

Unraveling Service-Driven Digital Transformation: A Multi-Level Innovation Framework

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ABSTRACT : *Digital transformation has become a critical imperative for organizations seeking to maintain competitive advantage in the rapidly evolving business landscape. This paper presents a comprehensive conceptual framework of service-driven digital transformation that integrates three interconnected dimensions: service innovation, business model innovation, and ecosystem innovation. Drawing upon extensive literature review and theoretical analysis, we develop a framework that illustrates how service-oriented approaches can catalyze organizational transformation through the synergistic interaction of these three innovation pillars. The framework emphasizes the dynamic and iterative nature of digital transformation, highlighting the role of customer-centricity, value co-creation, and platform-based ecosystems. We further explore the mechanisms through which service innovation drives business model reconfiguration and ecosystem orchestration, providing practical insights for managers and policymakers. This research contributes to the growing body of knowledge on digital transformation by offering a holistic perspective that bridges service-dominant logic with business model innovation and ecosystem theories.*

KEYWORDS: *Digital transformation, Service innovation, Business model innovation, Ecosystem innovation, Service-dominant logic.*

I. INTRODUCTION

The contemporary business environment is characterized by unprecedented technological disruption, changing customer expectations, and intensifying global competition. In this context, digital transformation has emerged as a strategic imperative for organizations across industries, enabling them to leverage digital technologies to fundamentally alter their value creation and capture mechanisms [1]. While digital transformation encompasses various dimensions including technological, organizational, and cultural changes, an increasingly prominent perspective emphasizes the central role of services in driving this transformation [2].

Service-dominant logic, as articulated by Vargo and Lusch [3], provides a theoretical foundation for understanding how value is co-created through service exchanges rather than through the transfer of tangible goods. This perspective has profound implications for digital transformation, suggesting that organizations must reconceptualize their offerings as service platforms that facilitate ongoing value creation with customers and other stakeholders [4]. The shift from product-centric to service-centric business models represents a fundamental reorientation that extends beyond mere technological adoption to encompass strategic, organizational, and ecosystem-level changes.

Recent research has highlighted the interconnected nature of service innovation, business model innovation, and ecosystem innovation in the context of digital transformation [5]. Service innovation involves the development of new or improved service offerings, service delivery mechanisms, and customer experiences. Business model innovation entails the reconfiguration of how organizations create, deliver, and capture value. Ecosystem innovation refers to the collaborative creation of value through networks of interdependent actors, resources, and relationships. While each of these innovation types has been studied extensively in isolation, their synergistic interactions in driving digital transformation remain underexplored.

This paper addresses this research gap by developing a comprehensive conceptual framework that integrates service innovation, business model innovation, and ecosystem innovation within the context of service-driven digital transformation. The model draws upon diverse theoretical perspectives including service-

dominant logic, business model literature, and ecosystem theory to provide a holistic framework for understanding and managing digital transformation initiatives. By examining the interdependencies and feedback loops among these three innovation dimensions, we offer insights into how organizations can orchestrate their transformation efforts to achieve sustainable competitive advantage.

The remainder of this paper is organized as follows. Section 2 provides a comprehensive literature review on digital transformation, service innovation, business model innovation, and ecosystem innovation. Section 3 presents the conceptual framework and develops propositions regarding the relationships among the key constructs. Section 4 discusses the theoretical and practical implications of the conceptual framework. Section 5 concludes with limitations and directions for future research.

II. LITERATURE REVIEW

Digital transformation refers to the profound transformation of business activities, processes, and models to leverage digital technologies [6]. It represents a fundamental shift beyond digitization to reimagining value creation in the digital age. Research has evolved from a focus on technology adoption to a comprehensive understanding of organizational change [7]. A critical insight is that digital transformation is an ongoing process requiring dynamic capabilities for sensing environmental changes and reconfiguring resources [8]. This aligns with viewing digital transformation as a journey requiring continuous learning and adaptation.

Service innovation encompasses developing new service concepts, delivery processes, and customer experiences [9]. Unlike product innovation, service innovation involves intangible elements such as processes and value propositions. Service-dominant logic reshaped understanding by viewing all economic exchange as service exchange [10]. Digital technologies increasingly enable service innovation through platforms, data analytics, and artificial intelligence [11]. Service innovation is viewed as collaborative, with value emerging through resource integration and co-creation involving customers and stakeholders [12].

Business model innovation involves modifying core elements to create new value propositions and revenue streams [13]. The business model canvas provides a framework with nine building blocks for describing and designing business models [14]. Digital technologies drive business model innovation through platforms and network effects [15]. Business model innovation is challenging as it requires deviating from established routines and may involve cannibalizing existing revenue streams [16]. The systemic nature means changes in one element require adjustments in others.

