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EMERGING ARTIFICIAL INTELLIGENCE (AI) TRENDS ADOPTED BY WOMEN ENTREPRENEURS: AN INDIAN AND GLOBAL PERSPECTIVE

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Abstract

Artificial Intelligence (AI) is quickly changing the entrepreneurial world, creating new chances for innovation, market growth and efficiency. This study has looked into the trends of AI adoption among women entrepreneurs from both global and Indian views and this study is based on secondary data, literature reviews and Industry Reports. It has highlighted key sectors, such as fintech, healthtech, e-commerce and agritech, where women-led ventures which are speeding up AI integration. Around the world, women have used AI for customer analytics, business intelligence and automation, aided by better access to digital platforms and networks. In India, government programs like Digital India, Startup India and AI for All have laid a strong groundwork for AI adoption, especially in urban areas. Yet, structural issues remain, such as digital gender gaps, low AI knowledge and social and cultural barriers, particularly in rural communities. The results stressed the importance of creating digital policies that include everyone, offering targeted training and building collaborative networks to help more women get involved in AI-driven entrepreneurship. Overall, improving women's access to AI tools can spark innovation, support gender equality and boost inclusive economic growth.

Keywords: Artificial Intelligence, India and Women Entrepreneurs

Introduction

Artificial Intelligence (AI) has completely changed the global entrepreneurial scene, offering new ways to innovate, work more efficiently and market expansion (PwC, 2018). Women entrepreneurs are using AI technology more and more to get around traditional business problems and go ahead of the competition (McKinsey & Company, 2020). From intelligent automation to AI-driven customer analytics, women-led enterprises are accommodating these tools to enhance customer experience, streamline operations and innovate their offerings (OECD, 2021). Globally, women entrepreneurs are utilizing AI in sectors like fintech, healthtech and e-commerce, representing a change from more typical gendered fields (World Economic Forum, 2022). Women are becoming tech founders in places like the United States and the UK, and they are actively involved in AI-related businesses and venture ecosystems (Startup Genome, 2021). Global efforts are assisting in closing the gender and digital divide, despite structural issues like as underrepresentation in STEM disciplines and gender prejudice in funding (UNCTAD, 2021).

In India, women entrepreneurs are beginning to use AI more often. This trend is growing due to digital literacy programs, startup schemes and improved internet penetration (NITI Aayog, 2021). Women are using AI for business intelligence, predictive analysis and digital marketing to grow their businesses (Mehta & Goyal, 2023). Government initiatives like "Digital India," "Startup India," and the "AI for All" campaign have been important in promoting AI use among women-led startups (Ministry of Electronics and IT, 2022). However, socio-cultural constraints, digital gender gaps, and lack of access to AI infrastructure still create significant challenges in India (Bain & Company, 2019). While urban women have started to use AI solutions in their businesses, rural women stay left out of this digital revolution (GSMA, 2021). The COVID-19 pandemic has also had a mixed effect; it sped up digital adoption but worsened existing gender inequalities.Given this background, it is important to understand the trends,

factors and obstacles in AI adoption by women entrepreneurs in both global and Indian context. This study aims to explore the emerging trends, highlight effective practices and identify gaps in AI adoption among women entrepreneurs.

