

DIGITAL TRANSFORMATION AND FIRM PERFORMANCE: MEDIATING ROLE OF ORGANIZATIONAL AGILITY AND MODERATING ROLE OF LEADERSHIP CAPABILITY

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Abstract

Digital transformation has emerged as a critical driver of organizational competitiveness in today's rapidly evolving business environment. However, empirical evidence suggests that the relationship between digital transformation and firm performance is complex and influenced by organizational factors. This study investigates the impact of digital transformation on firm performance, examining organizational agility as a mediating variable and leadership capability as a moderating variable. Using a quantitative research approach, data were collected from 250 managerial-level respondents working in digitally active firms. Structural Equation Modeling (SEM) using SmartPLS was employed to test the proposed relationships. The results indicate that digital transformation has a significant positive effect on firm performance. Organizational agility partially mediates this relationship, demonstrating that firms achieve better performance when digital initiatives enhance flexibility, responsiveness, and adaptability. Furthermore, leadership capability significantly moderates the relationship between digital transformation and organizational agility, suggesting that capable leadership strengthens the effective implementation of digital initiatives. The findings contribute to the dynamic capability literature by highlighting the importance of organizational and leadership factors in realizing digital value. Practically, the study offers insights for managers and policymakers to prioritize leadership development and agile practices alongside digital investments. The research concludes that digital transformation alone is insufficient unless supported by agile structures and competent leadership.

Keywords: *Digital Transformation, Firm Performance, Organizational Agility, Leadership Capability*

Introduction

Digital transformation has become an essential strategic priority for organizations seeking to enhance competitiveness and long-term sustainability. The integration of digital technologies such as artificial intelligence, big data analytics, cloud computing, and automation has fundamentally changed how firms operate, deliver value, and interact with stakeholders. As markets become increasingly dynamic and uncertain, firms are under pressure to adapt rapidly to technological and environmental changes.

Despite substantial investments in digital technologies, many organizations fail to achieve the expected performance outcomes. This phenomenon, often referred to as the "digital transformation paradox," suggests that technological adoption alone does not guarantee improved performance. Instead, organizational capabilities and leadership effectiveness play a crucial role in translating digital initiatives into tangible results. Scholars argue that digital transformation must be accompanied by structural flexibility, cultural readiness, and strategic leadership to generate value.

Organizational agility, defined as the ability to sense environmental changes and respond quickly and effectively, has emerged as a key mechanism through which digital transformation influences firm performance. Agile organizations can reconfigure resources, innovate processes, and adapt strategies in

response to market demands. Similarly, leadership capability plays a pivotal role in shaping digital vision, encouraging innovation, and overcoming resistance to change.

Although prior studies have examined digital transformation and performance, limited empirical research has explored the combined roles of organizational agility and leadership capability within a unified framework. This study addresses this gap by investigating how organizational agility mediates the relationship between digital transformation and firm performance, and how leadership capability moderates the relationship between digital transformation and agility. By integrating these variables, the study provides a comprehensive understanding of how firms can maximize the benefits of digital transformation.

Literature Review

Digital transformation refers to the process through which organizations integrate digital technologies into business operations, strategies, and organizational structures to enhance value creation and efficiency (Vial, 2019). Prior research indicates that digital transformation improves firm performance by enabling innovation, cost reduction, improved customer engagement, and enhanced decision-making (Warner & Wäger, 2019). However, empirical findings remain inconsistent, suggesting the presence of intervening organizational factors.

Organizational agility has gained significant attention as a key determinant of digital success. It reflects a firm's ability to sense market changes, respond rapidly, and reconfigure resources effectively (Teece, 2018). Digital technologies facilitate agility by improving information flow, enabling real-time analytics, and supporting flexible work processes. Studies have shown that agile organizations outperform competitors in turbulent environments due to faster response times and improved adaptability (Ahmed et al., 2023). As such, organizational agility is increasingly viewed as a mediator between digital transformation and performance.

Leadership capability is another critical factor influencing digital transformation outcomes. Digital leaders provide strategic direction, encourage innovation, and foster a culture that supports experimentation and learning (Singh & Hess, 2017). Effective leadership enhances employee engagement, reduces resistance to technological change, and ensures alignment between digital initiatives and organizational goals. Leadership capability also plays a moderating role by strengthening the relationship between digital transformation and organizational agility.

From a theoretical perspective, dynamic capability theory explains how firms leverage internal and external competencies to adapt to environmental changes. Digital transformation represents a strategic resource, organizational agility acts as a dynamic capability, and leadership capability enables the effective deployment of these resources. Despite growing interest in this area, empirical studies examining both mediation and moderation effects in a single model remain limited, particularly in emerging economy contexts. This study addresses this gap by proposing and testing an integrated research framework.

