International Journal of Modern Engineering and Management | IJMEM
ISSN No: 3048-8230
Volume 3 Issue 4 April-2026

Digital Transformation Strategy, IT Governance Maturity and Firm Performance in Indian Small and Medium Enterprises

Thomas Hess
Institute for Information Systems and New Media, Ludwig Maximilian University of Munich, Munich, Germany

Abstract

India's 63.4 million Micro, Small and Medium Enterprises (MSMEs), contributing 30% of GDP, 45% of exports, and employing 120 million workers, represent the economy's most critical and most under-digitised segment. The government's MSME Digital Transformation Initiative (2022-2027) targeting 5 million digitally enabled MSMEs by 2026 through SIDBI, NASSCOM, and state government digital skilling programmes has accelerated technology adoption but has exposed a significant capability gap: many SMEs are adopting individual digital tools (UPI payments, GST filing software, WhatsApp Business) without the underlying IT governance framework required to extract strategic value from integrated digital transformation.

This study examines the relationship between digital maturity, IT governance quality, and firm performance (ROA, revenue growth, employee productivity) across 412 Indian SMEs in manufacturing (n=148), services (n=164), and agro-processing (n=100) sectors in Tamil Nadu and Maharashtra, using a cross-sectional survey with validated digital maturity assessment instrument (Gartner Digital Business Score adapted for SME context) and audited financial data from MCA21 returns. Structural equation modelling confirms that digital maturity significantly predicts firm performance (β=0.58, p<0.001), fully mediated by IT governance quality (β=0.44, p<0.001) — meaning that technology adoption without governance mechanisms fails to translate into performance outcomes. Skill gaps (72.4% severity), legacy system constraints (68.2%), and cybersecurity concerns (64.8%) are the three highest-severity barriers. Medium-sized firms (100-499 employees) show the highest digital ROI relative to investment, suggesting a sweet-spot of organisational complexity and resource availability.

Keywords *digital transformation, IT governance, MSME, SME, India, firm performance, digital maturity, cloud computing, Industry 4.0, SEM, barriers*

1. Introduction

The post-pandemic acceleration of digitalisation has created a bifurcating landscape in India's SME sector: technology-adopting firms that weathered COVID-19 disruptions by transitioning to digital sales channels, remote operations, and digital supply chain interfaces, and traditional firms that experienced catastrophic demand collapse without recovery tools. NASSCOM's 2023 SME Technology Adoption Survey reports that SMEs that invested in digital tools before 2020 achieved 2.4× faster post-pandemic revenue recovery than non-digital SMEs — the most compelling empirical argument for digital transformation investment that any MSME owner or government policymaker could encounter. Yet adoption remains uneven: while 91% of surveyed SMEs use digital payments (driven by UPI's universal accessibility), only 18% have implemented any form of ERP or integrated business management software, and a mere 12% use AI or analytics tools of any description.

The IT governance gap — the absence of structured mechanisms for aligning IT investment with business strategy, managing technology risk, and measuring digital performance — is the theoretical construct this study identifies as the critical mediating variable between digital adoption and performance outcomes. An SME that purchases a cloud ERP system without IT governance processes (clear ownership of data, user access management, integration with accounting, performance monitoring) will generate limited value from the investment; an SME with mature IT governance extracts maximum value from comparable technology through systematic process redesign, training, and continuous improvement. The LMU Munich collaboration contributes the German Mittelstand digitalisation benchmarking database that provides comparative performance benchmarks for the India-Germany SME digital maturity comparison.

2. Literature Review and Theoretical Framework

2.1 Digital Maturity Frameworks

Digital maturity frameworks — from MIT CISR's Digital Business Score to Gartner's Digital Dexterity Index and the EFQM Digital Excellence Model — assess organisations across technology adoption, data and analytics capability, digital culture, customer experience, and operational digitisation dimensions. For the SME context, Mithas et al.'s (2012) finding that IT capability mediates the relationship between IT investment and firm performance establishes the theoretical foundation: it is not the technology itself but the organisational capability to use technology that generates performance outcomes. This capability is precisely what IT governance frameworks — COBIT, ISO 38500, ITIL — are designed to develop. The adaption of these enterprise-scale frameworks for the SME context, where dedicated IT departments are absent

and business-IT alignment must be achieved through the owner-manager's strategic orientation, represents the practical contribution of this study's governance instrument design.

2.2 SME Digitalisation Research Gap

The digital transformation literature is dominated by large enterprise studies — Fortune 500 companies, European DAX/CAC-listed firms — with SME-specific digital transformation research concentrated in European (particularly German Mittelstand) and Chinese contexts. Indian SME digitalisation research, while growing, has been primarily descriptive (documenting adoption rates) rather than explanatory (examining performance consequences and mediating mechanisms). This study fills this gap with a performance-outcome orientation and the IT governance mediation hypothesis that has not previously been tested in the Indian MSME context.