Review of Literature

1. **Sultan Alateeg et al. (2024)** have examined how AI can transform the entrepreneurial landscape for women in Saudi Arabia. The study revealed that the cultural, educational and financial challenges faced by women entrepreneurs in adopting AI. Cultural norms and societal expectations often act as barriers, while limited AI awareness and funding restrict women's ability to utilize AI effectively. However, the findings highlighted AI's potential to enhance flexibility, decision-making, and innovation for women-led startups. Overall, this research contributes significantly to understanding how technology can empower women entrepreneurs in a traditionally conservative society.
2. **Abbie-Gayle Johnson et al. (2024)** have explored how platforms like Airbnb, in partnership with SEWA in India, are helping women from low socio-economic backgrounds become entrepreneurs. Using Ostrom's commons theory and IAD framework, the study highlights how traditional and digital commons, combined with cultural ideologies, support women's empowerment. It emphasized that women view themselves as empowered entrepreneurs despite facing technological and social barriers. The role of SEWA as a commons facilitator was pivotal in bridging digital gaps, especially for rural women unfamiliar with technology.
3. **Manal Anabtawi et al. (2024)** havemade a compelling analysis of how women entrepreneurs engaged with generative AI (GenAI) technologies and Used Rogers' Diffusion of Innovations (DOI) theory, the study identified both facilitators like trialability, observability and inhibitors such as privacy concerns and GenAI algorithmic bias. It explained 53 per cent of the variance in GenAI adoption.The paper also emphasized the need for user-centric design and inclusive AI development.
4. **Mahesh K. M. et al. (2023)** have offered an in-depth conceptual examination of how digital financial tools and government initiatives were transformed Self-Help Groups (SHGs) in India, especially those formed by women. The study emphasized the growing fintech ecosystem driven by tools like Aadhaar, UPI and digital banking and highlighted how these enhanced financial access in rural and underserved areas. It showed how SHGs have been empowered through digital means such as NABARD's E-Shakti and SKDRDP's digitization efforts, improved credit access, financial literacy and the socio-economic conditions of their members. An ABCD analysis suggested strengthening digital literacy, infrastructure, and credit systems for inclusive growth.
5. **Mahesh K. Met al. (2023)**explored an insightful review of India's evolving MSME sector. It highlighted how various government schemes like Startup India, PMEGP, ECLGS and digital platforms such as ONDC and Udyam are catalyzing growth, especially in rural areas. The study emphasized the crucial role of digital innovation, FinTech and 5G technology in creating a supportive ecosystem for entrepreneurs. The paper also addressed constraints like NPA rise, digital illiteracy and delayed payments to MSMEs. Overall, the paper presented a comprehensive roadmap for leveraging government support and digital transformation to ensure inclusive and sustainable economic progress in India.

Objectives of the Study

1. To identify emerging trends in AI adopted by women entrepreneurs in India and global.
2. To highlight sectors where AI is most widely adopted by women entrepreneurs in India andglobal level.

Research Methodology

This study follows a quantitative and**qualitative-descriptive research design**basedon**secondary data**. The research aims to explore emerging global and Indian trends in the adoption of Artificial Intelligence (AI) by women entrepreneurs by critically analyzing existing literature, government databases, reports and industry publications. This approach allows for the synthesis of existing knowledge and identification of patterns, gaps and opportunities relevant to the subject matter.

Data Analysis

The study presents a detailed analysis of the data collected to explore the adoption trends of Artificial Intelligence (AI) among women entrepreneurs globally and within India. The objective is to identify key patterns, sectoral preferences and influential factors that shape the integration of AI technologies by women-led enterprises.

Emerging Trends in AI Adopted by Women Entrepreneurs in India

India presents a unique mix of challenges and opportunities when it comes to women entrepreneurs adopting AI. Several factors influence AI integration in the Indian context:

1. Rapid Digital Transformation and Government Initiatives

India's digital revolution, driven by government efforts like Digital India and strong infrastructure development, has created favorable conditions for AI adoption. These policies aim to integrate new technologies across sectors and improve digital skills among women.

2. Socio-Economic Dynamics and Cultural Distinction

Women entrepreneurs in India often work in settings shaped by traditional gender roles and socio-economic limitations. While there is a solid history of digital entrepreneurship initiatives, such as partnerships in the sharing economy that support female empowerment (for example, the collaboration between SEWA and Airbnb), moving towards AI adoption brings new challenges. These include limited access to ongoing training, lack of infrastructure in rural areas and cultural biases that might obscure innovative ventures led by women.

3. Sectoral Concentration and AI Use Cases

In India, successful AI adoption frequently occurs in more digitally focused sectors, such as e-commerce, fintech, agritech and health tech. Women entrepreneurs in urban areas are using AI to improve supply chains, enhance customer experience and create business intelligence solutions for better decision-making. In contrast, women in traditional rural sectors often benefit from digital platforms but face a steeper learning curve when it comes to AI. Various pilot studies and startup cases show that with the right training and infrastructure support, these obstacles can be addressed, leading to greater AI use.

