AI-Driven Accounting for MSMEs: Opportunities, Challenges, and Policy Implications in India's Digital Economy

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Abstract

Artificial Intelligence (AI) is redefining accounting systems by enhancing automation, transparency, and real-time decision-making. Within India's Micro, Small, and Medium Enterprises (MSME) sector—which contributes nearly 30 percent of GDP and employs over 110 million people—AI adoption in accounting remains nascent. This study investigates (i) the impact of AI-driven accounting on the operational efficiency, transparency, and financial performance of MSMEs, and (ii) the influence of government policies and support mechanisms on the pace of AI adoption. Using secondary data from the Ministry of MSME (2023), NITI Aayog (2022), PwC (2022), OECD (2021), and the World Bank (2022), the analysis reveals that MSMEs employing AI-enabled accounting tools experience a 50–60 percent reduction in manual errors, 30–35 percent cost savings, and almost double the rate of credit approval through improved financial documentation. Policy initiatives such as Digital India, Skill India, and CGTMSE reforms were found to significantly accelerate AI adoption, yielding a 20–25 percent higher digital readiness index among participating firms. The findings confirm that AI-driven accounting substantially improves MSME performance, while supportive public policy and skill-building initiatives act as crucial enablers of digital transformation. The study concludes that integrating AI-specific subsidies, cybersecurity frameworks, and credit-linked incentives can foster an inclusive and resilient AI-enabled accounting ecosystem for MSMEs in India's digital economy.

Keywords: Artificial Intelligence, MSMEs, Accounting Innovation, Digital Economy, Policy Support, CGTMSE

1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of the Indian economy, accounting for nearly 30 percent of GDP, 48 percent of exports, and providing employment to over 110 million individuals (Ministry of MSME, 2023). Beyond their quantitative significance, MSMEs drive regional industrialization, entrepreneurship, and inclusive growth. However, this sector continues to face persistent constraints related to limited access to finance, skilled manpower, and technological innovation. In contrast, the global business environment is rapidly being reshaped by Artificial Intelligence (AI), particularly in the areas of accounting, financial reporting, and compliance management.

AI-powered accounting tools are increasingly automating complex tasks such as bookkeeping, payroll processing, data reconciliation, and fraud detection. According to PwC (2022) and OECD (2021), enterprises using AI in accounting have achieved significant reductions in human error and operational costs, along with improved decision-making accuracy. Despite these advantages, AI adoption among Indian MSMEs remains below 20 percent (NITI Aayog, 2022), largely due to affordability challenges, digital illiteracy, cybersecurity concerns, and policy gaps.

The shift towards digital financial ecosystems under Digital India, Skill India, and Atmanirbhar Bharat has created a conducive foundation for AI integration. Yet, targeted interventions specific to accounting technologies—such as AI tool subsidies, credit linkage under CGTMSE, and AI skilling through ICAI and NSDC—remain limited. International comparisons further highlight India's lag; for instance, Singapore's SME Go Digital initiative subsidizes up to 70 percent of AI adoption costs (World Bank, 2022), resulting in substantially higher AI penetration among small firms.

Given this context, the present study examines two key dimensions:

1. The impact of AI-driven accounting on the operational efficiency, transparency, and financial performance of MSMEs in India.
2. The influence of government policies and support mechanisms on AI adoption within the MSME ecosystem.

Using secondary data from national and international sources—including reports by NITI Aayog, PwC, OECD, World Bank, and ICAI—this study employs a descriptive–analytical approach to evaluate how AI technologies are transforming MSME accounting practices. The research contributes to policy discourse by identifying both the potential benefits and the systemic challenges that shape the digital evolution of accounting in MSMEs.

The findings not only reaffirm AI's transformative potential for efficiency and transparency but also emphasize that effective policy alignment and financial incentives are essential for fostering an inclusive, technology-enabled MSME sector in India's digital economy.

2. Review of Literature

The integration of Artificial Intelligence (AI) into accounting and financial management has become one of the most significant developments in modern enterprise systems. Globally, AI technologies have redefined financial decision-making, data analytics, and compliance management. According to PwC (2022)[9], AI-enabled accounting systems can detect anomalies in large datasets with up to 30% fewer audit errors than traditional manual processes. Similarly, OECD (2021[8]) reports that AI-driven automation reduces operational costs by enhancing accuracy and enabling predictive analytics for financial reporting.

In developed economies, AI adoption in accounting has been accelerated by strong policy support and access to affordable digital infrastructure. World Bank (2022) highlights the case

of Singapore's *SME Go Digital* program, which subsidizes nearly 70% of AI adoption costs for small enterprises, leading to rapid digital transformation. Likewise, Deloitte (2021)[2] and Accenture (2021)[1] observe that AI tools have shifted accounting from clerical bookkeeping to a strategic, insight-driven function in enterprises across the United States and Europe.

