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Transformation of Management Functions in the Digitalization of Service Processes: A Theoretical Analysis

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Introduction

Service sector organizations worldwide are undergoing unprecedented digital transformation, driven by advances in artificial intelligence, cloud computing, data analytics, blockchain technologies, and the Internet of Things. These technological developments are not simply tools for efficiency improvement but represent fundamental shifts in how services are designed, delivered, and experienced by customers and stakeholders. Within this transformation, management functions—traditionally understood through the classical framework of planning, organizing, leading, and controlling—are experiencing profound changes in their scope, methods, and strategic importance.The theoretical significance of examining management function transformation in the context of service digitalization extends beyond practical organizational concerns to address fundamental questions about the nature of managerial work, organizational coordination, and value creation in digitally-enabled service ecosystems. As service processes become increasingly digitized, the traditional boundaries between management functions blur, new hybrid roles emerge, and the very definition of what constitutes effective management is being renegotiated. This analysis seeks to provide a comprehensive theoretical framework for understanding these transformations, contributing to both management theory and practical guidance for organizations navigating digital transformation in service.The purpose of this article is to develop a theoretically-grounded understanding of how management functions are changing as service processes become digitized, identifying key patterns, mechanisms, and implications for organizational practice. The analysis draws upon multiple theoretical traditions including classical management theory, digital transformation literature, service-dominant logic, and organizational change theory to construct an integrated framework for understanding management function evolution in digitalized service environments. By synthesizing these perspectives, the article aims to provide both conceptual clarity and practical insights for managers, researchers, and policymakers engaged with service sector digitalization.

Literature Review

The foundational understanding of management functions originates in the work of Henri Fayol and subsequent management theorists who identified four core functions: planning, organizing, leading, and controlling, often abbreviated as the POLC framework. Planning involves defining organizational objectives and determining the optimal course of action to achieve them, requiring managers to anticipate future conditions and set strategic direction. Organizing encompasses the establishment of organizational structures, allocation of resources including personnel and equipment, and assignment of tasks and authority necessary to implement plans. Leading, sometimes termed directing, focuses on influencing and motivating employees to perform assigned tasks effectively through communication, inspiration, and supervision. Controlling involves monitoring performance,

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comparing actual results against planned standards, and taking corrective action to address deviations, ensuring organizational alignment with objectives. Digital transformation in service sectors extends beyond simple digitization—the conversion of analog processes to digital formats—to encompass comprehensive organizational change involving strategic renewal, business model innovation, and fundamental reconfiguration of value creation logics. Unlike digitization which focuses on technological conversion, digitalization applies digital technologies and information to broader organizational and societal contexts, transforming how organizations operate and deliver value. Digital transformation represents an even more comprehensive process, integrating advanced digital technologies into business models and operating processes, thereby altering how value is created, delivered, and captured. Contemporary management literature increasingly recognizes that digital transformation profoundly impacts management strategies and practices across all functional areas. The abundance of data generated by digital technologies allows managers to make more informed, data-driven decisions, with access to real-time data, predictive analytics, and performance metrics enabling managers to identify trends, forecast outcomes, and optimize operations with greater accuracy. AI-powered analytics enhance planning accuracy, cloud platforms enable decentralized organizing, virtual collaboration tools transform leading, and real-time dashboards revolutionize controlling. The emergence of new managerial roles specifically focused on digital transformation illustrates the evolving nature of management functions in digitalized contexts. Digital transformation managers guide organizations through technology-driven changes, coordinating teams and ensuring accountability while planning and implementing new strategies. These managers find technology solutions, plan their implementation, and measure and guide their success, representing a hybrid role that spans traditional management functions while incorporating specialized digital competencies.

