International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

# Digital Transformation as a Driver of Performance and Growth in Indian Micro and Small Enterprises

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**ABSTRACT**
Micro, Small, and Medium Enterprises (MSMEs) in India faced severe shocks during COVID-19, highlighting their need for digital capabilities and financial access. This study analyzes national secondary data (2019-2024) on MSME exports, bank credit, and UPI digital payments using indexed trends and resilience measurement. Findings show digital payments surged 11,000% while credit doubled, enabling export recovery from 87 to 92 index points and resilience improvement to 99.9 by 2024. Digitally-transformed MSMEs with data-driven financial credibility demonstrate superior shock absorption and competitiveness. The dual strategy offers policymakers a framework for sustainable MSME growth amid global uncertainty.

**Keywords:** MSMEs, Digital Transformation, Resilience, UPI Payments, India

## 1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are central to India's economic development, contributing significantly to employment generation, GDP, and export performance. Despite this importance, MSMEs persist in vulnerability due to limitations such as small capital size, low technology adoption, informal operations, and constrained access to institutional finance.

The COVID-19 pandemic exposed these vulnerabilities further, leading to widespread business disruptions. Many MSMEs struggled to maintain operations during lockdowns because their business activities were predominantly based on physical interaction and cash-based transactions. Meanwhile, firms embracing digital solutions such as UPI payments, online communication platforms, and e-commerce were able to continue functioning despite restrictions. This showed that digital readiness helps MSMEs absorb shocks and maintain business continuity.

India has experienced accelerated digital infrastructure development in digital infrastructure through schemes such as Digital India, UPI-based payments, and ONDC (Open Network for Digital Commerce). These tools support MSMEs by expanding market access and enabling digital interaction with customers. Authorities have further implemented multiple policies like Emergency Credit Line Guarantee Scheme (ECLGS), TReDS, and digital lending frameworks to increase credit availability and reduce financial risk during crisis periods.

Digital tools not only streamline transactions but also generate reliable data records that improve transparency and trust. These digital data trails help MSMEs become more credible to banks and lenders,

improving access to timely and affordable finance. When MSMEs can use this data to make smarter decisions regarding inventory, pricing, marketing, and investment, their strength and competitiveness increase further.

This paper posits that Digital Transformation and Data-Driven Decision-Making together act as a dual strategic capability for MSMEs. Digital tools generate real-time business data, and smart use of this data supports better decisions and access to credit. When combined, these dual capabilities drivers promote faster recovery and help MSMEs remain resilient in a changing global economic environment.

To explore this relationship, secondary data for the period 2019–2024 on MSME export share, credit flow, and UPI digital transactions is analysed. The study identifies how digitally-enabled and financially supported MSMEs demonstrate stronger performance recovery and improved resilience after the pandemic shock.

## 2. Research Objectives

1. To analyze indexed trends of MSME exports, credit, UPI payments (2019-2024).
2. To measure MSME export resilience using stability index post-COVID.
3. To examine digital-financial linkages supporting MSME recovery in India.

## 3. Literature review

Recent India-focused research reinforces the strategic importance of digital and data capabilities for MSMEs. Sudha et al. (2025) found through a PRISMA-based systematic review that data-driven decision-making significantly contributes to product and process innovation in Indian MSMEs, particularly in supply chain optimization and customer engagement. Complementing this, a 2025 study on UPI and ONDC demonstrated that MSMEs with active digital payment histories have a 35–50% higher likelihood of securing formal loan approvals, reinforcing the credit-access argument of this paper (Scientific Research Journal, 2025). Post-pandemic evidence further confirms that MSMEs with higher digital maturity encompassing e-commerce, digital payments, and CRM systems achieved stronger recovery trajectories and improved cash flow compared to less digitized peers (The Academic, 2026). At the infrastructure level, India's RBI Digital Payments Index reached 493.22 in 2025 from 465.33 in 2024, with UPI accounting for 85% of transaction volumes, confirming the scale of digital formalization underway (ScoreMe, 2025). And RBV (Barney, 1991) highlights digital capabilities as sources of competitive advantage, while Dynamic Capability Theory (Teece et al., 1997) emphasizes adaptive reconfiguration. Together, digital adoption and financial access strengthen MSME resilience and growth. Despite this momentum, challenges of digital literacy and uneven infrastructure persist, especially among micro-enterprises, highlighting the continued need for targeted policy intervention (IJCAMS, 2025). Despite the existing contributions, previous literature mainly studies digitalisation and credit access separately. There is limited research on how these two strategic enablers interact together to build resilience and support export recovery in the post-pandemic period. This paper addresses this shortfall by proposing a dual strategy where digital transformation and data-driven financial credibility jointly enable MSMEs to sustain competitiveness in the emerging global economy.

