

The Role Of Artificial Intelligence In Transforming M - Commerce: Opportunities, Challenges, And Future Prospects

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Abstract- Artificial Intelligence (AI) is no longer a futuristic concept but a present reality that is redefining commerce worldwide. From intelligent chatbots to predictive financial models, AI is transforming how businesses interact with customers, manage operations, and make decisions. This research paper explores the role of AI in commerce, with special reference to accounting, finance, marketing, human resources, and supply chain management. The study uses secondary data, reports, and case examples from India and other economies. Apps supported by app stores have provided an environment of trust for consumers yet web-based M-commerce remains dominate with evidence that physical shops are using M-commerce to fight back. Still the real business prospect in M-commerce comes from the opportunities to develop new business models and integrating new technologies where innovation and creativity is highly rewarded. The findings suggest that AI offers immense opportunities for efficiency, innovation, and inclusion. However, challenges such as high implementation costs, data privacy concerns, job displacement, and ethical dilemmas must be carefully addressed. The paper concludes with a forward-looking perspective on how AI can drive sustainable m-commerce if supported by responsible policies and balanced adoption strategies.

Keywords- AI opportunities, Digital Services, mobile payments, mobile applications, social commerce, mobile security, user experience.

I. INTRODUCTION

Commerce has historically adapted to technological revolutions. The invention of computers enabled faster record keeping, while the internet revolutionized marketing and communication. Today, AI represents the next stage of evolution. Unlike earlier tools, AI does not just assist humans but also learns, predicts, and takes decisions in real time. M-Commerce or Mobile commerce, a term derived from the electronic commerce with the focus on the ability to buy sell advertise and perform business operation on the move. The

technology allowing such process is constantly developing and changing. initially linked to laptops Commerce is now predominately associated with smartphone and tablets. Globally, the AI market in commerce is expanding at an unprecedented pace. According to PwC (2023), AI is expected to contribute nearly \$15.7 trillion to the global economy by 2030. In India, a report by NASSCOM (2022) estimated that AI adoption in retail, banking, and logistics could add \$500 billion to GDP by 2025.

Mobile Commerce (m-commerce): This refers to e-commerce transactions that occur through mobile devices like smartphones and tablets. Mobile apps and mobile-optimized websites play a crucial role in m-commerce.

Mobile commerce (M-commerce) has become a driving force in the modern digital business ecosystem, fundamentally transforming the way businesses and consumers interact. This review paper provides a comprehensive analysis of the current trends, key impacts, and future prospects of M-commerce in the rapidly evolving digital landscape. The study explores how the rise of smartphones, mobile applications, digital wallets, and social commerce has significantly enhanced customer convenience, expanded market reach, and reshaped consumer behavior. It also examines the challenges associated with mobile security, user experience, and technological dependencies that businesses must address to succeed in the mobile-first environment.

CHARACTERSTICS AND LIMITATIONS:

- Mobile devices tend to have limited space typical smartphone or table would have less than 10% storage space compared to desktops and laptops.
- Mobile devices also have significantly smaller display screen to allow easier mobility. This means the design of websites app and application for M-Commerce needs to take into consideration what are the essential requirements needed to fit into these limited displays.

Mobile devices need to operate on battery for longer hours. This feature is essential of the device to be considered to be true mobile long and continued use of the processing power of the mobile device would drain the battery.

- The operating system on mobile devices has been designed not to be large and reduce its extensive use of the processor and RAM. This has come at a cost reducing the tools and options that would have been otherwise available its typical desktop or laptop
- Mobile devices come with extensive features not found traditionally in desktop or laptop device. Features include high resolution cameras Global positioning system, near field communication and SMS messages calling and access to extensive libraries for application downloads known apps.

CATEGORIES OF APPS:

- Apps are categorized by what they provide in digital services.
- Game apps are games using mobile devices in which user interacts with the device in response to graphics on the screen. IT may come as a surprise to many people that while game apps represent the biggest category of apps overall game apps represent less than 23% of the most popular apps.
- Business apps are second most popular and represent apps created by businesses to sell buy and advertise and maintain business operation example of business apps would be supermarkets shops and stores restaurant chains estate agents' suppliers' apps companies providing comparison services and more.
- Educational apps represent around 10% and include academic tools such dictionaries translator's language learning programming calculators word processors spreadsheet schooling kinds educational apps academic establishment apps associated with schools and universities.
- Lifestyle apps include clothing app make up app food and cooking apps dieting apps dating apps time management apps and more. Entertainment apps would include movies, TV, Video, Podcast digital radio and more. Traditionally the process involved making a payment to acquire the entertainment package and the user would have access unlimited access to copy a recent trend is move from buying streaming invoices watching or listening to that content only once or for short period of time. This is the same business model associated with rating moved. Big names are found here like YouTube, net flex and softy.

