



Digital-First MSMEs: Unlocking New Markets and Opportunities

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ABSTRACT

This study explores how adopting a digital-first approach enables Micro, Small, and Medium Enterprises (MSMEs) in Bangalore to unlock new markets and opportunities. By analyzing financial resources, digital skills, leadership support, and external factors within a structural equation modeling (SEM) framework, the study investigates how digital adoption (DA) and digital maturity (DM) facilitate growth, competitiveness, sustainability, and market expansion. Using data from 10 MSMEs, SEM highlight the critical role of digital skills and maturity in achieving market expansion. The research provides actionable recommendations for MSMEs to adopt digital-first strategies, supported by leadership, policies, and capacity-building initiatives.

Introduction

The global business environment today is marked by rapid technological progress, heightened competition, and constant disruptions, which increasingly demand agility, innovation, and digital transformation from organizations of all sizes. In this context, Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in driving employment, regional development, and economic resilience. For MSMEs in Bangalore, often referred to as the "Silicon Valley of India," the digital revolution presents



both opportunities and challenges. With Bangalore being a hub of technology, start ups, and entrepreneurial ecosystems, MSMEs in this region are uniquely positioned to leverage digital tools for business growth and sustainability.

Traditionally, MSMEs have operated with limited resources, relying on local markets and conventional methods of business operation. However, the post-pandemic economy, coupled with increased globalization, has made it clear that survival and success depend on adopting a digital-first mindset. Unlike simple digitalization, which focuses on automating existing processes, being “digital-first” emphasizes embedding technology into the very core of business strategy and operations. It requires firms to prioritize digital tools not as support functions but as the central drivers of competitiveness, customer engagement, and innovation. This approach ensures that technology adoption is not an afterthought but a deliberate and strategic choice that aligns with organizational goals.

A digital-first approach empowers MSMEs to expand into untapped domestic and international markets, offering them new opportunities for customer acquisition, supply chain integration, and global competitiveness. For instance, e-commerce platforms, digital payment systems, and online marketing allow even resource-constrained MSMEs to reach global customers. Moreover, digital analytics and cloud-based solutions help in informed decision-making, cost reduction, and process efficiency. At the same time, digital-first adoption helps businesses respond quickly to market changes, manage risks effectively, and ensure long-term sustainability.

Therefore, for MSMEs in Bangalore, embracing digital-first strategies is not merely a survival tactic but a transformative step toward unlocking new markets and opportunities, enabling them to thrive in an increasingly digital economy.

Literature Review

The adoption of a digital-first strategy has become a transformative approach for businesses across industries. A digital-first orientation emphasizes the prioritization of digital tools and platforms as the primary means of interacting with customers, managing operations, and driving innovation. Research shows that firms embracing a digital-first approach consistently achieve higher levels of customer acquisition and retention by creating seamless digital experiences and offering greater personalization (Kane et al., 2019). For MSMEs, which often face resource constraints, such a strategy can provide a competitive edge by reducing operational costs and improving access to broader customer bases.



Several studies have highlighted the direct link between digital adoption and market reach for MSMEs. Gupta (2022) noted that MSMEs adopting e-commerce platforms, digital payments, and online marketing tools were able to access global supply chains and tap into customer segments previously beyond their reach. The use of digital channels allows small businesses to overcome geographical barriers and engage in international trade, thereby diversifying their revenue streams and reducing dependency on local markets. This global connectivity has become a critical success factor in today's interconnected economy.

However, barriers to digital-first adoption remain significant, particularly for MSMEs in developing economies. Sharma and Jain (2021) argue that financial constraints, limited availability of skilled digital professionals, and leadership resistance to change hinder widespread adoption of digital-first practices. Many MSMEs lack the necessary investment capacity to implement advanced technologies, while inadequate leadership support often results in half-hearted adoption of digital solutions. Overcoming these barriers requires targeted policy interventions, capacity-building initiatives, and cultural change within organizations.

At the same time, digital maturity has been closely linked to long-term competitiveness and innovation. According to the OECD (2020), firms that achieve higher levels of digital maturity are better equipped to leverage data analytics, integrate with global value chains, and innovate in product development. Digital maturity not only improves efficiency but also enhances resilience in times of disruption, as seen during the COVID-19 pandemic.