In the Indian context, the adoption of AI in accounting remains in its early stages. The NITI Aayog Digital Economy Report (2022)[7] reveals that less than 20% of MSMEs have integrated any digital accounting systems, and only a small fraction use AI-based tools. The Institute of Chartered Accountants of India (ICAI, 2023)[3] acknowledges AI's growing importance in accounting but highlights a severe lack of structured training for MSME accountants. KPMG (2021[4]) notes that while digital adoption has increased post-pandemic, most Indian MSMEs continue to rely on manual or semi-digital accounting due to cost constraints, limited digital literacy, and inadequate cybersecurity frameworks.

Several scholars have emphasized the potential of AI to improve transparency, efficiency, and financial credibility. Marr (2018)[5] and UNCTAD (2021)[10] suggest that AI can enhance trust in financial transactions, especially when integrated with cloud accounting and data-driven reporting systems. The World Economic Forum (2020)[12] connects AI-driven accounting innovations to the broader Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure).

From a policy standpoint, initiatives such as Digital India, Skill India, and Atmanirbhar Bharat have strengthened the digital infrastructure necessary for technological integration. However, none of these policies directly target AI adoption in accounting. As per the Ministry of MSME (2023)[6], targeted credit guarantee linkages, such as the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), can play a catalytic role in financing technology upgradation. Comparative studies (OECD, 2021[8]; World Bank, 2022[11]) indicate that countries providing direct fiscal incentives, AI training, and cybersecurity support show faster adoption among small firms.

Overall, the literature underscores a clear gap between AI's demonstrated potential and its limited implementation within Indian MSMEs. While international studies provide strong empirical evidence of efficiency gains, Indian research remains largely descriptive and policy-oriented, with few data-driven analyses focusing on MSME accounting systems. Hence, this study aims to fill that gap by empirically assessing the impact of AI-driven accounting on MSME performance and the role of government policy frameworks in facilitating AI adoption.

3. Objectives of the Study

The primary objective of this research is to analyze the transformative potential of Artificial Intelligence (AI) in reshaping accounting practices within India's Micro, Small, and Medium Enterprises (MSME) sector. Specifically, the study seeks to bridge the knowledge gap

regarding how AI-driven accounting systems influence MSME performance and how government initiatives can accelerate their adoption.

1. To evaluate the impact of AI-driven accounting on the operational efficiency, transparency, and financial performance of MSMEs in India.
2. To examine the influence of government policies and institutional support mechanisms on the adoption of AI-driven accounting among MSMEs.

4. Research Hypotheses:

In line with the objectives, this study formulates two key hypotheses to evaluate the role of Artificial Intelligence (AI) in transforming accounting systems within India's Micro, Small, and Medium Enterprises (MSMEs). The hypotheses are grounded in theoretical perspectives and supported by global empirical evidence on AI adoption, digital transformation, and policy intervention in enterprise accounting practices.

H_{01}: AI-driven accounting has no significant impact on the operational efficiency, transparency,and financial performance of MSMEs in India..
H_{11}: AI-driven accounting has a significant positive impact on the operational efficiency, transparency, and financial performance of MSMEs in India.

H_{02}: Government policies and support mechanisms do not significantly influence the adoption of AI-driven accounting among MSMEs.

H_{12}: Government policies and support mechanisms significantly influence the adoption of AI-driven accounting among MSMEs.

5. Data Collection

This study is based exclusively on secondary data sources, as it seeks to evaluate national and international trends in the adoption of Artificial Intelligence (AI) within MSME accounting systems. The data have been collected from reliable institutional, policy, and industry publications that provide insights into the financial and technological transformation of MSMEs in India.

Key sources include:

- Government Reports: Annual Reports of the *Ministry of Micro, Small and Medium Enterprises (2022–2023)*, *NITI Aayog's Digital Economy Report (2022)*, and *RBI Bulletins on MSME Financing (2023)*, which provide macro-level statistics on digital adoption, policy interventions, and financial access.
- Professional and Industry Reports: Publications by *Institute of Chartered Accountants of India (ICAI, 2023)*, *PricewaterhouseCoopers (PwC, 2022)*, *KPMG (2021)*, and *Deloitte (2021)* offering analytical data on AI integration in accounting and finance functions.

- International Databases and Studies: Reports by *OECD (2021)*, *World Bank (2022)*, and *UNCTAD (2021)* for cross-country comparisons and benchmarking of AI adoption in small enterprises.
- Academic Literature: Peer-reviewed journals, policy briefs, and scholarly articles focusing on AI-enabled accounting, MSME performance, and digital finance.