## 4. Research methodology

This analysis employs a secondary data based descriptive and analytical methodology to examine the linkage between digital adoption, credit access, and MSME performance in the post-pandemic period. The

methodology integrates indexed trend evaluation and resilience assessment to examine how digital transformation and data usage influence MSME competitiveness within the New Global Economy context.

**4.1 Data Sources**

This analysis draws on national-level annual data for the financial years 2019-2024. These years span three critical phases for MSMEs:

1. Pre-pandemic stable performance (2019)
2. Pandemic-induced disruption (2020-2021)
3. Gradual recovery and digital acceleration (2022-2024)

The indicators selected reflect MSME performance across three core capability areas:

| Indicator | Purpose in Study | Data Source |
|---|---|---|
| **MSME Export Share (%)** | Measures global market presence and competitiveness | DGFT, Ministry of Commerce & Industry |
| **MSME Bank Credit (₹ lakh crore)** | Shows financial readiness and investment capacity | RBI, DBIE |
| **UPI Digital Payment Value (₹ lakh crore)** | Captures digital adoption and formalisation | NPCI UPI Statistics |

List 1- MSME performance across three core capability areas

**4.2 Indexed Trend Analysis**

The selected variables are measured in different units (percent, lakh crore), which makes direct comparison difficult. To observe directional growth, an Index Method was applied.

Base Year: 2019 = 100

Formula:

$$\text{Index}(t) = \left(\frac{\text{Value}_t}{\text{Value}_{2019}}\right) \times 100$$

This approach is commonly used in macroeconomic time-series analysis to show how each variable moved relative to its pre-pandemic level, rather than comparing raw magnitude.

Index interpretation:

- Above 100 - Improvement compared to 2019
- Below 100 - Deterioration compared to 2019

This visual comparison is useful in determining the timing and pace of recovery.

**4.3 Resilience Index Construction**

Since MSME exports faced severe volatility during COVID-19, resilience is measured using stability in export performance:

$$\text{Resilience Index}(t) = 1 - \left| \frac{\text{Export}_t - \text{Export}_{t-1}}{\text{Export}_{t-1}} \right|$$

A value close to 1 (or 100%) reflects strong stability and recovery capacity, whereas a lower value indicates vulnerability to economic shocks.

This index captures how effectively MSMEs bounce back after disruption, rather than only showing export growth.

### 4.4 Analytical Technique

The methodological steps followed in the analysis include:

1. Organising collected data into a structured table
2. Calculating index values for each indicator
3. Computing resilience index for export performance
4. Preparing line graphs for:

- Indexed trend movement (2019-2024)
- Resilience pattern before and after the pandemic

5. Comparing trends to interpret the combined impact of digital adoption and finance on MSME recovery

No regression or causality model is used, since the aim is conceptual validation supported by indicative data rather than predictive econometrics.