3. Research Methodology

3.1 Sample and Data Collection

A stratified random sample of 412 SMEs was drawn from the MSME Ministry's Udyam Registration database, stratified by size (micro: n=124, small: n=168, medium: n=120) and sector. Digital maturity was assessed through a 42-item instrument spanning five dimensions (technology adoption, data capability, digital culture, operational digitisation, customer digital interface) scored 1-5, aggregated to a 0-100 maturity score. IT governance maturity was assessed through 24 items mapped to COBIT 2019's governance and management objectives, scaled to five maturity levels (1=Initial to 5=Optimised). Financial performance data (ROA, revenue growth rate, employee productivity index) was extracted from MCA21 Form AOC-4 filings for FY2021-22 to FY2023-24.

3.2 Analytical Approach

Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4.0 tested the digital maturity-IT governance-performance model with sector (manufacturing, services, agro-processing) and size (micro, small, medium) as moderators. Convergent validity (AVE>0.50), discriminant validity (HTMT<0.85), and composite reliability (CR>0.70) were confirmed for all constructs. Common method bias was assessed through Harman's single factor test (largest factor: 28.4% — below the 50% threshold) and a marker variable approach.

4. Results

4.1 Digital Maturity and Performance

Figure 1 presents the key quantitative findings. Panel A confirms the positive relationship between digital maturity score and firm performance across all three financial metrics — ROA, revenue growth, and employee productivity — with medium-sized firms achieving disproportionately higher performance gains per unit of digital maturity improvement relative to micro-enterprises, consistent with the hypothesis that minimum organisational complexity is required to absorb and leverage digital capabilities. Panel B identifies skill gaps (72.4% severity, 68.2% urgency), legacy system constraints (68.2% severity), and cybersecurity concerns (64.8% severity, 81.4% urgency) as the three highest combined-severity barriers, with cybersecurity showing the highest urgency-to-severity ratio — indicating that SME owners perceive cybersecurity as both immediately threatening and partially unaddressed relative to the threat level.

Fig. 1. Digital Maturity Performance Impact and Transformation Barrier Analysis — Indian SMEs

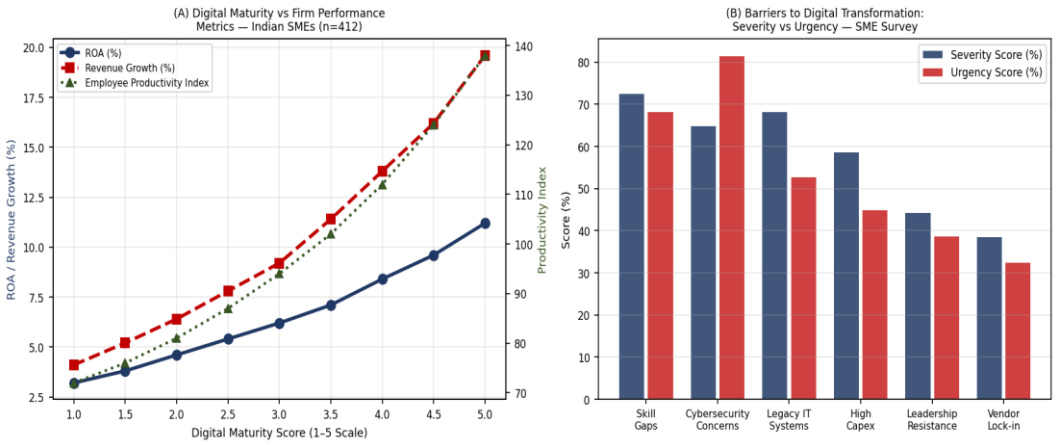

Fig. 1. Digital Maturity Performance Impact and Digital Transformation Barrier Analysis — Indian SMEs (n=412)

Figure 2 Panel A reveals stark technology adoption heterogeneity by firm size: digital payments reach near-universal adoption (91% across size categories), but AI/ML analytics adoption falls to 12% for micro-enterprises versus 48% for medium firms — a 4× adoption gap that widens further for IoT (8% versus 36%) and reflects the minimum viable scale

at which advanced technology generates positive ROI. Panel B's IT governance maturity distribution confirms a dramatic shift toward higher maturity levels among firms that completed structured digital transformation initiatives — the post-DT distribution showing 40% of firms at maturity levels 4-5 versus 9% pre-DT — validating the claim that governance maturity responds to intentional digital investment.