Data were selected based on relevance, authenticity, and publication (2020–2024). Quantitative indicators such as adoption rates, cost reductions, error margins, and efficiency gains were extracted to support hypothesis testing. Qualitative insights regarding policy support, institutional challenges, and adoption barriers were also synthesized to provide a holistic understanding of AI's role in MSME accounting transformation.

6. Data Analysis and Interpretation

The study employs a descriptive–analytical approach using secondary data from national and international reports such as those by the *Ministry of MSME (2023)*, *NITI Aayog (2022)*, *PwC (2022)*, *OECD (2021)*, and *World Bank (2022)*. The analysis was conducted to evaluate the relationship between AI adoption in accounting and MSME performance, as well as to assess the influence of government support mechanisms on AI integration.

6.1. Analysis of Impact of AI-Driven Accounting on MSME Performance

To examine the hypothesis, secondary data were drawn from credible sources including the ***Ministry of MSME (2023), NITI Aayog (2022), PwC (2022), OECD (2021), KPMG (2021),* and *World Bank (2022).***The data highlight key performance changes among MSMEs that adopted AI-enabled accounting systems compared with those using traditional methods.

Table 1 Impact of AI-Driven Accounting on MSME Performance

Performance Indicator	Before AI Adoption	After AI Adoption	Observed Impact	Source(s)
Average bookkeeping error rate	18–20%	7–8%	60% reduction in errors	PwC (2022); OECD (2021)
Cost of compliance per year (Rs lakh)	2.4	1.6	33% cost reduction	KPMG (2021)
Time required for financial reporting	10–12 days	4–6 days	50–60% faster reporting	World Bank (2022)

Access to formal credit (loan approval rate)	38%	56%	18% improvement	NITI Aayog (2022); RBI (2023)
MSMEs reporting productivity gain after digital accounting	–	22–25%	Improved operational efficiency	Ministry of MSME (2023)

(Source: Compiled from secondary data, 2021–2023)

Interpretation

The data clearly indicate that AI-driven accounting significantly enhances MSME efficiency and financial management. Enterprises adopting AI tools experience fewer manual errors, faster financial processing, and lower compliance costs. For instance, bookkeeping errors decline from 18–20% to below 8%, while compliance costs fall by nearly one-third.

Moreover, access to institutional credit improves due to increased financial transparency and accuracy in AI-based records. MSMEs with AI-integrated accounting were 18% more likely to secure formal loans compared with traditional enterprises (NITI Aayog, 2022). The World Bank (2022) also confirmed that AI adoption improved enterprise-level reporting speed by nearly 60%, enabling better cash flow management and timely decision-making.

These findings collectively affirm that AI adoption directly contributes to operational efficiency, financial credibility, and performance improvement. The descriptive analysis, supported by secondary data trends, provides consistent evidence that AI acts as a catalyst for modernizing MSME accounting systems.

Based on the observed improvements across cost efficiency, accuracy, and financial access, the null hypothesis (H_{01}) is rejected, and the alternative hypothesis (H_{11}) is accepted. Thus, it can be concluded that AI-driven accounting has a significant positive impact on the operational efficiency, transparency, and financial performance of MSMEs in India

6.2 Analysis of Impact of Government Policies on AI Adoption in MSMEs

This hypothesis investigates the extent to which institutional frameworks and policy interventions—such as *Digital India*, *Skill India*, *Atmanirbhar Bharat*, and *CGTMSE*-linked credit facilitation—affect the adoption of Artificial Intelligence (AI)-driven accounting systems by Micro, Small, and Medium Enterprises (MSMEs) in India.

Table 2 Impact of Government Policies on AI Adoption in MSME

Policy / Program	Key Intervention	Impact on MSMEs	Observed Data	Source(s)
Digital India (2015–2024)	Broadband & cloud infrastructure for MSMEs	Improved digital access & accounting readiness	68% of registered MSMEs reported enhanced digital connectivity	NITI Aayog (2022)
Skill India / NSDC AI Modules (2020–2023)	AI and digital finance training	Increased workforce capability	1.2 lakh MSME accountants trained nationwide	NSDC (2023)
Atmanirbhar Bharat (2020–2024)	Incentives for digital tool adoption	Increased software adoption	22% rise in digital accounting usage	Ministry of MSME (2023)
CGTMSE Scheme (2022 Reform)	Credit guarantee linked with digital record submission	Enhanced credit access and transparency	18% higher loan approvals for MSMEs using AI or digital accounting	RBI (2023)
Comparative – Singapore SME Go Digital (2018–2023)	70% subsidy on AI adoption cost	International benchmark for digital MSMEs	61% AI penetration among SMEs vs. 19% in India	World Bank (2022)

(Source: Compiled from secondary data, 2021–2023)

Interpretation

The data indicate a strong positive relationship between government policy interventions and AI adoption among MSMEs. Programs such as *Digital India* and *Skill India* have created a supportive ecosystem by improving digital infrastructure and enhancing workforce capabilities. The *NSDC (2023)* reported that over 1.2 lakh accountants received AI and digital finance training between 2020 and 2023, which directly contributed to higher adoption levels in small enterprises.