4. Collaborative Ecosystems and Knowledge Sharing

A common trend in India is the collaborative approach to adopting technology. Initiatives like digital commons, where community members share and benefit from digital tools, are especially effective. Platforms and networks focused on mentoring, peer support and government-backed incubators foster an environment where AI can be shared more fairly. The sharing economy model, though mainly associated with services like accommodation, offers important insights into how collaboration can lower individual barriers to adopting technology.

5. Emergence of AI-Driven Social Ventures and Impact Focus

There are a growing number of social ventures led by women that blend profit goals with social impact. These businesses often use AI to tackle issues like financial inclusion, healthcare access and educational outreach. While specific data on AI adoption in these ventures is still developing, qualitative analyses indicate that they tend to be more resilient and adaptable because of their dual focus on market success and community advancement.

TABLE NO.01: AI ADOPTION BY WOMEN ENTREPRENEURS IN INDIA (2020–2024)

Year	Women-led AI Startups	Total Women-led Startups in percentage	Source
2020	520	5.2	DPIIT Startup India Report, 2020
2021	730	6.8	NITI Aayog WEP Report, 2021
2022	1,050	8.9	Nasscom AI Adoption Report, 2022
2023	1,600	12.1	Nasscom AI DEW Report, 2023
2024	2,100 (est.)	14.5	Projected based on DPIIT &Nasscom Trends

Source: Created by Author

India has witnessed over **28 per cent CAGR** in AI adoption among women-led startups from year 2020 to year 2024. Between year 2020 and year 2024, there has been a remarkable rise in the adoption of Artificial Intelligence (AI) by women entrepreneurs in India. The number of women-led AI startups has grown from 520 in the year 2020 to an estimated 2,100 in the year 2024, marking an increase of over 300 per cent within five years. This impulse reflects a strong and growing interest among women entrepreneurs in leveraging AI technologies to drive innovation and business growth.The growing involvement of women in AI entrepreneurship not only reflects greater inclusivity in the tech sector but also promises more diverse and fair innovation. If the current momentum continues, women-led AI startups could become a major driver of India's AI-powered economic transformation.

TABLE NO. 02: SECTOR-WISE DISTRIBUTION OF WOMEN AI ENTREPRENEURS IN INDIA (2024)

Sector	Women AI Entrepreneurs in percentage	Source
HealthTech	26	NASSCOM AI Report 2023
EdTech	21	DPIIT Startup Dashboard, 2024
E-commerce	18	Bain & Google Women in Tech Report 2022
AgriTech	14	Ministry of Agriculture, Startup India
FinTech	13	Invest India Report, 2023

Source: Created by Author

The data in table no. 02 indicates that women entrepreneurs in India are making significant strides in AI adoption, particularly in sectors that directly impact social well-being and economic development. Among the various sectors, **HealthTech** leads with **26 per cent** of women AI entrepreneurs with strong presence of utilizing artificial intelligence in the healthcare industry. EdTech follows with 21 per cent, reflecting women's active role in developing AI-powered educational platforms and tools, driven by the growing demand for personalized learning and digital classrooms. The E-commerce sector makes up 18 per cent, showing that women are using AI to improve customer experience, streamline logistics and tailor shopping experiences. AgriTech and FinTech both have lower women entrepreneurial involvement compared with other sectors. The varying percentages suggest potential areas for policy support and capacity building, especially in sectors like AgriTech and FinTech, to encourage greater participation.

EmergingTrends in AI Adopted by Women Entrepreneurs at Global level

Globally, the conversation about women entrepreneurs adopting artificial intelligence (AI) has shifted from a minor issue to a major topic in technological innovation and entrepreneurship studies. In recent years, several important trends have appeared:

1. Increased Digital Entrepreneurship

The rise of digital platforms has made it easier to start a business. Studies in digital entrepreneurship, like those by Davidson and Vaast (2010), explain how new media, mobile technologies and internet-based platforms create new opportunities for innovation and business growth. AI is particularly beneficial as it provides predictive analytics, personalized customer interaction and process improvements that were previously available only to large companies. As global markets become more digital, women entrepreneurs have started using these tools to gain a competitive edge.

