
**Digital Transformation, Competitive Pressure, and Digital Leadership:
Toward a Conceptual Model of Public Enterprise Service Innovation**

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Abstract

State owned enterprises increasingly face demands to enhance digital service performance under the dual mission of generating profit and delivering social value. While extant studies predominantly focus on private firms, the public sector remains underexplored. This conceptual article aims to develop a framework linking competitive pressure, digital transformation, and digital leadership to digital service performance, with digital innovation as a mediating mechanism. By integrating perspectives from innovation ecosystems, dynamic capabilities, and public management, this study advances theoretical understanding of how public enterprises can adapt to digital disruption while maintaining legitimacy and public trust. The article further highlights methodological opportunities through sequential explanatory mixed methods to bridge quantitative patterns with qualitative insights into organizational adaptation.

Keywords: public enterprise digital service; digital innovation; competitive pressure; digital transformation; digital leadership

1. Introduction

In the past decade, digital transformation has emerged as one of the most influential forces shaping organizational strategies and performance. It refers not only to the adoption of new technologies but also to the reconfiguration of organizational processes, structures, and business models to leverage digital opportunities (Warner & Wäger, 2019). While private firms have been extensively studied for their agility and ability to exploit digital technologies to innovate and compete (Ghezzi & Cavallo, 2020; Palfreyman & Morton, 2022), the dynamics of digital transformation in public enterprises remain relatively underexplored.

Public enterprises occupy a unique position within national economies. Unlike purely private firms, they operate under a dual mission: ensuring profitability and efficiency while simultaneously fulfilling social mandates and serving the public interest (Mia et al., 2024). This

duality creates inherent tensions in their strategic choices, particularly in responding to external pressures for innovation and accountability. In the digital era, citizens no longer compare government services exclusively with one another; rather, they benchmark them against seamless digital services offered by private platforms such as e-commerce, ride-hailing, or digital banking (Priyono & Hidayat, 2024). Consequently, public enterprises face mounting demands to adapt their services, integrate new technologies, and improve user experiences in order to remain relevant and legitimate.

Competitive pressure, traditionally conceptualized as market rivalry in private sector contexts (Alaskar et al., 2021) takes on a broader meaning in public enterprises. It includes reputational competition, inter-agency benchmarking, and pressure from citizens-as-users. These pressures act as catalysts for digital transformation and service innovation. When public enterprises fail to adapt, the risks include citizen dissatisfaction, declining trust in government, and the erosion of institutional legitimacy (Mia et al., 2024; Ghezzi & Cavallo, 2020). Recent studies have emphasized that even in the absence of direct market rivalry, public organizations must interpret such pressures as competitive dynamics that demand strategic renewal (Priyono et al., 2024; Prabowo et al., 2025).

Leadership plays a critical role in translating external pressures into internal capacity for transformation. Digital leadership capability is defined as the ability of leaders to envision, mobilize, and orchestrate resources in ways that align with digital opportunities (Benitez et al., 2022). Unlike traditional bureaucratic leadership styles, digital leaders are expected to foster agility, experimentation, and collaborative networks that connect organizations with digital ecosystems (Nambisan & Sawhney, 2011). In the public sector, such leadership must also reconcile innovation with principles of equity, inclusiveness, and accountability. Prior evidence shows that organizations with strong digital leadership capabilities demonstrate superior innovation outcomes and service performance (Leso et al., 2023; Feroz et al., 2023).

At the heart of this transformation lies digital service innovation. Defined as the creation of new or significantly improved services enabled by digital technologies (Sedera et al., 2016; Iden et al., 2020), digital innovation functions as the mediating mechanism through which external pressures and leadership capacities translate into tangible performance outcomes. In public enterprises, digital innovation may manifest in various forms, such as mobile-based citizen services, AI-enabled decision support systems, or integrated e-government platforms. These innovations not only improve efficiency but also enhance inclusiveness and responsiveness—key elements of public value creation (Callista et al., 2024; Orero-Blat et al., 2024).

Despite growing interest in digital government, the majority of empirical studies continue to focus on the private sector (Warner & Wäger, 2019; Mia et al., 2024). Few have systematically examined how competitive pressure, digital transformation, and digital leadership interact to shape digital service performance in public enterprises. Furthermore, limited attention has been given to the mediating role of digital innovation, particularly in contexts where public organizations are both service providers and instruments of government policy.

