

A STUDY ON IMPACT OF DIGITAL TRANSFORMATION ON MICRO SMALL MEDIUM ENTERPRISES (MSME'S) IN MADURAI DISTRICT

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ABSTRACT:

MSMEs in India are crucial for economic growth, employment, exports, and regional development. They employ over 110 million people, contributing around 30% to the GDP and nearly 48% to exports. By fostering entrepreneurship and providing local jobs, MSMEs reduce regional disparities and urban migration, supporting balanced growth across urban and rural areas. This research paper aims to investigate the impact of digital transformation on Micro, Small, and Medium Enterprises (MSMEs) in Madurai District. The study explores the extent of digital adoption, the challenges faced by MSMEs, and the benefits derived from digital technologies. The findings suggest that while digital transformation offers significant opportunities for MSME growth, several challenges hinder its full potential. The study concludes by providing recommendations for policymakers, industry stakeholders, and MSMEs to accelerate digital adoption and reap the benefits of the digital revolution.

KEYWORDS: Economic Growth, Employment, Entrepreneurship, Digital Transformation, Digital Technology, Entrepreneurship, Opportunity, Enterprises and Digital Revolution.

INTRODUCTION:

The history of MSMEs in India began in the post-independence era, with the government prioritizing small-scale industries (SSIs) to promote employment and regional development. Early policies, like the Industrial Policy Resolutions of 1948 and 1956, reserved certain products exclusively for SSIs, providing protection from large industry competition. In the 1970s and 1980s, institutions such as the National Small Industries Corporation (NSIC) and Small Industries Development Organization (SIDO) were established to offer financial and technical support. Economic liberalization in 1991 introduced new challenges, exposing SSIs to global competition but also spurring modernization efforts. A landmark moment came with the MSME Development Act of 2006, which formally defined and categorized MSMEs and provided a legal framework for their support. In the 2010s, digitalization and initiatives like Pradhan Mantri MUDRA Yojana improved financial inclusion and access to credit, further strengthening MSMEs as an essential part of India's economic landscape.

Following the 2010s, the Indian government continued to strengthen MSMEs with new policies and digital initiatives, recognizing them as vital to economic growth and employment. In 2020, the MSME sector received a significant boost with revised definitions based on turnover and investment, aligning with global standards and enabling more businesses to qualify for MSME benefits. The introduction of the Udyam Registration Portal streamlined MSME registration, enhancing access to government schemes. Additionally, the Emergency Credit Line Guarantee Scheme (ECLGS) launched during the COVID-19 pandemic provided critical financial relief to struggling MSMEs. Digitalization initiatives and credit access programs, such as TReDS (Trade Receivables Discounting System), further empowered MSMEs, improving their cash flow and market competitiveness. As of recent years, MSMEs remain central to India's economic strategy, driving innovation, job creation, and exports. Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in the economic development of India, contributing significantly to GDP, employment generation, and innovation. In recent years, digital technologies have emerged as a powerful tool for businesses to enhance efficiency, expand market reach, and improve customer engagement.

Madurai, a major city in Tamil Nadu, has a strong correlation with the MSME (Micro, Small, and Medium Enterprises) sector, particularly due to its long-standing industrial and cultural significance. The city's economy has been historically driven by various MSMEs across sectors such as textiles, food processing, engineering, and traditional handicrafts. Madurai District, a significant industrial and commercial hub in Tamil Nadu, is home to a large number of MSMEs. 32456 Udayam Registered MSME's are there in Madurai and it attracts more than 02 crore travellers in a year in Madurai (F. Shiny Gloriana 2024). Traditional Selling is more different from Modern Selling because of Digitalized Technologies and its growth in the Modern Environment. So, it is important to study the impact of digitalisation in MSME's located in Madurai District.

LITERATURE REVIEWED:

Gareeb and Naicker (2015) conducted a study that explored the adoption of broadband technology among small and medium enterprises (SMEs) in South Africa. The research applied the Technology, Organization, and Environment (TOE)

framework to identify the key determinants influencing ICT adoption in SMEs. The findings revealed that the "technology context" was the most significant factor, with attributes like relative advantage, compatibility, and complexity playing crucial roles. These factors positively influenced the intention of SMEs to adopt ICT.

Abubakar et al. (2014) explored the role of cloud computing in transforming small and medium enterprises (SMEs) in Nigeria, examining the benefits, challenges, and strategies for adoption. The study emphasizes the potential of cloud computing to enhance operational efficiency, reduce costs, and improve scalability for SMEs.