Methodology

This theoretical analysis employs a conceptual synthesis approach, integrating insights from classical management theory, digital transformation literature, service research, and organizational change theory to construct an integrated framework for understanding management function transformation in digitalized service contexts. The methodology involves systematic review and synthesis of theoretical perspectives rather than empirical data collection, aiming to develop conceptual clarity and theoretical propositions that can guide future empirical research and organizational practice. The analytical framework is structured around the four classical management functions—planning, organizing, leading, and controlling—examining how each function is being transformed through service process digitalization. For each function, the analysis identifies key mechanisms of transformation, emerging patterns, and theoretical implications, drawing upon contemporary literature on digital transformation in service sectors. The synthesis approach enables identification of cross-cutting themes and patterns that transcend individual management functions, revealing broader transformations in the nature of managerial work and organizational coordination in digitalized service environments.

Results

The planning function is experiencing fundamental transformation in digitalized service environments, shifting from periodic, linear strategic planning to continuous, adaptive, and data-driven planning processes. Traditional planning approaches characterized by annual strategic planning cycles and relatively stable assumptions about competitive environments are being replaced by more dynamic, iterative planning processes that leverage real-time data and predictive analytics. AI-

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powered analytics enhance planning accuracy by enabling managers to identify trends, forecast outcomes, and optimize operations with greater precision than traditional planning methods. Digital transformation enables planning processes to become more decentralized and participatory, with cloud platforms and collaborative tools allowing broader organizational participation in strategic planning. This shift from centralized, hierarchical planning to more distributed planning processes reflects broader changes in organizational structures and decision-making authority in digitalized environments. Planning increasingly involves scenario-based thinking and adaptive strategies rather than fixed long-term plans, recognizing the rapid pace of technological change and market dynamics in digital service sectors. The organizing function is undergoing profound changes as digitalization enables new organizational structures, resource allocation mechanisms, and coordination approaches. Traditional hierarchical organizational structures are being supplemented or replaced by more flexible, network-based structures enabled by digital platforms and communication technologies. Cloud platforms and digital collaboration tools enable decentralized organizing, allowing teams to coordinate effectively across geographical and organizational boundaries. Digitalization is transforming how resources are allocated and managed within service organizations, with data analytics and AI enabling more dynamic, evidence-based resource allocation decisions. The concept of digital labor—automation, AI agents, and algorithmic systems performing work traditionally done by humans—is fundamentally altering resource allocation and organizational design. Service organizations are increasingly organizing around digital platforms and ecosystems rather than traditional functional or product-based structures, reflecting the platform-based nature of many digital service business models. The leading function is being transformed by digitalization through changes in communication patterns, motivational mechanisms, and leadership approaches required in digital service environments. Virtual collaboration tools are transforming how leaders communicate with and motivate employees, enabling new forms of distributed leadership and team coordination. The shift to digital service delivery often requires leaders to manage teams that include both human employees and digital agents or AI systems, requiring new leadership competencies and approaches. The transformation of leading functions is also evident in the emergence of new leadership roles focused on digital transformation and AI adoption. Digital transformation managers and AI/Digital Transformation Managers are responsible for bridging business strategy and advanced technology, shaping how AI, automation, and data-driven intelligence are embedded into everyday workflows. These leadership roles require not only traditional leadership competencies but also digital fluency, technological understanding, and the ability to lead organizational change in technology-intensive contexts. Leading in digitalized service contexts increasingly involves change management capabilities, as organizations must continuously adapt to evolving technologies and market conditions. The controlling function is experiencing perhaps the most dramatic transformation through digitalization, with real-time dashboards, automated monitoring systems, and AI-powered analytics revolutionizing how performance is measured and managed. Traditional controlling approaches based on periodic reporting and retrospective analysis are being replaced by continuous, real-time performance monitoring enabled by digital technologies. Real-time dashboards provide managers with immediate visibility into performance metrics, enabling faster identification of issues and more timely corrective action. Digitalization is enabling more sophisticated and granular performance measurement, with data analytics allowing organizations to track performance across multiple dimensions simultaneously. In IT service management, for example, digital transformation is enabling incident management with faster categorization, better correlation,