This study contributes to filling these gaps by proposing a conceptual model that positions digital innovation as the central mechanism connecting external pressures and leadership capacities with digital service performance in public enterprises. By integrating perspectives from innovation ecosystems (Nambisan & Sawhney, 2011), dynamic capabilities (Warner & Wäger, 2019), and digital leadership (Benitez et al., 2022), this framework enriches both theoretical debates and practical strategies for digital transformation in the public sector.

2. Methodological Considerations

In constructing the theoretical framework for this conceptual paper, a purposive literature selection strategy was adopted, focusing on peer-reviewed articles published between 2019 and 2025 that address the core constructs of competitive pressure, digital transformation, digital leadership, and digital service innovation, particularly within public sector or hybrid organizations such as state-owned enterprises. The primary aim was to capture the most recent conceptual advances and empirical insights in these domains. Articles were identified using a combination of Google Scholar, Scopus, and Web of Science databases, using targeted keywords (e.g., “digital transformation in public enterprise”, “digital leadership”, “competitive pressure in public management”). Priority was given to studies offering theoretical contributions or validated measurement constructs that could inform the model’s development. This strategy aligns with best practices in conceptual research, where literature selection is guided not by exhaustive coverage but by theoretical relevance and analytical rigor (Jaeger et al., 2025; Moleka, 2025).

The selection of references also followed the principle of theoretical triangulation, integrating perspectives from innovation ecosystems (Nambisan & Sawhney, 2011), the resource-based view (Cai et al., 2024), and dynamic capabilities theory (Warner & Wäger, 2019) to develop a more comprehensive and interdisciplinary model. Public sector-specific studies were prioritized to ensure contextual alignment, particularly those highlighting digital governance challenges, hybrid organizational logic, and citizen-centric service design (Ghezzi & Cavallo, 2020; Priyono & Hidayat, 2024). Additionally, methodological frameworks from previous conceptual papers were reviewed to inform the logical structure of hypothesis development (Appiah & Grimm, 2025; Ghosh et al., 2025). Through this curated approach, the paper not only synthesizes extant knowledge but also positions its theoretical model within a robust scholarly discourse that is both timely and contextually grounded.

3. Theoretical Framework and Hypothesis Development

3.1 The Influence of Competitive Pressure Positively Influences Digital Service Performance

Competitive pressure is an important external factor that drives organizations to adopt and optimize digital technologies in order to maintain their competitive advantage. Firms operating in highly competitive environments tend to accelerate digital transformation to enhance efficiency, service quality, and responsiveness to market demands (Chang and Chen, 2025). Moreover, digital service quality is often evaluated in relative terms against competitors, where external benchmarks serve as critical references for service improvement (Hao et al., 2025). Thus, competitive pressure not only stimulates technology adoption but also compels

organizations to continuously improve their digital service standards in order to meet or even exceed customer expectations.

Furthermore, although competitive pressure may create challenges such as technostress, empirical evidence shows that with adequate organizational support and managerial capabilities, such pressures can actually foster improved digital service performance (Khalequzzaman et al., 2025; Merín-Rodrigáñez et al., 2025). This is consistent with findings in the public sector context, where the quality of human resources and the readiness of digital infrastructure significantly contribute to the effectiveness of digital services (Febrian et al., 2025). Consequently, competitive pressure can be viewed as a catalyst for the development of internal capabilities that strengthen effectiveness, innovation, and the competitiveness of digital services. Based on this reasoning, the following hypothesis is proposed:

H1: Competitive pressure positively influences digital service performance

3.2 The Influence of Competitive Pressure on Digital Service Innovation

Competitive pressure is widely recognized as a critical driver of digital service innovation because it compels organizations to explore new technological solutions, redesign processes, and continuously adapt their offerings to remain competitive. In dynamic and technology-intensive markets, firms exposed to strong competitive pressure are more likely to adopt digital innovation as a differentiation strategy to respond quickly to changing customer expectations (Uršič and Čater, 2025). Digital service innovation is therefore not merely a technological improvement but also a strategic response shaped by external market forces, where competitive intensity accelerates experimentation, rapid deployment, and integration of emerging technologies into new service models (Hietala and Päivärinta, 2025).