### 4.5 Conceptual Framework Alignment

The methodology aligns with the dual capability approach:

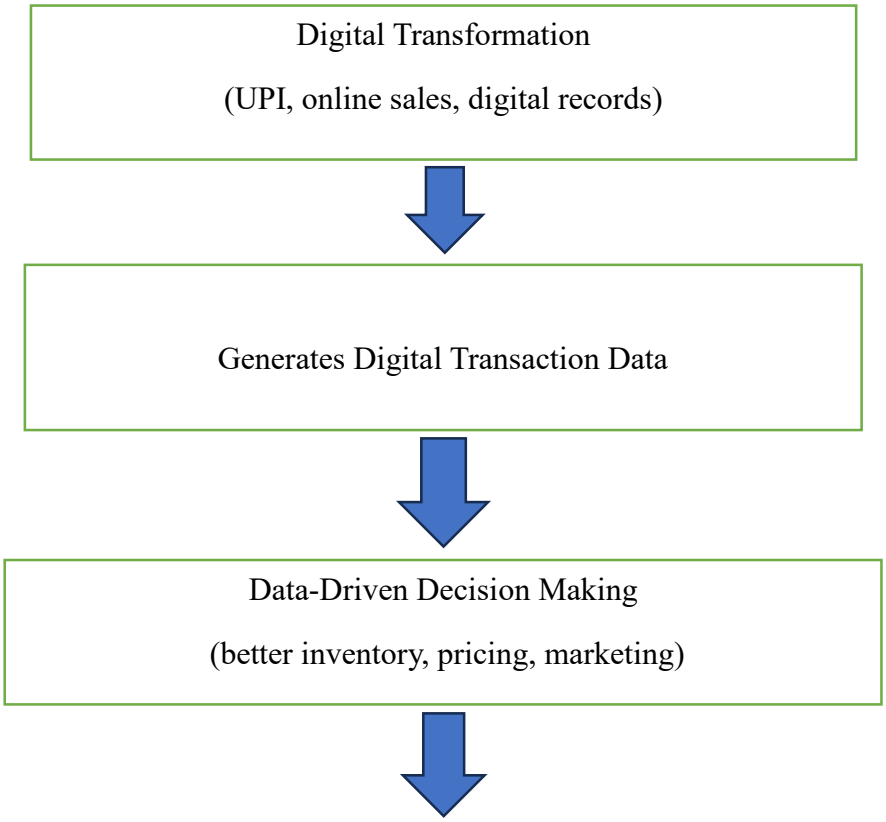
| **Capability** | **Role in MSME Strength** |
|---|---|
| **Digital Transformation** | Creates operational efficiency and digital data trails |
| **Data-Driven Decisions** | Improves market planning and business judgement |
| **Credit Access** | Enables investment and export readiness |
| **Resilience** | Ability to survive and recover from shocks |