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and earlier detection, while problem management looks beyond isolated failures to identify patterns across applications, infrastructure, identity, and vendors. AI and machine learning are enabling predictive controlling, where potential performance issues are identified and addressed before they impact service delivery. Beyond the transformation of individual management functions, digitalization is producing cross-functional patterns that affect how management functions interact and integrate. The boundaries between planning, organizing, leading, and controlling are becoming more fluid, with digital technologies enabling more integrated and iterative management processes. For example, real-time performance data (controlling) directly informs strategic planning, while digital collaboration tools (organizing) enable more participatory planning and leading processes. Digitalization is also enabling new forms of management process integration through platforms and ecosystems. Service organizations increasingly manage not only internal processes but also external platform relationships, partner ecosystems, and customer co-creation processes, requiring integrated management approaches that span organizational boundaries. This ecosystem-based management requires new competencies and approaches that integrate traditional management functions with platform governance, partnership management, and ecosystem coordination.

Discussion

The theoretical analysis presented in this article reveals that digitalization of service processes is producing fundamental transformations in management functions that extend far beyond simple automation or efficiency improvement. The changes observed across planning, organizing, leading, and controlling functions suggest a comprehensive reconfiguration of managerial work in digitalized service contexts, with important implications for management theory and organizational practice. One key theoretical implication is the need to update classical management frameworks to account for the dynamic, integrated, and technology-mediated nature of management functions in digitalized service environments. While the POLC framework remains useful as a structural heuristic, its application in digital contexts requires significant modification to account for continuous planning processes, decentralized organizing structures, distributed leadership approaches, and automated controlling mechanisms. The proposed logics of light touch processes, infrastructural flexibility, and mindful actors provide a starting point for such theoretical updating, but further development is needed to fully capture the complexity of management function transformation.The analysis also highlights the importance of considering digital transformation as a comprehensive organizational change process rather than merely a technological upgrade. The transformation of management functions reflects broader changes in organizational structures, processes, and value creation logics that accompany service digitalization. This suggests that successful digital transformation requires not only technological capabilities but also management capabilities to navigate organizational change, develop new competencies, and reconfigure organizational structures and processes. The emergence of hybrid management roles spanning traditional functional boundaries represents another important theoretical development. These roles reflect the increasing integration and interdependence of management functions in digitalized contexts, suggesting that future management theory should move beyond functional silos toward more holistic, integrated frameworks. The competencies required for these hybrid roles—including digital fluency, change management capabilities, and ecosystem thinking—represent important areas for future management education and development. From a practical perspective, the analysis suggests that service organizations undergoing digital transformation should pay careful attention to the evolution of management functions and ensure that management

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capabilities keep pace with technological changes. This may require investment in management development, organizational redesign, and cultural change to enable new management approaches suited to digitalized service contexts. Organizations should also consider how digital technologies can be leveraged to enhance rather than simply automate management functions, using data analytics, AI, and digital platforms to enable more effective planning, organizing, leading, and controlling.

Conclusion

This theoretical analysis has examined the transformation of management functions in the context of service process digitalization, revealing fundamental changes across planning, organizing, leading, and controlling functions. The analysis demonstrates that digitalization is not merely automating existing management practices but fundamentally reconfiguring the nature of managerial work, requiring new competencies, altered organizational structures, and reconceptualized approaches to value creation and service delivery. The findings have important implications for both management theory and organizational practice, suggesting the need for updated theoretical frameworks and enhanced management capabilities to navigate digital transformation in service contexts. Future research should empirically investigate the patterns and mechanisms of management function transformation identified in this theoretical analysis, examining how these transformations vary across different service sectors, organizational contexts, and cultural environments. Longitudinal studies tracking the evolution of management functions over the course of digital transformation initiatives would provide valuable insights into the dynamics and contingencies of management function change. Research is also needed on the competencies and capabilities required for effective management in digitalized service contexts, informing management education and development programs.

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