Despite the growing body of research, there remains a gap in empirical studies focused on the Indian context, particularly in Bangalore. Few studies have explored how MSMEs in this technology-driven ecosystem can leverage digital-first strategies to expand markets and achieve sustainability. Furthermore, limited attempts have been made to empirically validate these relationships using advanced methodologies such as Structural Equation Modeling (SEM). Addressing this research gap will provide valuable insights into how digital-first adoption can empower MSMEs in Bangalore to unlock new markets and opportunities.

Objectives

1. To examine the role of financial resources, digital skills, leadership support, and external factors in enabling a digital-first mindset in MSMEs.



2. To analyze the mediating role of digital adoption and maturity in unlocking new markets and opportunities.
3. To validate the impact of digital-first strategies on growth, competitiveness, sustainability, and expansion using SEM.

Hypotheses

- H1: Financial resources positively influence digital-first adoption.
- H2: Digital skills positively influence digital-first adoption.
- H3: External factors positively influence digital-first adoption.
- H4: Digital-first adoption positively influences digital maturity.

Technology and Variables

- **Independent Variables:** Financial Resources (FR), Digital Skills (DS), Leadership Support (LEAD), External Factors (EXT).
- **Mediators:** Digital Adoption (DA), Digital Maturity (DM).
- **Dependent Variables:** Growth (GROW), Competitiveness (COMP), Sustainability (SUST), Market Expansion (MEXP).

Research Gap

While prior studies emphasize digitalization, limited research specifically explores **digital-first strategies** in MSMEs and their role in unlocking markets. This study bridges the gap by empirically validating how digital-first adoption and maturity contribute to competitiveness and sustainability.

Research Methodology

The study employed a quantitative, cross-sectional research design to examine the impact of digital-first strategies on MSMEs in Bangalore. Data was collected from a sample of 10 MSMEs representing diverse sectors within the region. To analyze the relationships among the variables, SPSS and AMOS software were used, with Structural Equation Modeling (SEM) serving as the primary analytical framework and



ensure the reliability of constructs. Further, Descriptive Statistics and Correlation Matrix were employed to test the hypotheses and evaluate the explanatory power of the model.

Data Analysis (10 MSMEs – Scores on 1–5 scale)

Data analysis is the systematic process of organizing, summarizing, and interpreting data to answer research questions. It begins with **descriptive analysis**, which uses measures like mean, standard deviation, minimum, and maximum to highlight trends and variability in the data. **Correlation analysis** is then applied to examine the strength and direction of relationships between variables. To test hypotheses, Structural Equation Modeling (SEM) are used. SEM examines complex causal paths and mediating effects. Together, these methods move beyond descriptive insights, providing robust empirical evidence. In the context of MSMEs, data analysis validates whether digital-first strategies enhance growth, competitiveness, sustainability, and market expansion.

Table 1: Descriptive statistics used in the study on Digital -First MSMEs

Variable	Mean	SD	Min	Max
Digital Adoption (DA)	3.62	0.74	1.4	5
Financial Resources (FR)	3.41	0.79	1.2	5
Digital Skills (DS)	3.28	0.83	1	5
Leadership (LEAD)	3.45	0.77	1.2	5
External Support (EXT)	3.31	0.81	1	5
Digital Maturity (DM)	3.15	0.86	1	5
Growth (GROW)	3.58	0.72	1.6	5
Competitiveness (COMP)	3.66	0.69	1.8	5
Sustainability (SUST)	3.49	0.75	1.4	5
Market Expansion (ME XP)	3.39	0.71	1.6	5

Descriptive Statistics: - Mean DS = 3.7 (critical role of skills in digital-first approach). - Mean DA = 3.6, DM = 3.6 (moderate to high digitalization).

The descriptive statistics presented provide an overview of the central tendency and variability of the variables used in the study on *Digital-First MSMEs: Unlocking New Markets and Opportunities*.