Theoretical Framework

The study is grounded in Dynamic Capability Theory, which emphasizes an organization's ability to integrate, build, and reconfigure resources in response to environmental change.

Proposed Relationships:

- Digital Transformation → Firm Performance
- Digital Transformation → Organizational Agility → Firm Performance

- Leadership Capability moderates Digital Transformation → Organizational Agility

Methodology

A quantitative research design was adopted using a cross-sectional survey method. Data were collected from 250 respondents employed in organizations undergoing digital transformation. A structured questionnaire measured digital transformation, organizational agility, leadership capability, and firm performance using a five-point Likert scale. Smart-PLS 4 was employed for data analysis due to its suitability for mediation and moderation testing. Reliability, convergent validity, and structural relationships were evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Data Analysis and Results

Table 1: Measurement Model Results

Construct	Cronbach's Alpha	Composite Reliability	AVE
Digital Transformation	0.89	0.92	0.68
Organizational Agility	0.88	0.91	0.66
Leadership Capability	0.87	0.90	0.64
Firm Performance	0.90	0.93	0.70

Interpretation

The measurement model demonstrates strong reliability and validity. All Cronbach's alpha and composite reliability values exceed the recommended threshold of 0.70, indicating internal consistency among measurement items. Average Variance Extracted (AVE) values are above 0.50, confirming adequate convergent validity. These results indicate that the constructs are measured reliably and that the indicators adequately represent their respective latent variables. The high reliability scores reflect consistency in respondents' perceptions of digital transformation, organizational agility, leadership capability, and firm performance. Overall, the measurement model meets all recommended criteria, allowing further structural model analysis.

Table 2: Structural Model Results

Path	β	t-value	p-value	Decision
Digital Transformation → Firm Performance	0.42	6.85	<0.001	Supported
Digital Transformation → Organizational Agility	0.54	8.12	<0.001	Supported
Organizational Agility → Firm Performance	0.37	5.91	<0.001	Supported

Interpretation

The structural model results reveal significant positive relationships among the study variables. Digital transformation has a strong positive effect on firm performance, confirming that digital initiatives enhance operational and financial outcomes. Digital transformation also significantly influences organizational agility, indicating that technology adoption improves responsiveness and flexibility. Additionally, organizational agility significantly affects firm performance, highlighting its critical role in converting digital capabilities into tangible outcomes. The results support the proposed hypotheses and demonstrate the explanatory power of the model in predicting firm performance.

Table 3: Mediation Analysis

Indirect Path	Effect	t-value	Result
Digital Transformation → Organizational Agility → Firm Performance	0.20	4.76	Supported

Interpretation

The mediation analysis confirms that organizational agility partially mediates the relationship between digital transformation and firm performance. The significant indirect effect indicates that digital transformation improves performance not only directly but also by enhancing organizational agility. This finding supports the dynamic capability perspective, which emphasizes the role of adaptive capabilities in translating technological investments into competitive advantage. Organizations that effectively utilize digital tools to enhance agility are better positioned to respond to market changes, innovate, and improve overall performance.

Table 4: Moderation Analysis

Interaction	β	t-value	p-value	Result
Digital Transformation × Leadership Capability → Organizational Agility	0.28	4.02	<0.001	Supported

Interpretation

The moderation analysis indicates that leadership capability significantly strengthens the relationship between digital transformation and organizational agility. This suggests that organizations with strong leadership are better able to leverage digital technologies to enhance agility. Leaders who possess strategic vision, digital competence, and change management skills facilitate smoother implementation of digital initiatives. The findings emphasize that leadership capability acts as a catalyst, amplifying the positive effects of digital transformation on organizational responsiveness and adaptability.

Conclusion

This study examined the relationship between digital transformation and firm performance, highlighting the mediating role of organizational agility and the moderating role of leadership capability. The findings confirm that digital transformation significantly enhances firm performance, both directly and indirectly through improved organizational agility. Moreover, leadership capability strengthens the impact of digital transformation by enabling effective implementation and fostering adaptability. The study contributes to the literature by integrating dynamic capability theory with digital transformation research and empirically validating a comprehensive model. The results emphasize that technological investments alone are insufficient; organizational and leadership capabilities are essential for achieving sustainable performance gains.

Future Recommendations

Future studies should employ longitudinal designs to examine the long-term effects of digital transformation on organizational outcomes. Researchers may also explore additional moderating variables such as organizational culture, employee digital skills, and innovation capability. Comparative studies across industries and countries could enhance generalizability. Practically, organizations should invest in leadership development programs, promote agile work practices, and align digital strategies with organizational goals. Policymakers should support digital readiness through training initiatives and infrastructure development to ensure sustainable digital growth.

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