Ecosystem innovation refers to the collaborative creation of value through networks of interdependent actors, resources, and relationships [17]. Ecosystem innovation also presents significant challenges. Coordinating diverse actors with potentially conflicting interests requires sophisticated governance mechanisms and trust-building processes [18]. Managing the complexity of ecosystem relationships demands new capabilities for network management, partner engagement, and value allocation. While service innovation, business model innovation, and ecosystem innovation have each been studied extensively, their integration within the context of digital transformation remains underexplored. Service-driven digital transformation represents a holistic approach that positions service innovation as the primary driver of organizational change, with business model innovation and ecosystem innovation serving as complementary mechanisms for realizing the full potential of service-centric strategies [19]. Rather than starting with available technologies and seeking applications, organizations should begin with a deep understanding of customer needs and value creation opportunities, then identify and deploy appropriate technologies to enable service innovation [20].

III. METHODOLOGY

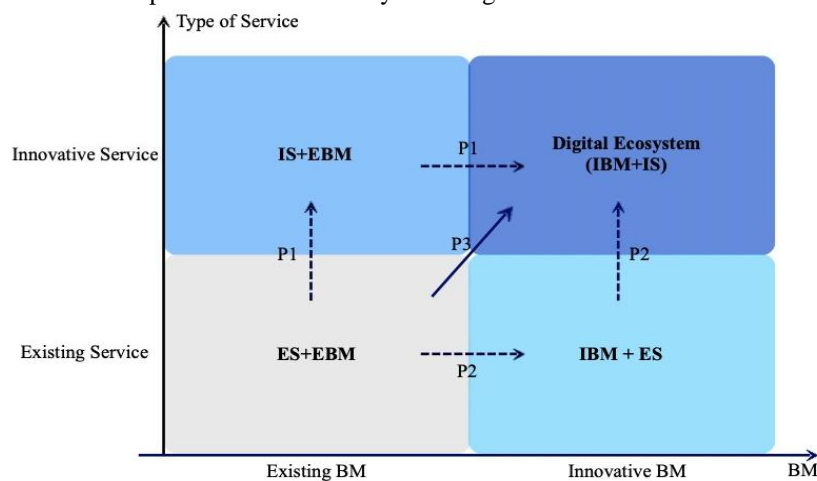
The study adopts an exploratory multiple case study method. Based on the digital transformation events of the selected cases, this study summarizes a service-oriented innovation model from existing services to innovative services, and finally to the transformation into a digital ecosystem. The collection of data includes five ways: Interviews with the chairman, board members, and middle and senior managers. Database of the World Economic Forum (WEF). Real-time internal observation within the company. Internal company documents. Archival data includes company websites, news reports, published journals and other databases. In-depth interviews with senior executives at manufacturing companies between September 2024 and September 2025.

The case selection criteria in this study are companies with successful digital transformation events, good brand reputation, a large employee base, and a leading position in the industry. Keywords used in searching for companies include ‘business model innovation’, ‘digital transformation’, ‘service innovation’, ‘ecosystem innovation’, ‘digital ecosystem’, etc. 12 companies are selected : Allianz / Adidas / BASF / Deutsche Bank / Siemens / Volkswagen / Under Armour / Daimler / Ørsted A/S / Tesla / Box. The unit of analysis is each digital transformation event in the selected sample companies. The framework links the service-driven concept with digital transformation and further explains the potential mechanisms of transformation through digital development. The abductive process goes back and forth between empirical material and literature. Coding process is conducted according to the analysis units of business model innovation, service innovation and digital transformation events.

The reliability and validity are addressed as follows. First, dataset is formed from different sources. Secondly, the interviewees are contacted again by email, and the research results are double checked to ensure the validity and authenticity of the evidence. Thirdly, a case study database is established to compile enterprise interview data and internal files. Finally, in the process of data analysis, the abstraction of the theory is enhanced through repeated induction and iteration between the collected databases.

IV. FINDINGS AND DISCUSSIONS

Building upon the literature reviewed above, we develop a conceptual framework that illustrates the relationships among service innovation, business model innovation, and ecosystem innovation in the context of service-driven digital transformation. The framework depicted in Figure 1, presents these three innovation dimensions as interconnected pillars that collectively drive digital transformation outcomes.



P1 : Existing Service - Innovative Service - Successful Digital Transformation (IBM+IS)



P2 : Existing Service - Innovative Business Model - Successful Digital Transformation (IBM + IS)



P3 : Existing Service - Successful Digital Transformation (IBM+IS)



Figure 1. The framework of service-driven digital transformation.