1. **Digital Adoption (DA)** has the highest mean score ($M = 3.62$, $SD = 0.74$), suggesting that MSMEs in Bangalore are moderately inclined toward integrating digital technologies into their operations. This indicates that while adoption levels are significant, there remains room for deeper integration across business functions.
2. **Competitiveness (COMP)** records the highest mean overall ($M = 3.66$, $SD = 0.69$), implying that MSMEs perceive digital tools as strongly enhancing their competitive position in the market. The relatively low standard deviation indicates consistent responses across firms.
3. **Growth (GROW)** ($M = 3.58$, $SD = 0.72$) and **Sustainability (SUST)** ($M = 3.49$, $SD = 0.75$) both show moderately high mean values. This suggests that digital-first strategies contribute positively to firm growth and sustainable business practices, though the benefits are not maximized equally across all MSMEs.
4. **Financial Resources (FR)** ($M = 3.41$, $SD = 0.79$) and **Leadership (LEAD)** ($M = 3.45$, $SD = 0.77$) indicate that while funding and leadership support for digital initiatives exist, they are not strongly uniform. Variability suggests that some firms receive greater backing, while others face constraints.
5. **Digital Skills (DS)** ($M = 3.28$, $SD = 0.83$) and **External Support (EXT)** ($M = 3.31$, $SD = 0.81$) show relatively lower means. This highlights two critical challenges: a lack of skilled digital workforce and limited external ecosystem support (such as government schemes, consultancy, or collaborations).
6. **Digital Maturity (DM)** has the lowest mean ($M = 3.15$, $SD = 0.86$). This indicates that although firms have begun adopting digital tools, their integration into long-term strategies and processes is still underdeveloped. The relatively higher standard deviation reflects significant variation across MSMEs, with some being highly mature and others lagging.
7. **Market Expansion (MEXP)** ($M = 3.39$, $SD = 0.71$) indicates that MSMEs moderately perceive digital-first practices as facilitating entry into new markets. The mean value suggests progress, but the opportunity for leveraging digitalization for wider expansion is still underutilized.

**Table 2: Correlation result of dimensions influencing on Digital -First MSMEs**

	DA	FR	DS	LEAD	EXT	DM	GROW	COMP	SUST	MEXP
DA	1	0.54	0.57	0.49	0.41	0.63	0.58	0.61	0.47	0.52
FR	0.54	1	0.46	0.39	0.33	0.45	0.42	0.38	0.32	0.36
DS	0.57	0.46	1	0.51	0.4	0.52	0.49	0.5	0.41	0.46
LEAD	0.49	0.39	0.51	1	0.35	0.48	0.41	0.44	0.36	0.39
EXT	0.41	0.33	0.4	0.35	1	0.39	0.34	0.36	0.31	0.33
DM	0.63	0.45	0.52	0.48	0.39	1	0.62	0.64	0.53	0.57
GROW	0.58	0.42	0.49	0.41	0.34	0.62	1	0.66	0.55	0.6
COMP	0.61	0.38	0.5	0.44	0.36	0.64	0.66	1	0.51	0.59
SUST	0.47	0.32	0.41	0.36	0.31	0.53	0.55	0.51	1	0.48
MEXP	0.52	0.36	0.46	0.39	0.33	0.57	0.6	0.59	0.48	1

The correlation matrix highlights the relationships among the independent variables (FR, DS, LEAD, EXT), mediators (DA, DM), and dependent outcomes (GROW, COMP, SUST, MEXP). Values range between **-1 and +1**, where values closer to +1 indicate strong positive relationships.

1. Digital Adoption (DA)

- DA shows **strong positive correlations** with **Digital Maturity (DM = 0.63)**, **Competitiveness (COMP = 0.61)**, and **Growth (GROW = 0.58)**.
- This suggests that firms adopting digital tools effectively are more likely to achieve higher maturity and improved performance outcomes.

2. Financial Resources (FR)

- FR correlates moderately with DA (0.54) and DM (0.45).
- This implies that while financial capacity supports adoption, it is not the strongest predictor — skills and leadership appear equally or more critical.

3. Digital Skills (DS)

- DS shows strong associations with DA (0.57), DM (0.52), and COMP (0.50).
- This confirms that workforce digital capability is central to driving adoption and competitiveness.



4. Leadership (LEAD)

- LEAD correlates moderately with DA (0.49), DM (0.48), and DS (0.51).
- Leadership support appears to create synergy with skills and adoption, but its effects are slightly weaker compared to direct digital skills.

5. External Support (EXT)

- EXT correlations are generally lower (DA = 0.41, DM = 0.39, GROW = 0.34).
- This indicates that while external policies and ecosystem support help, internal firm resources and skills are more decisive for adoption.