Furthermore, research highlights that competitive environments encourage ambidextrous approaches—balancing exploitation of existing capabilities with exploration of novel digital services—which ensures that organizations can maintain efficiency while pioneering innovation (Hietala and Päivärinta, 2025). Empirical findings also show that under competitive pressure, firms increasingly rely on customer-driven innovation, engaging users in co-creation processes that accelerate the development and diffusion of digital services (Qasim, Bataineh and Alhur, 2025). Hence, competitive pressure acts not only as a catalyst but also as an enabler of organizational learning and innovation capability. Based on this reasoning, the following hypothesis is proposed:

H2: Competitive pressure positively influences digital service innovation

3.3 The Influence of Digital Transformation on Digital Service Performance

Digital transformation has been recognized as a comprehensive organizational change process that leverages digital technologies to enhance processes, decision-making, and value creation. It involves the reconfiguration of resources, integration of advanced technologies, and development

of managerial capabilities that collectively improve service outcomes and firm performance (Merín-Rodríguez et al., 2025). In the banking industry, for example, digital transformation has been shown to not only streamline internal operations but also to improve customer experiences and regulatory compliance, thereby supporting higher levels of digital service performance (Khalequzzaman et al., 2025). This indicates that digital transformation establishes a strong foundation for organizations to optimize digital services, making them more efficient, reliable, and responsive to evolving user needs.

Furthermore, studies emphasize that the outcomes of digital transformation are directly linked to digital service performance through mechanisms such as business model innovation, supply chain digitalization, and digital service design. Firms that implement digital transformation effectively are better able to orchestrate resources, create innovative business models, and maintain digital service quality aligned with customer expectations (Li et al., 2025; Hao et al., 2025). The integration of digital technologies into service delivery further enhances reliability, personalization, and trust, which are critical to improving customer satisfaction and service performance, as evidenced in contexts such as healthcare and e-commerce (Wissawaswaengsuk et al., 2025). Therefore, digital transformation functions both as a driver and an enabler of superior digital service performance. Based on this reasoning, the following hypothesis is proposed:

H3: Digital transformation positively influences digital service performance.

3.4 The Influence of Digital Transformation on Digital Service Innovation

Digital transformation has been widely acknowledged as a strategic enabler of innovation, particularly in the domain of digital services. By leveraging advanced technologies such as big data, artificial intelligence, and cloud computing, digital transformation creates new opportunities for organizations to redesign processes and co-create value with customers. Empirical studies demonstrate that digital transformation facilitates new product and service development by enabling flexible organizational structures and knowledge integration across boundaries (Merín-Rodríguez et al., 2025). In service sectors such as banking and healthcare, digital transformation not only enhances efficiency but also drives the emergence of innovative digital services that are more personalized, interactive, and customer-centric (Khalequzzaman et al., 2025; Wissawaswaengsuk et al., 2025). This indicates that digital transformation acts as both a technological and organizational catalyst for digital service innovation.

Moreover, research highlights that digital transformation outcomes are reinforced through mechanisms such as business model innovation, supply chain digitalization, and digital service quality enhancement. For example, supply chain digitalization enabled by digital transformation has been shown to improve firms' ability to orchestrate resources and design novel business models, which in turn accelerate service innovation (Li et al., 2025). Similarly, in digital service ecosystems, external reference knowledge and technological benchmarking facilitated by digital transformation provide firms with new incentives to continuously innovate and differentiate their digital offerings (Hao et al., 2025). Therefore, digital transformation serves as a key driver of

organizational learning and resource reconfiguration, both of which are essential for fostering digital service innovation. Based on these insights, the following hypothesis is proposed:

H4: Digital transformation positively influences digital service innovation.

3.5 The Influence of Digital Leadership on Digital Service Performance

Digital leadership has emerged as a critical determinant of organizational success in the era of digital transformation, as it combines technological competence with leadership practices to enhance performance outcomes. Leaders who adopt digital leadership practices foster a culture of innovation, empower employees, and ensure the integration of digital tools in day-to-day operations, which collectively improve service delivery and performance (Cheng et al., 2025). Studies suggest that digital leadership enhances organizational agility, promotes effective communication, and strengthens employee commitment, all of which are crucial for improving the quality and responsiveness of digital services (Mollah et al., 2024). By aligning digital strategies with organizational vision, digital leaders create an environment that not only supports technological adoption but also ensures that digital services deliver superior value to customers (Mollah et al. 2005).

Furthermore, digital leadership plays a pivotal role in overcoming resistance to change, reducing technostress, and shaping organizational culture to embrace digital transformation initiatives. Evidence from systematic reviews highlights that leadership behaviors—particularly change-oriented and relation-oriented practices—are positively associated with service quality, innovation, and performance in digital contexts (Orkamo et al., 2025). In addition, empirical findings demonstrate that digital leaders can indirectly boost service performance by building digital capabilities, promoting absorptive capacity, and creating a supportive innovation climate within organizations (Dinarti et al., 2025; Cheng et al., 2025). This implies that digital leadership acts as a catalyst for leveraging digital technologies to enhance service outcomes. Therefore, it is reasonable to propose the following hypothesis:

H5: Digital leadership positively influences digital service performance.