The conceptual framework comprises three core constructs: Service innovation, Business model innovation, and Ecosystem innovation. Each construct represents a distinct but interconnected dimension of the digital transformation process. Service innovation encompasses the development of new service concepts, the redesign of service delivery processes, and the enhancement of customer experiences. It includes both radical innovations that create entirely new service categories and incremental innovations that improve existing services. Service innovation is driven by deep customer insights, enabled by digital technologies, and focused on creating superior value for customers and other stakeholders. Business model innovation involves the reconfiguration of how the organization creates, delivers, and captures value. It includes changes in value propositions, revenue models, cost structures, and partnership arrangements. Business model innovation translates service innovations into sustainable economic models, ensuring that the value created can be appropriately captured by the organization and its partners. Ecosystem Innovation refers to the development and evolution of networks of interdependent actors that collaboratively create value. It encompasses the attraction and engagement of ecosystem participants, the establishment of governance mechanisms, and the orchestration of collaborative activities. Ecosystem innovation extends the reach and impact of service and business model innovations by leveraging the resources, capabilities, and relationships of diverse ecosystem actors. Figure 2 summarizes the evolutionary process towards successful digital transformation.

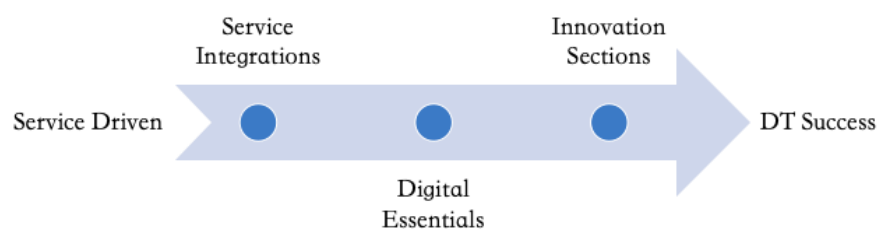


Figure 2. The evolutionary process towards DT success.

This conceptual framework also incorporates a dynamic process perspective that recognizes digital transformation as an ongoing journey rather than a destination. This perspective highlights several key process elements:

Sensing and Seizing Opportunities. Organizations must continuously scan the environment for emerging customer needs, technological possibilities, and competitive threats. This sensing capability enables organizations to identify opportunities for service innovation and anticipate the business model and ecosystem implications of these opportunities. The ability to quickly seize identified opportunities through rapid experimentation and iterative development is a critical success factor [21].

Iterative Learning and Adaptation. Digital transformation involves continuous learning and adaptation as organizations experiment with new services, business models, and ecosystem configurations. Failures and setbacks are inevitable but provide valuable learning opportunities. Organizations that foster a culture of experimentation, psychological safety, and learning from failure are better positioned to navigate the uncertainties of digital transformation [22].

Orchestration and Governance. As ecosystems become more complex and diverse, effective orchestration and governance become increasingly important. Ecosystem orchestrators must balance the need for coordination and standardization with the need for autonomy and flexibility among ecosystem participants. Developing appropriate governance mechanisms, incentive structures, and conflict resolution processes is essential for maintaining ecosystem health and vitality [23].

Scaling and Replication. Successful innovations must be scaled and replicated to achieve their full impact. This scaling process may involve extending services to new customer segments, replicating business models in new markets, or expanding ecosystems to include new partners. Scaling requires careful attention to the contextual factors that may affect the transferability of innovations across different settings [24].

V. CONCLUSION

This paper has developed a comprehensive conceptual framework of service-driven digital transformation that integrates service innovation, business model innovation, and ecosystem innovation. It

provides a holistic framework for understanding how organizations can leverage service-centric approaches to navigate the challenges and opportunities of digital transformation. By articulating the relationships among these three innovation dimensions and their dynamic co-evolution over time, the framework offers both theoretical insights and practical guidance for researchers and practitioners.

The key contributions of this paper are as follows. Firstly, the development of an integrative conceptual framework that bridges service-dominant logic, business model innovation, and ecosystem theory; Secondly, the articulation of specific propositions regarding the relationships among service, business model, and ecosystem innovation; Thirdly, the incorporation of a dynamic process perspective that recognizes digital transformation as an ongoing journey; and fourthly, the derivation of practical implications for managers and leaders navigating digital transformation.

Like all conceptual research, this study has several limitations that should be acknowledged. First, the model is based on theoretical analysis and synthesis of existing literature rather than empirical testing. Future research should empirically validate the proposed relationships through quantitative and qualitative studies. Case studies of organizations undergoing digital transformation could provide rich insights into how the proposed relationships unfold in practice [25]. Second, the framework presented is a general one that may need to be adapted for specific industry contexts. The dynamics of service-driven digital transformation may vary across industries due to differences in technological intensity, competitive dynamics, and regulatory environments. Future research could explore how the framework applies in specific sectors such as manufacturing, healthcare, financial services, and retail [26]. Despite these limitations, we believe that the conceptual framework provides a valuable foundation for understanding and managing service-driven digital transformation. We hope that this paper stimulates further research and practice in this important area.

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