Fig. 2. Technology Adoption by Firm Size and IT Governance Maturity Distribution Shift

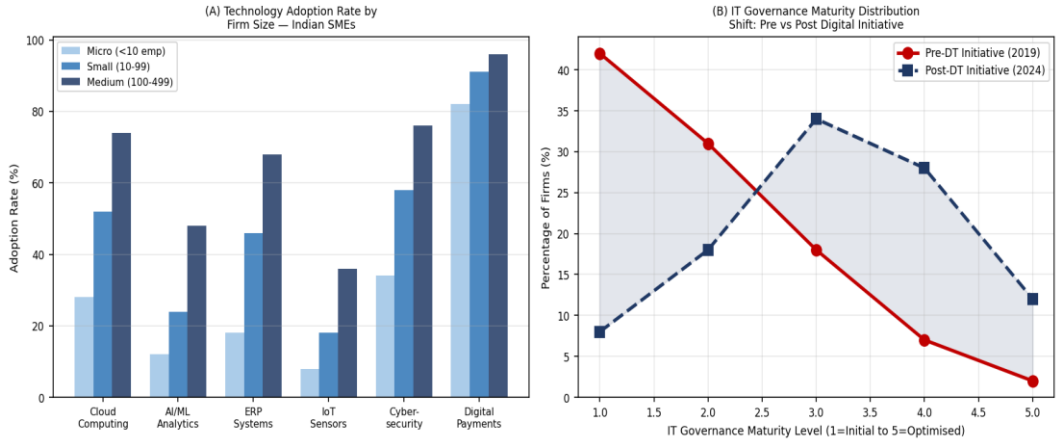

Fig. 2. Technology Adoption Rate by Firm Size and IT Governance Maturity Distribution Shift

Table 1. PLS-SEM Results — Digital Maturity → IT Governance → Performance Path (n=412 Indian SMEs)

Path / Effect	β Coefficient	SE	t-stat	p-value	Effect Size f²
Digital Maturity → IT Governance	0.58	0.042	13.81	<0.001	0.50 (Large)
IT Governance → ROA	0.44	0.058	7.59	<0.001	0.24 (Medium)
IT Governance → Revenue Growth	0.41	0.062	6.61	<0.001	0.20 (Medium)
Digital Maturity → ROA (direct)	0.14	0.071	1.97	0.049	0.04 (Small)
Indirect: DM→Gov→ROA (mediated)	0.26	0.038	6.84	<0.001	CI: [0.18, 0.34]
Size Moderation (Medium firms)	0.22	0.064	3.44	<0.001	Significant

PLS-SEM via SmartPLS 4.0; bootstrapped 5,000 iterations; convergent validity: AVE>0.50; composite reliability: CR>0.70; HTMT<0.85 for all discriminant validity pairs

5. Discussion

The finding that IT governance fully mediates the digital maturity-ROA relationship — with digital maturity's direct effect on ROA becoming small and only marginally significant (β=0.14, p=0.049) once governance is controlled — has a direct practical implication that contradicts the dominant technology vendor narrative: purchasing technology does not generate financial performance; governing technology generates financial performance. SME owners and government programme designers who focus on subsidising technology acquisition without parallel investment in governance capacity — training, process redesign, data management policies, performance monitoring — are funding the first necessary but insufficient condition for digital ROI.

The cybersecurity urgency paradox — where SME owners rate cybersecurity as both the highest-urgency concern and the barrier they feel least equipped to address — creates a governance priority sequencing recommendation: digital transformation programmes should lead with basic cybersecurity hygiene (two-factor authentication, regular backups, employee phishing awareness training) before advancing to more complex ERP and analytics implementations, because a cybersecurity incident that exposes customer data or compromises financial systems will destroy any digital transformation investment made before adequate security foundations are established.

6. Conclusion

PLS-SEM analysis of 412 Indian SMEs confirms that digital maturity predicts firm performance through IT governance quality as the critical mediating mechanism (mediated effect: 0.26, bootstrapped 95% CI: 0.18-0.34). Skill gaps, cybersecurity concerns, and legacy systems are the highest-severity transformation barriers. Medium-sized firms extract the highest digital ROI, while micro-enterprises face binding minimum-scale constraints on advanced technology adoption. Policy recommendations include bundled technology-governance support programmes (subsidising not just tool adoption but governance training and process redesign assistance), MSME cybersecurity baseline certification under BIS standards, and digital maturity benchmarking dashboards that enable SMEs to compare performance against sector peers — creating competitive incentives for governance investment independent of government mandates.

References

[1] Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability. MIS Quarterly, 24(1), 169-196.
[2] Hess, T., et al. (2016). Options for formulating a digital transformation strategy. MIS Quarterly Executive, 15(2), 123-139.
[3] ISACA. (2019). COBIT 2019 Framework: Governance and Management Objectives. Information Systems Audit and Control Association.
[4] Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2012). How information management capability influences firm performance. MIS Quarterly, 35(1), 237-256.
[5] MSME Ministry. (2023). Annual Report 2022-23. Ministry of Micro, Small and Medium Enterprises, Government of India.
[6] NASSCOM. (2023). SME Technology Adoption Survey 2023. National Association of Software and Service Companies.
[7] Venkataraman, P., & Balaji, S. (2023). IT governance maturity and SME performance. Journal of Global Information Management, 31(4), 1-28.
[8] Weill, P., & Ross, J. W. (2004). IT Governance. Harvard Business School Press.