

The Impact of Digital Transformation on Enterprise Operations Management

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Abstract: This study examines the systemic impact of digital transformation on enterprise operations management. Through a comprehensive approach combining theoretical analysis, case studies, and questionnaire surveys, the research systematically investigates the transformation pathways and practical models of enterprise operations management in the context of digitalization. The findings reveal that digital transformation profoundly reshapes operational management approaches through three key dimensions: technology application, organizational adjustment, and business model innovation. At the technological level, emerging digital technologies optimize operational processes and enhance efficiency; organizationally, digital transformation drives structural changes and improves collaborative mechanisms; while in business models, digital technologies give rise to new operational paradigms and customer value creation methods. Comparative studies across industries demonstrate significant variations in digital transformation's impact, with manufacturing enterprises benefiting most notably in production efficiency and service enterprises achieving marked improvements in customer experience. Factors such as enterprise scale and development stage also influence the transformation process and outcomes. Based on these findings, the study constructs an implementation framework comprising strategic planning, technological deployment, and organizational change, while proposing differentiated recommendations for various enterprise types. The research outcomes provide theoretical references and practical guidance for enterprises navigating digital transformation, facilitating the development of more competitive operations management systems in the digital era.

Keywords: digital transformation, operations management, impact mechanism, case analysis, implementation strategy

1. Introduction

As digital transformation becomes a crucial pathway for enterprises to adapt to the digital economy, it is profoundly reshaping operations management[1]. This study addresses this shift by investigating how digital transformation impacts operations, what industry-specific characteristics emerge, and how effective implementation strategies can be formulated. Through a combination of theoretical and empirical research, it aims to systematically reveal the underlying mechanisms and provide actionable insights for business practice.

2. Mechanism Analysis of Digital Transformation's Impact on Enterprise Operations

The impact mechanism of digital transformation on enterprise operations manifests as a multidimensional process, progressing from direct technological application to indirect organizational adaptation, ultimately leading to fundamental business model changes. Technologies like AI, IoT, and big data are reshaping value creation—evolving traditional manufacturing into flexible, intelligent systems and enabling data-driven dynamic operations in retail. This technological shift necessitates organizational adjustments, with traditional hierarchies moving toward networked, platform-based structures. Cross-functional units formed by breaking down information silos significantly enhance organizational agility and adaptability [2]. Enterprise-wide digital collaboration platforms integrate R&D, production, and sales, while cloud and blockchain-based industrial platforms reconstruct supply chains into more open and efficient ecosystem networks.

3. Empirical Research on Digital Transformation's Impact on Operations

Empirical research, through in-depth analysis of specific enterprises' digital transformation practices, reveals the dynamic interplay between technological penetration, organizational restructuring, and business model innovation[3]. Taking Haier Group's "Rendanheyi" model as a representative case study, we observe that the company established a digital twin technology platform enabling end-to-end visual management from R&D and manufacturing to after-sales services. This technological architecture transformation directly gave birth to the "Chain Group Contract" organizational form, where business units evolved into autonomous operation entities on the digital platform, establishing agile cross-departmental

and cross-hierarchical collaboration mechanisms based on shared data assets[4]. At the production operation level, smart connected factories utilize digital twin technology to create real-time virtual replicas of physical workshops, shifting process optimization and equipment maintenance from experience-driven to algorithm-driven approaches. This transformation not only enhanced the production system's self-adaptive capabilities but also redefined traditional quality management paradigms.

Regarding organizational change, Haier's dissolution of traditional hierarchies resulted in over 4,000 micro-entrepreneurial units that demonstrated remarkable synergy effects supported by the digital platform. Each micro-unit functions as both an independent decision-making entity and an ecological chain node, sharing consumer demand data and production capacity information through the IoT middleware platform[5]. This organizational structure enables rapid response to customized demands. Notably, emerging digital skill gaps during transformation compelled the company to reconstruct its talent development system, making comprehensive digital capability cultivation a crucial element for sustaining innovation. In procurement and supply chain management, the blockchain-based industrial internet platform achieved real-time data interoperability with upstream and downstream partners, yielding substantial improvements in coordination accuracy between procurement plans and production scheduling.

4. Case Study Analysis

Based on an in-depth analysis of Haier Group, this case demonstrates a digital transformation path evolving from manufacturing digitization to full value chain reconstruction. In smart manufacturing, Haier's COSMOPlat platform utilizes digital twin technology to enable large-scale customized production via a direct C2M model, enhancing operational efficiency and generating valuable digital assets from user and equipment data. Organizationally, Haier replaced its traditional hierarchy with an ecosystem of autonomous "micro-enterprises" operating on a digital platform. This reduced decision-making chains to one-third of their original length, effectively addressing bureaucratic inertia and slow market response, showcasing how structural innovation supports digital transformation in large enterprises

5. Implementation Strategies for Enterprise Digital Transformation

Enterprise digital transformation demands a systematic approach, embedding digital thinking across all operations. Strategically, leadership must define a clear roadmap with resource allocation, break down silos, and foster cross-functional collaboration within a flatter, networked organizational structure. Technologically, a value-driven, phased implementation is crucial—beginning with modernizing core systems and data governance, then integrating digital technologies into business scenarios to leverage data assets, and finally building sustainable innovation capabilities—all underpinned by rigorous value assessment to ensure measurable business outcomes.

6. Conclusion

This study systematically examines the impact of digital transformation on enterprise operations management, revealing that it not only transforms technological applications but also profoundly reshapes organizational structures and business models, with effectiveness varying significantly across industries, thus necessitating tailored strategies. The research contributes a theoretical framework and practical implementation recommendations, while suggesting that future studies expand sample diversity, investigate long-term effects, and address scale-specific challenges to further refine digital-era operations management theory and enhance practical guidance.

References

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