3.6 The Influence of Digital Leadership on Digital Service Innovation

Digital leadership has increasingly been recognized as a crucial driver of innovation in digitally transforming organizations. Leaders with strong digital orientation create environments where emerging technologies are not only adopted but also leveraged for service innovation. They provide strategic vision, manage cultural shifts, and foster collaboration that enables the generation of novel digital services (Hariyani et al., 2025). Empirical studies demonstrate that digital leadership shapes ambidextrous innovation—both explorative and exploitative—by guiding the integration of digital technologies with organizational strategies, thereby fostering conditions that enhance service innovation outcomes (Cai et al., 2024). In particular, digital leaders promote value co-creation with stakeholders and encourage experimentation, both of which are critical for advancing digital service innovation in dynamic markets (Cai et al 2024).

Moreover, leadership behaviors such as change-orientation, relational engagement, and external networking have been shown to directly contribute to digital innovation by enabling knowledge recombination and organizational learning (Orkamo et al., 2025). CEO-level digital leadership also plays a decisive role in ensuring that digitization efforts translate into sustainable and innovative practices, including eco-friendly or customer-centric digital services (Khan et al., 2025). This aligns with the resource-based and dynamic capabilities perspectives, which highlight leadership as a critical intangible resource that allows firms to reconfigure assets and capabilities for innovation. Hence, it can be argued that digital leadership provides both the strategic impetus and the operational capacity to drive service innovation. Based on this reasoning, the following hypothesis is proposed:

H6. Digital leadership positively influences digital service innovation

3.7 The mediating effect of digital innovation on competitive pressure, digital transformation, and digital leadership on service performance

Competitive pressure compels organizations to continuously innovate their digital services in order to maintain competitiveness. External pressures not only force firms to adopt new technologies but also reshape how value is created through service innovation (Uršič and Čater, 2025). Prior research indicates that competitive intensity accelerates the development of digital innovation as a strategic response to shifting customer expectations, which ultimately enhances service performance (Hietala and Päivärinta, 2025). Hence, digital innovation functions as a mediating mechanism through which competitive pressure stimulates the creation of novel digital services, leading to superior service outcomes. Therefore, the following hypothesis is proposed:

H7: Digital innovation mediates the effect of competitive pressure on service performance

Digital transformation enables the integration of advanced technologies into business processes, yet its positive effects on service performance largely depend on the extent to which transformation initiatives are translated into digital service innovation. Evidence suggests that digital transformation fosters business model innovation, supply chain digitalization, and technology-enabled service design (Merín-Rodríguez et al., 2025; Li et al., 2025). These transformation processes strengthen firms' ability to generate innovative digital services that are more personalized, efficient, and responsive, thereby improving service performance (Hao et al., 2025). Consequently, digital innovation represents a crucial pathway that mediates the relationship between digital transformation and service performance. Thus, the following hypothesis is proposed:

H8: Digital innovation mediates the effect of digital transformation on service performance.

Digital leadership provides strategic direction, cultivates adaptive organizational cultures, and promotes the adoption of digital technologies, thereby accelerating the creation of innovative digital services. Effective digital leaders facilitate ambidextrous innovation—balancing exploration and exploitation—and encourage value co-creation with stakeholders, which are

essential for digital service innovation (Cai et al., 2024). Moreover, strong digital leadership enhances absorptive capacity and organizational learning, ensuring that digital innovation translates into service offerings that are more valuable and customer-oriented (Hariyani et al., 2025; Orkamo et al., 2025). Thus, digital innovation serves as the mediator that explains how digital leadership contributes to improved service performance. Accordingly, the following hypothesis is proposed:

H9: Digital innovation mediates the effect of digital leadership on service performance.

Building on the preceding literature review and hypothesis development, the theoretical framework of this study is presented to illustrate the relationships among competitive pressure, digital transformation, and digital leadership, with digital innovation as the mediating mechanism. The framework integrates perspectives from competitive pressure theory, the resource-based view, and dynamic capabilities, offering conceptual clarity for the hypothesized relationships and providing a coherent foundation for analyzing how public enterprises can reconfigure resources and leadership practices to enhance legitimacy, innovation, and service performance in the digital era.