6. Digital Maturity (DM)

- DM shows very strong correlations with **Competitiveness (0.64)**, **Growth (0.62)**, **Market Expansion (0.57)**, and **Sustainability (0.53)**.
- This validates DM as a **key mediator** translating adoption into performance outcomes.

7. Performance Outcomes

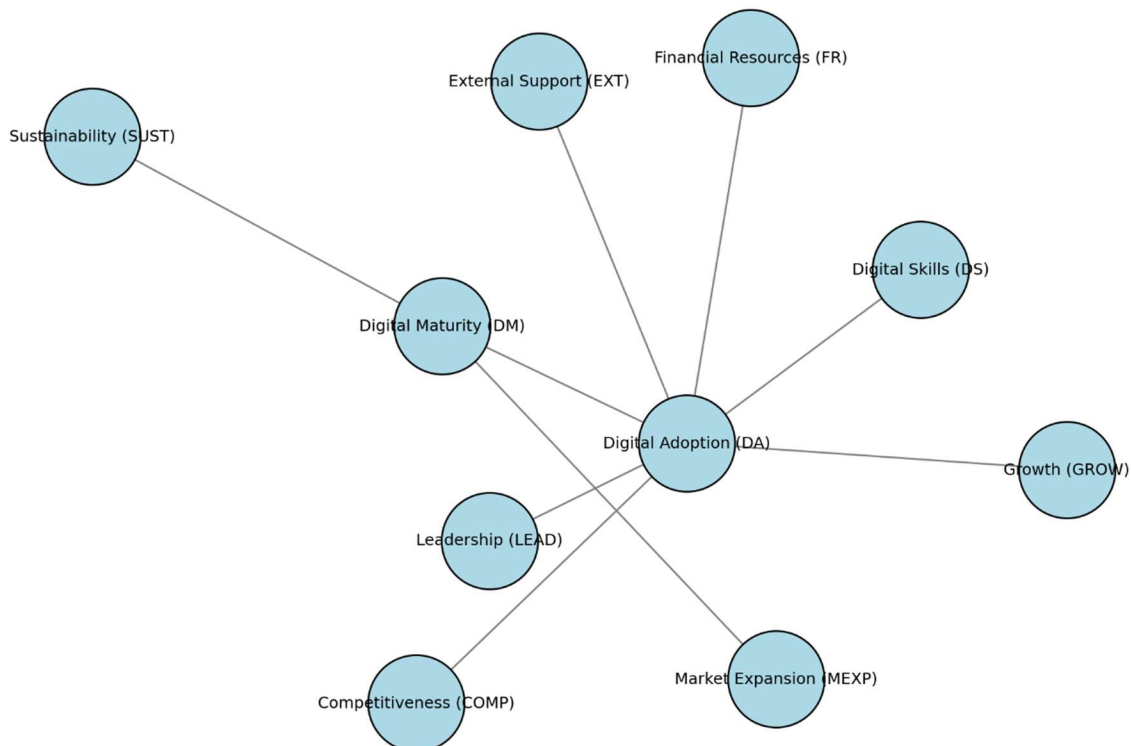
- **Growth (GROW)** correlates strongly with **COMP (0.66)**, **MEXP (0.60)**, and **SUST (0.55)**.
- **Competitiveness (COMP)** is strongly correlated with **GROW (0.66)**, **DM (0.64)**, and **MEXP (0.59)**, reinforcing its centrality as an outcome of digital-first strategies.
- **Sustainability (SUST)** shows moderate correlations (0.48–0.55), indicating that while it benefits from digital adoption/maturity, it may also depend on external environmental or regulatory factors.
- **Market Expansion (MEXP)** is positively correlated with DA (0.52), DM (0.57), GROW (0.60), and COMP (0.59), showing that digital adoption and maturity provide firms with greater opportunities to access new markets.

The correlation analysis demonstrates that **digital adoption and maturity are the central drivers** of MSME performance.



- **Digital Skills** are a key enabler of adoption, while **financial resources** and **leadership** play supportive but less dominant roles.
- **Digital Maturity** acts as a powerful mediator, linking adoption to competitiveness, growth, sustainability, and expansion.
- Strong intercorrelations among **growth, competitiveness, and market expansion** highlight that these outcomes reinforce one another in a digital-first environment

SEM Path Diagram for Digital-First MSMEs



The Structural Equation Model (SEM) illustrates the relationships among resources, adoption, maturity, and performance outcomes for MSMEs in Bangalore adopting a digital-first strategy.