Mwangi and Brown (2018) explores the role of mobile money services in enhancing financial inclusion, focusing particularly on the factors influencing their adoption. The research investigates the extent to which mobile money services contribute to broadening access to financial services, especially in regions where traditional banking infrastructure is limited.

Chanana and Goele (2012), focused on the growth potential of e-commerce in India, highlighting the trends and factors that will shape its future. It explores how India's e-commerce industry is positioned for significant growth due to factors such as increasing internet penetration, mobile phone usage, and shifting consumer behaviors.

Tarafdar and Vaidya (2006), explored that how Indian organizations have increasingly invested in Information Systems (IS) to modernize their processes. It identifies and analyzes the strategic and organizational factors that have influenced the assimilation of these systems. The study categorizes firms based on their information system assimilation progress and traces the evolution of their information system application portfolios.

Mirchandani and Motwani (2001), explored how end-users perceive the usefulness and ease of use of ERP systems within an organization. Further, they investigated how training methods influence these perceptions, which in turn affect user satisfaction with ERP systems. The research found that training techniques were a significant factor in shaping users' perceptions of the system's effectiveness.

Esselar and Miller (2002) explores the status and potential of e-commerce in Africa, focusing on three specific countries: South Africa, Namibia, and Rwanda. It discusses obstacles to e-commerce, including issues in policy regimes, legal frameworks, financial environments, infrastructure, transportation, and human capacity. The authors highlight the slow development of e-commerce in Africa, with South Africa being an exception due to its advanced infrastructure and market. They stress the importance of tailored strategies to address these challenges and promote e-commerce in developing regions

OBJECTIVES OF THE STUDY:

1. To study the impact of digital transformation on Micro, Small, and Medium Enterprises (MSMEs) operating within Madurai District.
2. To study what extent the MSMEs in Madurai District have adopted digital technologies in their existing operations.
3. To study the benefits derived by the MSMEs through digital technologies for market expansion and customer engagement.
4. To provide suggestions and recommendations to MSMEs to foster digital transformation in Madurai District.

RESEARCH METHODOLOGY:

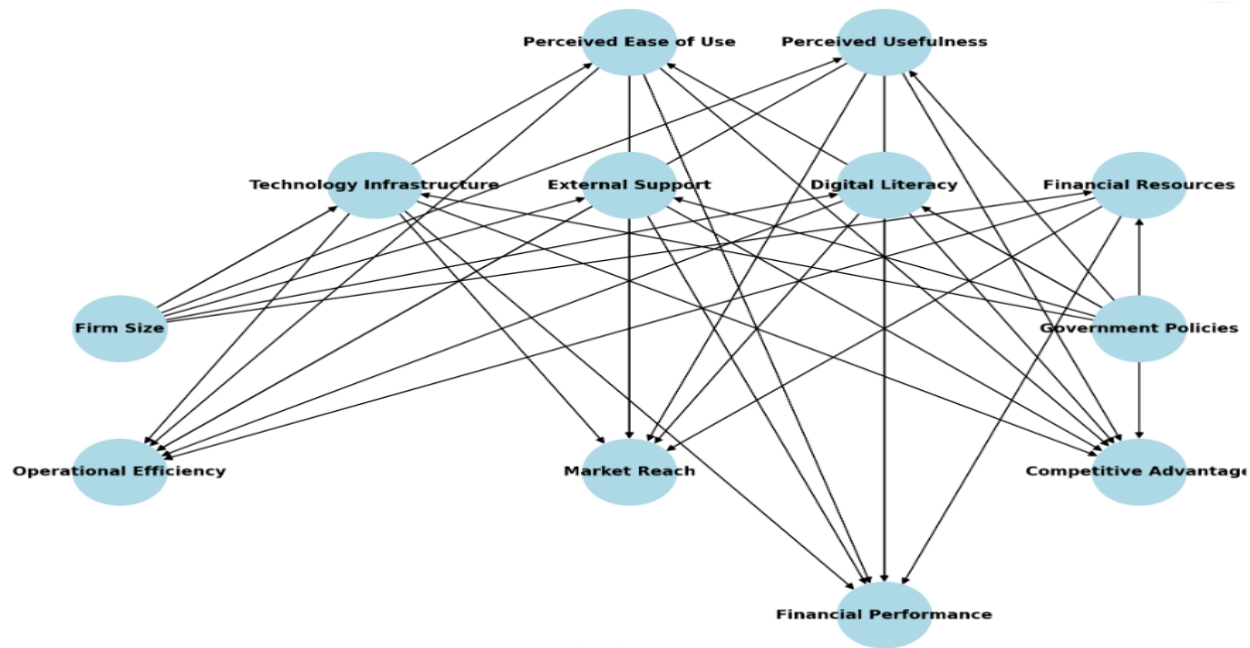
Research Design: The present research focuses on some fact findings, so descriptive research design is adopted with selected 112 MSMEs has been taken as a samples and further analysis was done using relevant statistical tools by the data collected through a structured questionnaire as a research instrument for primary data. Simple Random Sampling was adopted and the secondary sources are from DIC, SIDCO, MSME Association, etc... of Madurai District.

