the Ministry of Industry and Information Technology for five consecutive years [6].

2.2 Process Restructuring

Haier has achieved a comprehensive reengineering of its business by building the COSMOPlat industry interconnection platform. Through the research of this project, a network-based manufacturing and supply chain collaborative optimization method has been proposed, providing a new solution for enterprises. Haier can use this platform to flexibly arrange production lines, thereby reducing the time delay and resource waste caused by traditional manufacturing methods. Among them, the construction of the COSMOPlat platform has greatly improved Haier's inventory turnover and logistics response capabilities. This not only enables optimal control of inventory, but also effectively reduces inventory and storage costs, while increasing purchasing efficiency, thereby better controlling the company's production costs [7].

At the same time, Haier can also utilize its intelligent platform to accurately track and adjust each order in real-time, reducing overcapacity, inability to deliver on time, and other phenomena. This process adjustment can not only reduce the cost of each process, but also improve efficiency. Haier increases sales by providing personalized services to customers, enabling them to adapt to their needs on a larger scale.

2.3 Efficiency Improvement

As shown in Table 1, Haier's specific measures and achievements in improving efficiency through a series of technological innovations and strategies in the process of digital transformation. In terms of real-time monitoring of production lines, Haier has utilized big data and IoT technology to achieve real-time monitoring of production

lines, which can timely detect potential safety hazards, thereby reducing equipment downtime and improving production efficiency by 20%. Through accurate market demand forecasting, Haier has avoided the problem of product supply shortage, reduced oversupply by 30%, and also lowered the out-of-stock rate by 15% [8]. In addition, Haier has significantly increased production capacity and optimized production processes, resulting in a 28% increase in order fulfillment rate. In terms of cost management, Haier has successfully reduced operating costs by 18% and energy consumption by 22% by optimizing human resource allocation, reducing energy consumption, and improving equipment efficiency. These measures have helped Haier significantly improve production efficiency, while reducing operating costs and further enhancing its market competitiveness.

Table 1. Efficiency improvement.

Strategic	Description	Impact and Data
Real time monitoring of production line	Haier uses big data and IoT technology to monitor production lines in real-time, promptly identifying and resolving potential security issues.	Machine downtime has been reduced by 25%, and production efficiency has increased by 20%.
Market demand forecast	Haier utilizes big data to accurately estimate market demand, ensuring the rationality of inventory and production capacity planning, and avoiding the phenomenon of supply exceeding demand.	Through precise prediction, the oversupply has been reduced by 30%, and the product shortage rate has decreased by 15%.
Enhance production capacity	By optimizing production processes and enhancing technological applications, Haier has significantly increased its production capacity to meet larger market demands.	The production capacity has increased by 35%, and the order fulfillment rate has increased by 28%.
Cost Management and Optimization	Haier has achieved cost savings in operations by optimizing human resource allocation, reducing energy consumption, and improving equipment efficiency.	Operating costs have decreased by 18%, and energy consumption has decreased by 22%.

2.4 Increase Revenue

As shown in Table 2, Haier has effectively increased its revenue through digital transformation. On the e-commerce platform, Haier uses big data to accurately locate customers and increase sales, with annual sales increasing by 30% and customer conversion rates increasing by 20%. Secondly, through personalized marketing, Haier has increased customer brand loyalty and stickiness, with customer loyalty increasing by 15% and brand stickiness increasing by 25%. In addition, Haier has combined smart home products with online sales, creating a new profit model that has led to a 40% increase in smart home sales and a 20% increase in revenue. The launch of smart home products not only increases sales volume, but also brings sustained long-term revenue, expected to bring a 10% annual revenue growth. This series of measures has helped Haier significantly increase its revenue level through innovation and precise marketing strategies [9]. Therefore, the essence of digital transformation is to reconstruct the value chain

through data, and enterprises should maintain a dynamic balance between cost optimization and innovation investment [10].

Table 2. Increase in revenue.

Strategic	Description	Impact and Data
E-com- merce growth	Through e-commerce platforms, Haier utilizes big data to accurately locate customers, thereby achieving sales growth.	The annual sales of Haier e-commerce platform increased by 30%, and the customer conversion rate increased by 20%.
Personal- ized market- ing	By providing personalized products and services, and increased customer loyalty and stickiness to the brand.	Customer loyalty increased by 15% and brand stickiness increased by 25%.
Smart Home Inte- gration	Combining smart home products with online sales has created a new profit model.	Smart home sales increased by 40%, and the new profit model drove a 20% revenue growth.
Long-term income	The launch of smart homes not only increases sales volume, but also brings long-term fixed income.	Smart home products have brought about a sustained revenue growth of 10% annually.

3 Conclusion

This study indicates that digital transformation reconstructs the cost structure of enterprises through a three in one mechanism of "cost reduction, efficiency improvement, and revenue generation". Taking Haier as an example, relying on the COSMOPlat industrial Internet platform, Haier has realized the digitalization of the whole supply chain process, reducing the inventory cost by 18% and the logistics loss rate by 12%. Through intelligent production scheduling, the idle rate of equipment has been reduced by 25%, and the delivery cycle of orders has been shortened by 30%. In the long run, Haier has utilized user data to support research and development, increasing the premium of high-end products by 22%. This process demonstrates that digital transformation is not just the application of technology, but also a systematic transformation of enterprise strategy, organization, and capabilities. Technological upgrades need to be matched with organizational agility, and human resource restructuring needs to fill the 'digital skills gap'. When enterprises are undergoing digital transformation, they need to avoid the misconception of "technology only", as a transformation without top-level design may lead to system friction and increased collaboration costs. Based on Haier's practical experience, it is recommended that enterprises establish a three in one transformation framework of "user ecology resilience", drive precise decision-making through data closed-loop, integrate upstream and downstream resources on the platform, and promote organizational resilience to cope with uncertainty.

The study only analyzed the case of Haier, lacking cross industry or cross-cultural comparisons, which limited the breadth of the research. Future research can be extended to enterprises of different sizes and industries, exploring the applicability and effectiveness of digital transformation in various environments. In addition, although this article

analyzes Haier's successful experience, it does not delve into the specific challenges and countermeasures in the transformation process. Future research can further focus on risk management and response strategies that may be encountered during the transformation process, especially in industries with high uncertainty, how to balance the relationship between technological innovation and traditional business processes.

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