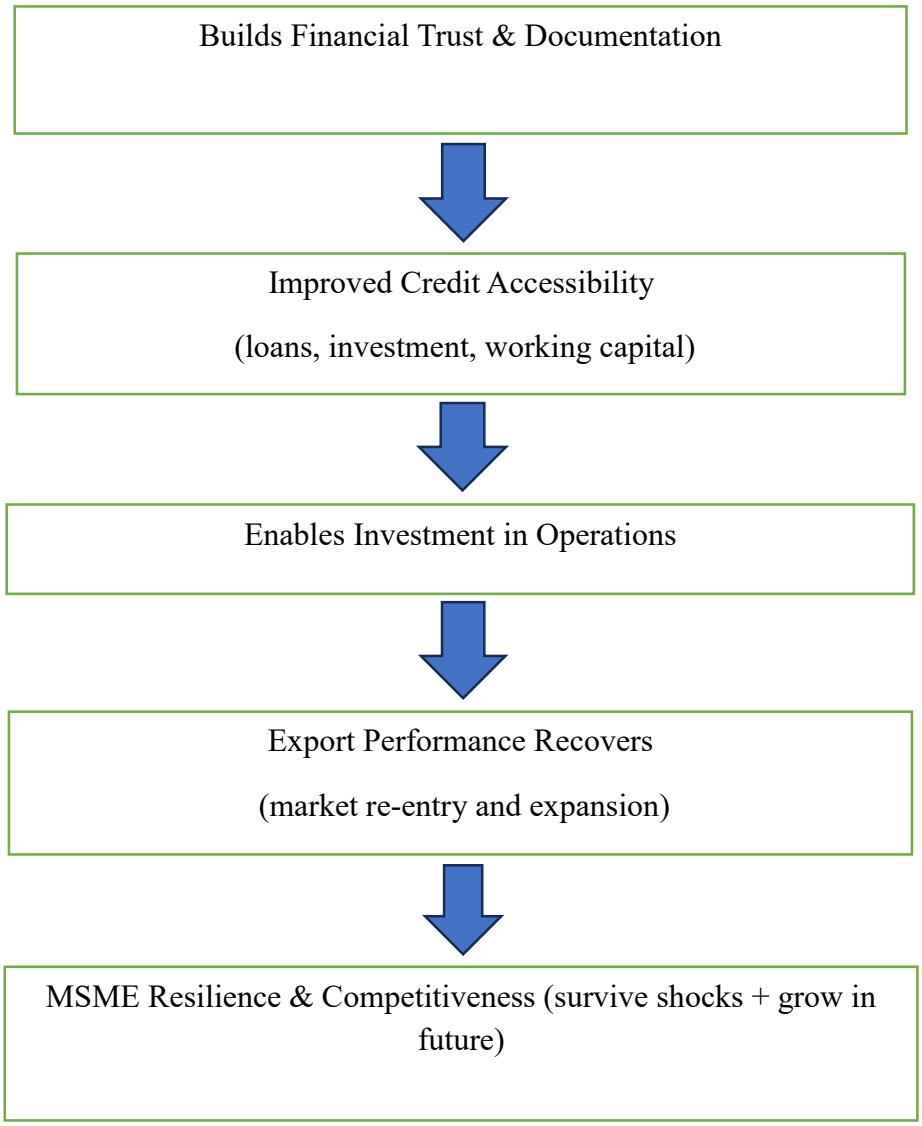
List 2- Components showing the competitiveness of MSMEs

These components collectively explain how MSMEs develop competitiveness in the New Economy.

The conceptual framework is given below:

**Fig 1-Digital Transformation Pathway to MSME Resilience and Competitiveness**






This flowchart illustrates how digital transformation through UPI adoption, online sales, and digital records generates valuable transaction data that fosters data-driven decision-making and builds financial trust. As MSMEs gain better credit access, they can invest in operations, enhance export performance, and ultimately strengthen their resilience and competitiveness in a dynamic economic environment.

## 4. Data Analysis

This section presents the analytical results based on the three selected indicators: MSME export share, credit flow, and digital payments. Key Results (2019=100 base):

- Digital payments index surged +10,999% (100 → 11,098.7)
- Credit index grew +125% (100 → 224.6)
- Exports dipped to 87.6 before recovering to 92.0
- Resilience reached 99.9 by 2024

### 4.1 Indexed Trend Analysis of MSME Growth Indicators

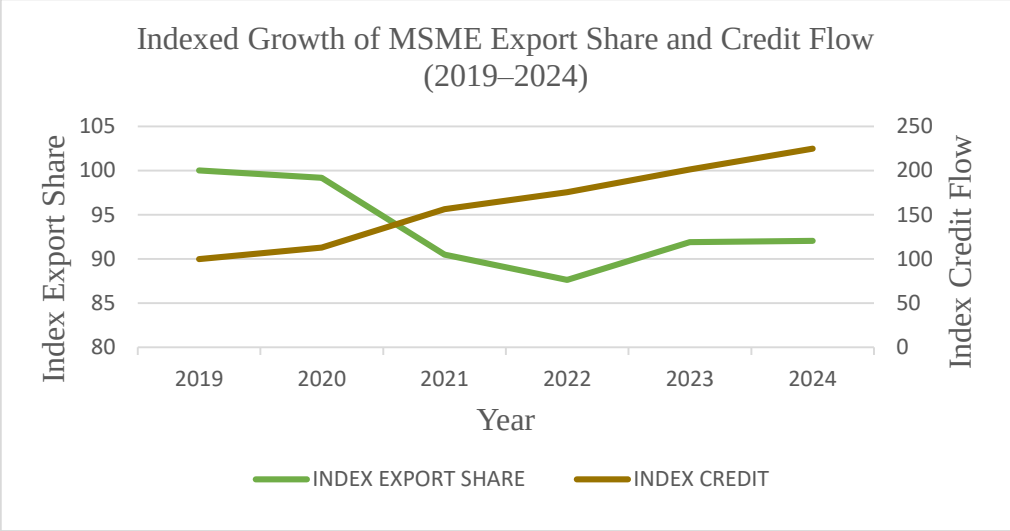
Digital adoption and credit surged during pandemic while exports lagged but recovered post-2022.