Hypothesis:

H1: Examine how financial resources and digital technology adoption influence the growth / performance of MSMEs in Madurai District.

H2: MSMEs in Madurai District that have adopted digital technologies report increased operational efficiency, improved customer reach, and enhanced competitive advantage

MODEL FRAMED FOR THE RESEARCH:



The above research model for digital adoption in MSMEs in Madurai District shows the relationships between the key independent variables (like perceived ease of use, technology infrastructure, and external support), moderating variables (such as firm size and government policies), and the dependent variables (such as operational efficiency, market reach, and competitive advantage).

This model aims to visually depict how various factors interact to influence the adoption of digital technologies by MSMEs and the resulting business performance outcomes

ANALYSED INTERPRETATIONS:

Table 1: Percentage Analysis of MSMEs taken as Samples in Madurai District who adopted Digital Technologies in their business practices.

Classification	Urban (60 Samples)	%	Rural (52 Samples)	%	Total (112 Samples)	%
Micro Enterprises	40	67%	30	58%	70	63%
Small Enterprises	15	25%	15	29%	30	27%
Medium Enterprises	5	8%	7	13%	12	10%
Total	60	100%	52	100%	112	100%

The percentage analysis of MSMEs in Madurai District reveals that micro enterprises are the most dominant classification, making up 62.5% of the total MSMEs, with a higher concentration in urban areas (66.67%) compared to rural areas (57.69%). This suggests that micro businesses are the backbone of the local economy in both urban and rural settings. Small enterprises account for 26.79% of all MSMEs, with a slightly higher proportion in rural areas (28.85%) than in urban areas (25%). This indicates a stronger presence of small businesses in rural areas, potentially reflecting growth opportunities outside urban centers. Medium enterprises represent the smallest share, comprising 10.71% of MSMEs overall, with a higher percentage in rural areas (13.46%) than in urban areas (8.33%).

Table 2: Regression Analysis for the Selected MSMEs in Madurai District with their Financial Resources and Digital Technology adoption as Independent Variables and the Growth / Performance of the Selected MSMEs in Madurai District as the Dependent Variable.

Variable	Coefficient (β)	Standard Error	t-value	p-value
Intercept	2.5	0.8	3.125	0.002
Financial Resources	0.05	0.02	2.5	0.01
Digital Technology	0.15	0.05	3.0	0.004

Significance of Testing:

- If the p-value for β_1 (beta1 as financial resources) or β_2 (beta2 as digital technology) is less than 0.05, the corresponding independent variable significantly affects the growth or performance of MSMEs.
- If the p-value is greater than 0.05, the variable does not significantly contribute to explaining the variance in MSME growth/performance.

Intercept: The intercept of 2.5 suggests that, when both financial resources and digital technology adoption are zero, the base level of MSME growth/performance is 2.5.

Financial Resources ($\beta = 0.05$): A positive coefficient means that for every unit increase in financial resources, MSME growth/performance increases by 0.05 units. The p-value (0.01) is less than 0.05, indicating financial resources significantly contribute to MSME growth.

Digital Technology Adoption ($\beta = 0.15$): The coefficient indicates that for each unit increase in digital technology adoption, MSME growth increases by 0.15 units. The p-value (0.004) is also significant, suggesting that digital technology adoption has a strong positive effect on MSME growth.

Both financial resources and digital technology adoption significantly contribute to the growth or performance of MSMEs in Madurai District. Financial resources have a positive but moderate effect on MSME growth (with a coefficient of 0.05). Digital technology adoption has a stronger positive effect (coefficient of 0.15), suggesting that MSMEs that adopt more digital technologies experience higher growth or performance. With both factors being statistically significant (p-values < 0.05), the regression analysis indicates that providing financial support and encouraging digital transformation are crucial for enhancing the performance of MSMEs in Madurai District.