- The remaining categories are utilities for managing the running of mobile devices travel for flights hotels car rentals and more books for digital reading health and fitness music for buying or streaming productivity for personal and business food and drinks sports photo and video recording and editing finance which includes banking credit card and financial management news referencing social media medical and finally navigation.

M-COMMERCE BUSINESS MODELS:

While in E-commerce there are variety of business models involving combinations of Business, Consumers, and Government, in M-Commerce only four combinations are deemed significant enough. While Business to Consumer (B2C) remains the most predominant model, we will also explain three important models: G2C, B2B, and C2C. Other models will be summarized, as their impact and existence remain very limited.

GOVERNMENT TO CONSUMER (G2C):

M-commerce is growing in presence. Nowadays Government to Consumer (G2C) M-Commerce is growing in Nowadays governments are keenly aware of the expanded use of mobile use and several governments have moved several of their services and payments to accommodate such model. Some of the G2C models that have been adopted include council tax, service payments, traffic penalty payments, and tax calculators.

BUSINESS TO BUSINESS (B2B):

M-Commerce is also slowly expanding as business move to capitalize on existing and new supply chain management systems that connects them better to their business partners. Dedicated apps are designed to partly replace some of the Web features that would accelerate order processing, track delivery, and keep business partners informed of their latest news, services, and products.

CONSUMER TO CONSUMER (C2C):

It represents a significant portion of M-Commerce as more independent consumers are able to sell to each other using mobile devices. Here traditional models in E-commerce copied into apps have proven to be as successful. Auction apps and consumer selling outlets such as eBay, gumtree, Graig list, and even some social media apps such as Instagram have been used to facilitate C2C M-commerce.

BUSINESS OPPORTUNITIES IN M-COMMERCE:

Business opportunities in M-commerce are expanding as the demand on portable and mobile computing continues to grow beyond the market of smartphone to be able technologies with implants predicted shortly after. We will start by presenting where the opportunities are still growing and where new opportunities are expected.

DIGITAL GOODS:

Digital goods are still a growing market in M-commerce represented by sale of apps. Games sold through the app Stores represent the biggest portion of digital goods sold for M-commerce. The wall street journal reports that apple app Store recorded 20 billion for 2018. Other digital goods included here were explained in the categories of apps sections include: Entertainment, Music books and more.

Digital services: A growing market of providing services that generated sales from social media advertising communication apps and call over network. Skype for instance while provides free video calls and voice of network calls, they charge for calls to landline other services have proven to help retain customers an attract new customers are business app such as M-Banking Grocery sales, auction apps, and business directories. It should be noted that convenience plays a key role here. Some of the successful digital service apps have capitalized on making the service convenient to customers example uber commodities clothing grocery sales are having limited success.

Literature Review

- Research on AI in commerce has been gaining momentum in recent years. Davenport and Ronanki (2022) divided AI applications into **process automation, cognitive insight, and cognitive engagement**. Kokina and Davenport (2017) highlighted AI's potential in auditing, particularly in reducing repetitive manual tasks.
- In marketing, Chatterjee, Rana, and Dwivedi (2024) emphasized the role of recommendation systems in e-commerce platforms, noting how personalization boosts consumer loyalty. In finance, Arner et al. (2017) studied "FinTech" and concluded that AI is central to fraud detection, credit risk assessment, and algorithmic trading.
- However, concerns remain. Brynjolfsson and McAfee (2017) warned about AI-driven job losses and widening inequalities. Crawford (2021) raised issues of algorithmic bias, where AI systems sometimes reinforce discrimination in recruitment or lending.
- In India, NITI Aayog (2023) released a national strategy on AI identifying priority areas: healthcare, agriculture,

education, smart mobility, and financial inclusion. The strategy highlights commerce as a cross-cutting beneficiary. Yet, adoption among MSMEs remains slow due to cost and skill barriers. This review shows that while global literature emphasizes efficiency gains, Indian studies focus more on inclusivity and accessibility of AI.

- Gupta and Sharma (2020) emphasize the pivotal role of social media platforms in reshaping traditional marketing approaches. They highlight how these platforms facilitate personalized interactions between brands and consumers, fostering deeper engagement and nurturing interactive relationships that transcend conventional marketing boundaries.
- Patel and Desai (2024) raise critical concerns regarding the ethical implications of AI in marketing. While acknowledging the unprecedented opportunities AI presents for marketers, they underscore the importance of addressing issues related to data privacy and algorithmic bias. They advocate for the implementation of robust regulatory frameworks and ethical guidelines to ensure responsible use of AI technology and safeguard consumer rights.