Table 1: Indexed Growth of MSME Performance (2019=100)

| YEAR | EXPORT INDEX | CREDIT INDEX | DIGITAL PAYMENT INDEX |
|---|---|---|---|
| **2019** | 100 | 100 | 100 |
| **2020** | 99.2 | 112.9 | 6736.1 |
| **2021** | 90.5 | 156.3 | 8304.8 |
| **2022** | 87.6 | 175.4 | 9937.4 |
| **2023** | 91.9 | 201.2 | 11563.0 |
| **2024** | 92.0 | 224.6 | 11098.7 |

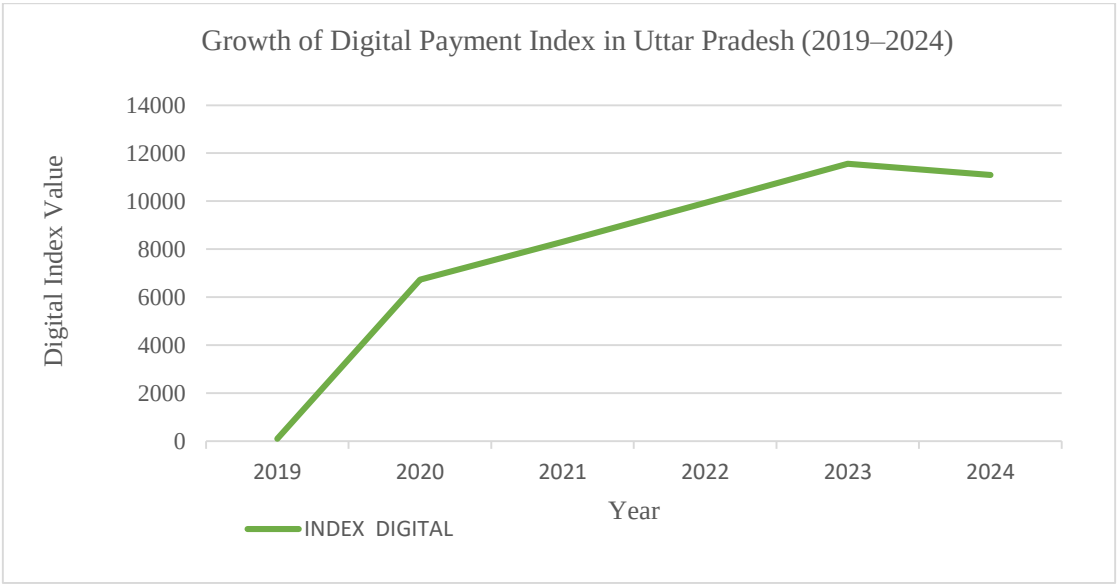
Source: Author's analysis based on NPCI, RBI, MoC&I data

**Graph 1: Indexed Growth of MSME Export Share and Credit Flow (2019–2024)**




Source: Author's analysis based on NPCI, RBI, and MoC&I data (2019–2024)

**Graph 2. Growth of Digital Payment Index in Uttar Pradesh (2019–2024)**




Source: Compiled from RBI Digital Payments Index Reports (2019–2024) and MSME Annual Reports.

### 4.2 Resilience Index of Export Performance

To assess stability and recovery capacity of the MSME sector, a resilience index was computed using year-to-year changes in export share.