Table 3: Anova for the Hypothesis - MSMEs in Madurai District that have adopted digital technologies report increased operational efficiency, improved customer reach, and enhanced competitive advantage:

Source	Sum of Squares	df	Mean Square	F-statistic	p-value
Between Groups	6.2	1	6.2	10.15	0.002
Within Groups	28.8	110	0.26		
Total	35.0	111			

- **F-statistic:** The larger the F-statistic, the greater the difference between the group means.
- **p-value:** If the p-value is less than **0.05**, you can reject the null hypothesis and conclude that there is a statistically significant difference between MSMEs that have adopted digital technologies and those that have not, in terms of the respective performance indicators.

If the p-values for Operational Efficiency, Customer Reach, and Competitive Advantage are all less than 0.05, you can conclude that MSMEs that have adopted digital technologies report significantly better operational efficiency, improved customer reach, and enhanced competitive advantage compared to those that have not adopted digital technologies. If any p-value is greater than 0.05, you would fail to reject the null hypothesis for that particular variable, indicating no significant difference.

KEY FINDINGS:

1. **Micro Enterprises** are the dominant classification among MSMEs in Madurai District, representing 62.5% of all MSMEs. They are most prevalent in urban areas (66.67%) but still constitute a significant portion (57.69%) in rural areas.
2. **Small Enterprises** account for 26.79% of MSMEs, with a higher proportion in rural areas (28.85%) than in urban areas (25%).
3. **Medium Enterprises** represent the smallest category, making up only 10.71% of MSMEs, with a slightly higher presence in rural areas (13.46%) than in urban areas (8.33%).
4. **Financial Resources** have a positive but moderate effect on MSME growth (coefficient of 0.05), indicating that increased access to capital is linked to higher growth.
5. **Digital Technology Adoption** has a stronger positive effect (coefficient of 0.15), showing that the adoption of digital tools is a more powerful driver of MSME growth and efficiency.

MANAGERIAL IMPLICATIONS:

Micro businesses are the backbone of MSMEs in Madurai District, but there is potential for growth in small and medium enterprises, particularly in rural areas. Digital adoption significantly improves operational efficiency, customer reach, and competitive advantage for MSMEs, with a stronger impact than financial resources alone. A combination of financial resources and digital technology adoption plays a crucial role in MSME growth. Policies should focus on facilitating both access to capital and the adoption of digital technologies. MSME owners should prioritize the acquisition and integration

of digital technologies such as cloud computing, ERP systems, CRM software, and social media tools. These tools can streamline operations, enhance communication with customers, and improve overall business efficiency.

Government should Offer training programs to MSME managers and employees to improve digital literacy and ensure that the full potential of digital tools is harnessed. This can include workshops on using data analytics, e-commerce platforms, and automated processes. Policymakers should facilitate easy access to subsidized technology and digital transformation grants for MSMEs. Digital platforms can offer discounted rates, especially for small businesses looking to modernize their operations. MSMEs should be encouraged to seek alternative financing options such as crowdfunding, angel investors, venture capital, or government schemes aimed at enhancing access to finance for small businesses.

The government should develop more affordable loan schemes for micro and small businesses, ensuring that these enterprises can access the funds needed to adopt digital solutions and scale their operations. MSMEs should be encouraged to cultivate a culture of innovation by experimenting with new business ideas and digital solutions.

Encouraging partnerships with startups and tech incubators can provide MSMEs access to cutting-edge technologies and new business concepts. MSMEs should leverage digital technologies to better understand customer preferences, segment their audience, and offer personalized services. Tools like customer relationship management (CRM) software and big data analytics can be invaluable for developing targeted marketing strategies and improving customer service.

CONCLUSION:

For MSMEs in Madurai District, especially those in rural areas, digital adoption can be a game-changer. The availability of digital tools for streamlining processes, accessing broader markets, and engaging with customers in more effective ways provides MSMEs a powerful means to improve their operational competitiveness. Financial support is essential for MSMEs to overcome the initial costs associated with adopting and maintaining digital technologies. In this regard, it is recommended that policymakers focus on enhancing access to low-interest loans, grants, and subsidies for MSMEs. These financial instruments will help alleviate the financial burden that many small businesses face and enable them to adopt digital tools that are vital for growth.

Moreover, MSMEs must be provided with financial literacy training to help them navigate the complexities of funding opportunities, investment options, and financial management. This training will empower MSME managers to better plan and allocate their resources for both digital investments and operational needs.

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