Objectives of the Study

- To examine the applications of AI in major areas of M-commerce.
- To analyse the opportunities and benefits derived from AI adoption.
- To identify the challenges, risks, and limitations of AI in M-commerce.
- To highlight India-specific examples of AI integration in M-commerce.
- To suggest future strategies for sustainable AI-enabled M-commercial growth.

Research Methodology

This paper is based on **descriptive and analytical research design** using secondary data. Data has been collected from: Academic journals and books on AI and commerce

- Reports by PwC, Deloitte, McKinsey, NASSCOM, and RBI
- Government of India publications on AI in MSMEs, banking, and trade

Case examples from e-commerce platforms (Amazon, Flipkart), digital banking (SBI YONO, Paytm), and logistics companies. The analysis combines literature review with secondary data interpretation. Tables and graphs are included to present statistical trends on AI adoption.

Data Analysis

AI in Finance and Accounting

AI is transforming financial decision-making by automating accounting, detecting fraud, and supporting investment analysis.

Automated Accounting: Tools like *QuickBooks AI* and *Zoho Books* simplify bookkeeping for SMEs.

Fraud Detection: Indian banks such as SBI use AI-driven systems to monitor suspicious transactions in real time.

Credit Scoring: FinTech companies like *Paytm* and *Lendingkart* employ AI to assess borrower risk using alternative data.

Table 1: AI Applications in Finance

Application Area	% Firms Reporting Benefit
Automated Bookkeeping	68%
Fraud Detection	74%
Credit Risk Assessment	61%
Algorithmic Trading	52%



Chart 1: AI Applications in Finance

Table 2: Impact of AI on Marketing Strategies:

AI Tool	% Firms Reporting Sales Growth
Recommendation Systems	72%

Chatbots for Customer Care	65%
AI-driven Ad Targeting	70%
Sentiment Analysis	58%



Chart 2: Impact of AI on Marketing Strategies:

Table 3: AI in Human Resource Management

Application Area	% Firms Reporting Positive Impact
Recruitment Automation	67%
Employee Retention	59%
Training & Development	62%

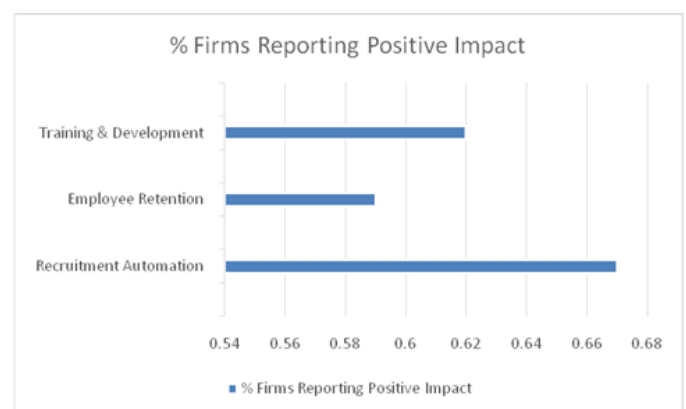


Chart 3: AI in Human Resource Management

TABLE- 4 M-COMMERCE GROWTH RATE IN INDIA FROM 2025 TO 2030

YEARS GROWTH	RATE OF GROWTH
2025	22.3%
2026	23.6%

2027	24.2%
2028	25.9%
2029	26.7%
2030	29.7%

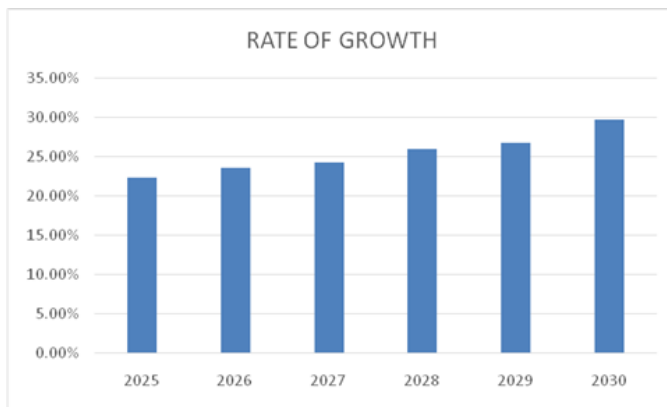


CHART- 4 M-COMMERCE GROWTH RATE IN INDIA FROM 2025 TO 2030

Future Prospects of AI in Commerce

- **Deeper Personalization in Marketing**

AI will enable hyper-personalized shopping experiences. Instead of generic ads, consumers will receive product suggestions tailored to their lifestyle, income, and preferences.