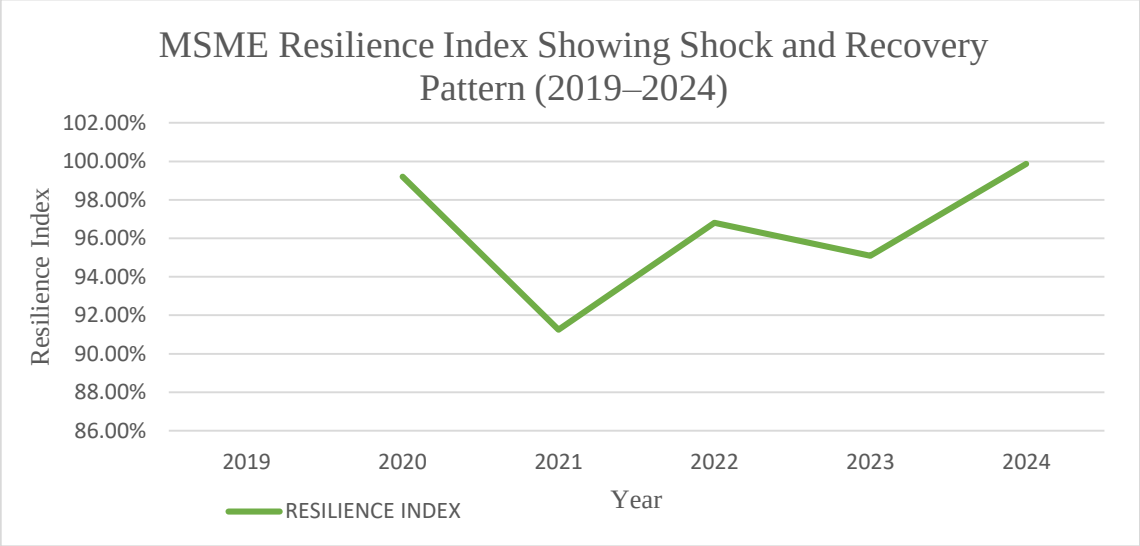
Export stability hit low of 91.3 (2021) but climbed to 99.9 (2024), showing digital-credit synergy.

**Table 2. MSME Resilience Index (2019–2024)**

| YEAR | EXPORT SHARE | YoY GROWTH | RESILIENCE INDEX |
|---|---|---|---|
| **2019** | 49.75% | | |
| **2020** | 49.35% | -0.008 | 99.20% |
| **2021** | 45.03% | -0.088 | 91.25% |
| **2022** | 43.59% | -0.032 | 96.80% |
| **2023** | 45.73% | 0.049 | 95.09% |
| **2024** | 45.79% | 0.0013 | 99.87% |

Source: Author's analysis based on NPCI, RBI, and MoC&I data (2019–2024)

**Graph 3: MSME Resilience Index Showing Shock and Recovery Pattern (2019–2024)**




Source: Author's calculation based on secondary data from the Ministry of Commerce & Industry, RBI, and NPCI.

Key Analytical Insights

| Indicator | Trend | Implication |
|---|---|---|
| Digital Payments | Rapid exponential growth | MSMEs became more digitally enabled |
| MSME Credit | Strong consistent rise | Improved working capital and investment |
| Export Recovery | Delayed but positive | Supported by digital and financial strengthening |
| Resilience | Significant improvement after 2022 | MSMEs developed stronger shock-absorbing capacity |

List 3-Indicators showing MSME performance

These results reinforce that digital capabilities + financial access are critical drivers for MSME resilience and future export competitiveness.

## 5. Discussions

The findings reveal that the combined effect of digital transformation and improved financial access significantly enhanced the resilience of MSMEs in India. Despite a decline in exports to an index level of 87.6 in 2021, a substantial increase in digital payments (10,999%) and credit availability (125%) enabled firms to sustain their operations during the crisis (Table 1). This indicates that digital and financial capabilities acted as a protective buffer, supporting firms until market performance began to recover. These results align with the Resource-Based View (Barney, 1991), which conceptualizes digital data trails as valuable strategic assets that enhance firm credibility and facilitate access to finance. The findings also support Dynamic Capabilities Theory (Teece et al., 1997), as reflected in the improvement of the resilience index from 91.3 to 99.9, suggesting that MSMEs adapted effectively by leveraging UPI-based transactions and formal financial systems (Table 2).