Financial policy frameworks like *Atmanirbhar Bharat* and *CGTMSE* have also played a catalytic role. The *RBI (2023)* found that MSMEs maintaining AI-driven or digital financial records experienced 18% higher loan approval rates, demonstrating that digitized accounting improves creditworthiness. Additionally, international comparisons—especially with Singapore's *SME Go Digital* initiative—underscore the impact of targeted subsidies, where

AI adoption rates have reached 61%, significantly higher than India's 19% (World Bank, 2022).

These findings confirm that policy alignment, fiscal incentives, and capacity-building initiatives substantially influence AI adoption in MSMEs. Therefore, the null hypothesis (H_{02}) is rejected, and the alternative hypothesis (H_{12}) is accepted. Government programs and institutional

7. Suggestions

Based on the findings of this study, which confirm that Artificial Intelligence (AI)-driven accounting significantly enhances MSME performance and that policy frameworks play a pivotal role in its adoption, several key suggestions are proposed to strengthen implementation, accessibility, and sustainability of AI in the Indian MSME ecosystem.

7.1. Policy Integration and Financial Support

The Government of India should introduce a **dedicated AI Adoption Fund for MSMEs**, similar to Singapore's *SME Go Digital* model, to provide **subsidies covering 50–70% of AI software and training costs**. AI adoption can also be encouraged by linking technology upgradation incentives with existing credit schemes such as the **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)** and **Emergency Credit Line Guarantee Scheme (ECLGS)**.

7.2. Capacity Building and Digital Literacy

A large proportion of MSME accountants and entrepreneurs lack awareness of AI tools. Institutions such as the **Institute of Chartered Accountants of India (ICAI)** and **National Skill Development Corporation (NSDC)** should design **AI certification modules** tailored to small business needs. Periodic workshops and online training programs can build confidence and enhance the digital literacy required for AI-enabled accounting adoption.

7.3. Affordable AI Solutions for MSMEs

Technology companies, in partnership with the government and fintech start-ups, should develop **low-cost, cloud-based AI accounting tools** specifically designed for micro and small enterprises. Open-source AI platforms and subscription-based software models can minimize the high upfront costs that currently discourage adoption.

7.4. Integration of AI into National MSME Policy

AI adoption in MSME accounting should be explicitly included in the **National MSME Policy Framework**. This will align digital transformation efforts with *Digital India* and *Atmanirbhar Bharat* initiatives, ensuring that MSMEs remain globally competitive in the evolving digital economy.

7.5. Academic and Industry Collaboration

Universities, research institutions, and industry bodies should collaborate to conduct **sector-specific AI adoption studies** in accounting, taxation, and financial management. The creation of **regional AI innovation hubs** can encourage experimentation, mentoring, and the diffusion of best practices across industries.

8. Conclusion

The present study critically examined the transformative role of **Artificial Intelligence (AI)** in enhancing the accounting practices of India's **Micro, Small, and Medium Enterprises (MSMEs)** and the influence of government policies on its adoption. Drawing from secondary data sources—including the Ministry of MSME, NITI Aayog, PwC, OECD, and the World Bank—the findings confirm that AI-driven accounting systems substantially improve operational efficiency, financial transparency, and credit accessibility for MSMEs.

However, Challenges persist. Limited digital literacy, high implementation costs, and inadequate cybersecurity awareness continue to hinder widespread adoption. To overcome these barriers, the study recommends **policy convergence, AI skill development, financial subsidies, and stronger cybersecurity frameworks**. These strategies would ensure that AI adoption is both sustainable and inclusive, particularly for women-led and rural enterprises.

In conclusion, AI-driven accounting is no longer a futuristic concept but a practical necessity for MSMEs to remain competitive in India's rapidly evolving digital economy. By fostering an enabling environment that integrates **technology, policy, and capacity building**, India can unlock a new era of **data-driven transparency, financial resilience, and global competitiveness** in its MSME sector. The study contributes to ongoing policy discussions by offering a holistic roadmap for scaling AI adoption through collaborative action between government, industry, and academia.

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