- **Expansion of AI in SMEs**

with falling costs of cloud-based AI tools, even small kirana stores and micro-enterprises in India will be able to use AI for inventory management, digital payments, and customer relationship management.

- **AI-driven Financial Inclusion**

Rural populations and unbanked citizens will gain access to credit, insurance, and savings through AI-enabled FinTech platforms that use alternative data such as mobile usage and digital transactions for credit scoring.

- **Intelligent Supply Chains**

Future supply chains will use AI in combination with Internet of Things (IoT) and blockchain to create real-time, transparent, and self-correcting logistics systems.

- **Rise of Human–AI Collaboration**

instead of replacing human workers, AI will increasingly act as a co-pilot. Employees will focus on strategic decision-making while AI handles repetitive, data-heavy tasks.

- **Policy and Ethical Frameworks**

Governments, including India's, are working on data protection laws and AI ethics frameworks. Strong regulation will ensure that AI in commerce grows in a responsible and inclusive way

Key findings:

- The survey results highlight several key takeaways regarding the integration of AI technologies in digital marketing:
- **Experience Level and Familiarity:** The majority of respondents have less than two years of experience in digital marketing, indicating that it's an emerging field within marketing management. However, they show a high level of familiarity with AI technologies, suggesting a growing trend in incorporating AI into digital marketing strategies.
- **AI Adoption and Usage:** The survey reveals that a significant portion of respondents are already using AI tools in their digital marketing activities, with Chat GPT being the most widely used AI tool. Moreover, usage frequency is predominantly on a daily basis, indicating the integration of AI into regular workflows.
- **Popular AI Use Cases:** Among the various applications of AI in digital marketing, article writing and copywriting emerge as the most popular. This underscores the effectiveness of AI in generating written content, which is crucial for online marketing efforts.
- **Barriers to AI Adoption:** Lack of knowledge for effective use is identified as the primary hindrance to AI adoption. This highlights the necessity for more education and training in AI technology to facilitate its widespread adoption and utilization.

II. CONCLUSION

Artificial Intelligence is transforming the very foundation of commerce by automating operations, enhancing decision-making, and creating new opportunities for businesses of all sizes. The study reveals that AI has clear benefits in finance, marketing, human resources, and supply chain management. Companies adopting AI report higher efficiency, cost reduction, and improved customer engagement. However, the challenges cannot be ignored. High costs, skill shortages, ethical issues, and data privacy concerns

present serious obstacles. The risk of job displacement also highlights the need for reskilling and social safeguards. For India, AI adoption is both a challenge and an opportunity. With its large base of small and medium enterprises, rapid growth of m-commerce, and strong IT industry, India has the potential to become a global leader in AI-driven m-commerce if it focuses on inclusive adoption and responsible governance. The future of commerce will not be about AI replacing humans, but about humans and AI working together. Policymakers, businesses, and educational institutions must collaborate to ensure that AI is used ethically, inclusively, and sustainably. If these conditions are met, AI can drive not just business growth but also social and economic development in the years ahead. AI-driven insights, automation, and personalization, marketers can unlock new opportunities for customer engagement and drive business growth. Moving forward, continued research and collaboration between academia, industry, and policymakers will be vital to further explore the potential of AI in shaping the future of digital marketing.

REFERENCES

- [1] Arner, D. W., Barberis, J., & Buckley, R. P. (2017). *FinTech, RegTech, and the reconceptualization of financial regulation*. *Northwestern Journal of International Law & Business*, 37(3), 371–414.
- [2] Chatterjee, S., Rana, N. P., & Dwivedi, Y. K. (2024). *The role of artificial intelligence in customer engagement in digital marketing*. *Journal of Business Research*, 118, 398–414.
- [3] Crawford, K. (2021). *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press.
- [4] Brynjolfsson, E., & McAfee, A. (2017). *Machine, Platform, Crowd: Harnessing Our Digital Future*. New York: W.W. Norton & Company.
- [5] Kokina, J., & Davenport, T. H. (2017). *The Emergence of Artificial Intelligence in Accounting*. *Journal of Emerging Technologies in Accounting*, 14(1), 115–122.
- [6] Gupta, R., & Sharma, S. (2020). *Reshaping Traditional Marketing Approaches Through Social Media Platforms*. *Journal Of Social Media Marketing*, 18(2), 112-128.
- [7] Patel, M., & Desai, N. (2024). *Ethical Implications of Ai in Marketing: Addressing Privacy and Algorithmic Bias*. *Journal Of Marketing Ethics*, 32(3), 176-192.