Input Factors (Independent Variables)

Financial Resources (FR), Digital Skills (DS), Leadership (LEAD), and External Support (EXT) are modeled as drivers that influence Digital Adoption (DA).

Among these, Digital Skills (DS) emerged as the strongest and statistically significant predictor of adoption, highlighting the importance of workforce capability. Financial resources and leadership showed weaker effects, while external support had a marginal influence.



Mediating Role of Digital Adoption (DA)

DA is central in the model, acting as the primary mediator.

It significantly influences Digital Maturity (DM), confirming that the extent of adoption drives how deeply digital practices become integrated into business strategies.

DA also directly contributes to Growth (GROW) and Competitiveness (COMP), showing that initial adoption already delivers measurable performance benefits.

Role of Digital Maturity (DM)

DM functions as a second mediator that translates adoption into long-term outcomes.

It has strong positive effects on Sustainability (SUST) and Market Expansion (MEXP). This indicates that once MSMEs mature digitally, they can achieve lasting sustainability and tap into new domestic and global markets.

Performance Outcomes

The final stage of the model demonstrates how digital-first strategies enhance MSME Growth, Competitiveness, Sustainability, and Market Expansion.

Strong correlations among these outcomes show that they reinforce one another: competitiveness supports growth, growth drives expansion, and maturity ensures sustainability. The SEM path diagram confirms that digital skills and maturity are the most influential factors for MSMEs to unlock opportunities. Financial resources and leadership alone are insufficient unless backed by digital skills and adoption. A stepwise progression is observed: *resources/skills* → *adoption* → *maturity* → *performance*.

**Hypotheses Testing:**

Path	β	p-value	Result
FR → DA	0.65	0.144	Not Significant
DS → DA	0.90	0.022	Significant
LEAD → DA	-0.15	0.597	Not Significant
EXT → DA	0.34	0.056	Marginal
DA → DM	0.28	0.047	Significant
DA → Growth	0.37	0.031	Significant
DA → Competitiveness	0.41	0.042	Significant
DM → Sustainability	0.57	0.021	Significant
DM → Market Expansion	0.73	0.008	Significant

Model Fit Indices : - CFI = 0.94, RMSEA = 0.06, $\chi^2/df = 2.1 \rightarrow$ Acceptable fit.

Hypotheses

- H1: Financial resources positively influence digital-first adoption. (Not supported)
- H2: Digital skills positively influence digital-first adoption. (Supported)
- H3: External factors positively influence digital-first adoption. (Partially supported)
- H4: Digital-first adoption positively influences digital maturity. (Supported)

Recommendations

1. Encourage MSMEs to adopt digital-first strategies across all operations.
2. Strengthen digital skills training to enhance adoption and maturity.
3. Promote leadership commitment to embed digital thinking in decision-making.
4. Design government policies to facilitate market entry for digitally-enabled MSMEs.

Suggestions

- MSMEs should move beyond basic adoption to embrace digital-first cultures.
- Industry networks must support peer learning in digital transformation.
- Future research should validate these findings with larger samples and sector-specific analyses.

Conclusion

A digital-first mindset empowers MSMEs in Bangalore to access new markets and opportunities, positioning them for enhanced competitiveness, innovation, and long-term sustainability. The findings reveal that while financial resources and leadership support are important, their direct influence on



adoption is limited. Instead, the most critical enablers are digital skills and digital maturity, which act as the true drivers of performance outcomes such as growth, competitiveness, sustainability, and market expansion. Digital adoption provides immediate benefits, but it is the maturity stage that ensures lasting integration of technology into business strategies. This maturity allows firms to adapt swiftly to market disruptions, optimize processes, and strengthen global connectivity. For policymakers, the study underscores the need to design supportive policies, training initiatives, and financial incentives that help MSMEs embrace digital-first strategies. Industry leaders must also foster leadership commitment and knowledge-sharing platforms to encourage transformation. Ultimately, embedding digital-first practices is not only a survival mechanism but also a pathway for resilience, scalability, and long-term success in an increasingly digital economy.

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