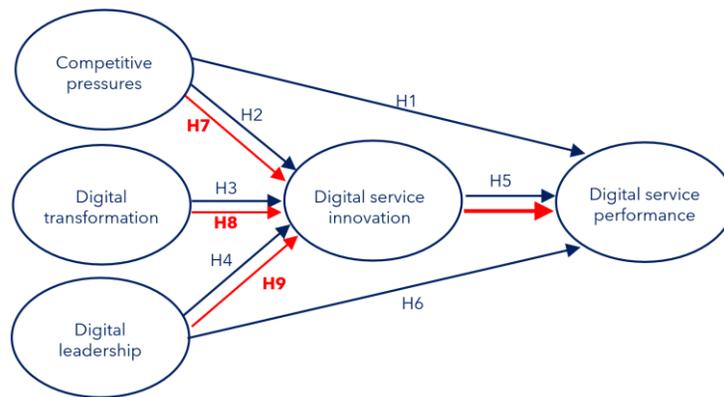


Figure 1. Theoretical framework

4. Expected Theoretical Contributions

This study seeks to advance both theoretical and practical understanding of how digital innovation, competitive pressure, digital transformation, and digital leadership interact to shape service performance in public enterprises. While existing scholarship has extensively examined these constructs within private-sector contexts, limited attention has been paid to their relevance in public organizations, where legitimacy, citizen expectations, and governance structures introduce distinct dynamics. By situating the analysis within the public management domain, this study offers several contributions to theory and practice.

First, this study extends the theory of competitive pressure into the domain of public enterprises, reframing competition not as market rivalry alone but as legitimacy pressures and rising citizen

expectations. While prior studies have examined competitive intensity primarily in private-sector contexts (Uršič and Čater, 2025; Hietala and Päivärinta, 2025), public organizations increasingly face accountability demands, transparency requirements, and pressure to deliver high-quality digital services comparable to private sector standards (Hao et al., 2025). By analyzing competitive pressure through this legitimacy-oriented lens, the study contributes to a broader understanding of how public enterprises adapt to institutional and societal demands, thereby extending the applicability of competitive pressure theory to non-market environments.

Second, the study bridges digital transformation and leadership research by situating both within the public management context. Previous scholarship has highlighted how digital transformation reshapes organizational processes and service delivery (Merín-Rodrigáñez et al., 2025; Li et al., 2025), while leadership research emphasizes the importance of adaptive, change-oriented, and collaborative leadership in steering digital initiatives (Orkamo et al., 2025; Hariyani et al., 2025). By integrating these perspectives, this study advances the understanding of digital leadership in public enterprises, illustrating how leaders must balance technological expertise with relational skills to align transformation strategies with citizen needs and institutional values.

Third, the study positions digital innovation as a mediating mechanism, thereby integrating the resource-based view and dynamic capabilities framework with public management scholarship. Existing studies demonstrate that innovation processes enable organizations to transform digital resources into superior service outcomes (Cai et al., 2024; Hao et al., 2025). By conceptualizing digital innovation as the bridge between competitive pressure, digital transformation, and digital leadership on the one hand, and service performance on the other, this study deepens theoretical integration between strategic management and public administration. This perspective highlights how public enterprises can reconfigure digital resources and capabilities to not only achieve efficiency but also legitimacy and responsiveness in delivering citizen-centric services.

5. Conclusion

This conceptual article has proposed a theoretical framework that integrates competitive pressure, digital transformation, and digital leadership as antecedents of digital service performance, with digital innovation functioning as a key mediating mechanism. By drawing from interdisciplinary perspectives such as innovation ecosystems, the resource-based view, and dynamic capabilities theory, the framework addresses an important gap in the literature—namely, the limited understanding of how public enterprises can systematically respond to external digital pressures while preserving legitimacy and fulfilling their public mandates. The synthesis of prior research allows for a more nuanced understanding of digital transformation in state-owned enterprises, moving beyond the predominantly private-sector focus of existing studies.

The proposed framework contributes to theory by reframing competitive pressure not merely as market competition, but also as institutional and societal legitimacy demands unique to public organizations. Moreover, it emphasizes the strategic role of digital leadership in orchestrating transformation initiatives that are not only efficient but also inclusive and citizen-centered.

Digital innovation is positioned at the heart of this framework as a transformational mechanism that converts external pressures and internal capabilities into tangible service performance outcomes.

While this article does not include empirical validation, it provides a robust foundation for future research using mixed methods. Quantitative studies may empirically test the hypothesized relationships using survey-based instruments and structural equation modeling, while qualitative approaches may explore contextual variations and organizational narratives behind digital transformation. Further research is also needed to examine how this framework holds across different public sectors, cultures, and digital maturity levels. Ultimately, the insights offered by this model aim to inform both academic debates and practical strategies for enabling agile, innovative, and accountable public enterprise systems in the digital era.

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