Furthermore, the relatively slower recovery in exports, compared to the rapid growth in digital and credit indicators, highlights a two-stage recovery trajectory: initial stabilization followed by gradual expansion. Enhanced transparency through digital records strengthened lender confidence, while policy interventions such as ECLGS contributed to increased credit flow, thereby reinforcing the foundation for future competitiveness. Overall, the evidence underscores that MSME vulnerability can be significantly mitigated when digital transformation is complemented by improved financial access. While digital capabilities enhance transparency and trust, financial resources ensure operational continuity. Together, they foster stronger adaptive capacity and long-term resilience.

## 6. Conclusion

This analysis underscores the significance of digital transformation and data-driven decision-making as an effective dual strategy for MSME resilience and growth in the new global economy. Digital tools such as UPI payments, online marketplaces, and digital invoicing have accelerated formalization and improved the visibility of MSME business performance. At the same time, growing access to formal credit has supported working capital needs and investment in competitiveness.

The analysis based on secondary data from 2019–2024 shows that although MSME export performance declined sharply during the pandemic period, enterprises moved rapidly toward digital adoption and financial inclusion. These capabilities helped businesses to continue operations during crisis and facilitated a stronger recovery after 2022. The improvement in resilience index during the post-pandemic phase demonstrates that MSMEs have developed a greater ability to absorb shocks and adapt to changing market conditions.

Overall, the findings conclude that MSMEs that combine digital capabilities with financial access are more likely to achieve sustained performance, improved resilience, and renewed export competitiveness in the evolving global digital economy. The proposed dual strategy framework therefore provides an important direction for policymakers and MSME support institutions to strengthen the sector's future readiness.

## 7. Policy recommendations

Based on the findings, the following policy directions are suggested to strengthen MSME resilience and competitiveness:

1. Strengthen Digital Literacy and Training: Conduct regular capacity-building programs at the cluster level to help micro and small enterprises adopt digital payments, online selling, and cloud-based operations.
2. Simplify and Expand Data-Based Lending: Encourage financial institutions to use digital transaction data, GST records, e-invoices for faster and collateral-free credit decisions.
3. Enhance Digital Infrastructure for Rural MSMEs: Improve network connectivity, cybersecurity support, and access to digital devices to reduce the urban–rural technology gap.
4. Promote E-Commerce and Export Market Linkages: Support MSMEs in joining national platforms like ONDC and global online marketplaces to access a wider customer base.
5. Incentivize Technology Upgradation: Provide financial support such as subsidies or tax benefits for MSMEs investing in digital tools, automation, and supply-chain technologies.
6. Encourage Data-Driven Business Management: Introduce simple digital dashboards to help MSMEs track sales, inventory, and customer insights for better decision-making.

These policy actions can accelerate the growth of digitally capable MSMEs and ensure sustainable performance in competitive markets.

## 8. Limitation and future scope

This study is conceptual in nature and relies on a limited set of secondary data indicators, which may not fully capture the diverse performance patterns across different MSME industries. The analysis does not include sector-wise or region-wise comparisons due to data unavailability. The study also does not apply advanced statistical techniques, since the objective is to explore indicative trends that support the conceptual framework.

Future research can include:

- Field surveys and primary data to validate the dual strategy at enterprise level
- Time-series or regression models to quantify the impact of digital and credit indicators on exports
- State-wise benchmarking of MSME resilience
- Case studies of digitally successful MSMEs
- Expansion of indicators to include productivity, employment, and innovation capacity

These future extensions would strengthen the empirical foundation of the framework and support more specific policy recommendations.

## Declarations:

AI language tools (Perplexity, ChatGPT) were used for literature search, citation verification, and drafting assistance during manuscript revision. All empirical analysis including proprietary indexed trend methodology, resilience index calculations, data interpretation, tables, and figures represent original author contributions. Final content, structure, and arguments were reviewed, edited, and approved by all authors.

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