2. Emerging AI Applications in Business Processes

Globally, practical AI applications relevant to small and medium enterprises (SMEs) include automated customer service chatbots, AI-driven market insights and machine learning for inventory management. These innovations provide significant advantages. Increased venture capital in AI startups and the use of AI solutions within larger tech ecosystems have fueled this trend. Women entrepreneurs frequently adopt AI for tasks such as data analysis, e-commerce personalization and making operational decisions. This helps lower costs and improves business performance.

3. Access to Global Networks and Digital Commons

The idea of digital commons, where resources are produced, maintained and shared collectively, has impacted how women entrepreneurs use technology. Through global online communities, collaborative workspaces and mentoring networks, women can access learning tools and AI resources. Although digital commons were once mostly linked to the sharing economy, the core ideas still apply today as women entrepreneurs incorporate AI into collaborative innovation.

4. Case Studies and Sectors adoption

Around the world, many success stories demonstrate the potential of AI to boost growth among women-led businesses. Some case studies showed better sales conversion rates, improved customer engagement and enhanced business analysis as direct results of adopting AI. Early adopters in sectors like retail, fintech, health and education emphasize AI's transformative role. These case studies provide important examples for measuring broader trends in AI adoption.

5. Cross-Cultural Variations and Sector-Specific Insights

AI adoption does not happen evenly across all markets. Firms in high-income areas benefit from strong digital infrastructure and supportive funding environments, while women entrepreneurs in low and middle-income regions often encounter extra challenges. Cross-cultural comparisons reveal that business sectors such as technology-driven retail and services implement AI more quickly, while traditional sectors may fall behind. Recognizing these differences is crucial for understanding global trends and creating targeted policies to encourage greater adoption.

Table No. 03: Global Trends in AI Adopted by Women Entrepreneurs

Region	Women Entrepreneurs Using AI (2023) in percentage	Common AI Use Cases	Source
North America	32	Customer service, predictive analytics	Statista, 2024
Europe	27	Product personalization, workflow automation	OECD, 2023
Asia-Pacific	35	Chatbots, NLP, e-commerce optimization	WEF Global Gender Gap Report, 2023
Africa	18	Inventory AI, SMS-based AI tools	UN Women–ITU, 2023
Middle East	20	FinTech AI, translation services	Accenture, 2024

Source: Created by Author

Major Findings

The following are the key findings of the study about Artificial Intelligence adopted by Women Entrepreneurs at Indian level and Global level.

1. The study found a pronounced urban-rural divide existed in AI adoption, where urban women entrepreneurs benefited from better infrastructure, digital exposure and training, while rural women continued to face challenges such as digital illiteracy, limited access to AI infrastructure and socio-cultural constraints.
2. Government initiatives like Digital India, Startup India and AI for All have built a supportive environment for adopting AI. However, ongoing structural barriers, such as low awareness of AI, limited access to funding and underrepresentation in STEM fields, still block widespread and fair participation.

3. There has been a significant rise in AI adoption among women entrepreneurs in India. The number of women-led AI startups grew from 520 in 2020 to an estimated 2,100 in 2024 with a compound annual growth rate (CAGR) of over 28 per cent.
4. The use of AI by women entrepreneurs have concentrated in certain industries, with the major sectors being HealthTech, EdTech and E-commerce. AgriTech and FinTech have emerging but relatively lesser involvement.
5. The study identified that AI adoption by women entrepreneurs have steadily increasing worldwide, particularly in sectors such as FinTech, HealthTech, EdTech and E-commerce, enabling innovation and operational efficiency.
6. The rise of digital platforms and mobile technologies has made it easier for women founders, allowing them to leverage AI-powered predictive analytics, personalized customer interactions and process automation to compete with larger firms.
7. The data revealed that persistent challenges remained globally, such as gender bias in funding, limited representation in STEM and concerns over AI-related privacy and algorithmic fairness, highlighted the need for inclusive AI policies and user-centric design.

Conclusion

The rise of Artificial Intelligence (AI) among women entrepreneurs has a fast-changing trend with great potential for transformation, both globally and in India. Around the world, women-led businesses were increasingly using AI tools to drive innovation, improve efficiency and grow their market presence in sectors like fintech, healthtech, edtech and e-commerce. The spread of digital platforms, better access to online resources and international mentorship networks have greatly contributed to entrepreneurial growth. In India, support from policies like Digital India, Startup India and AI for All, along with increasing digital literacy, was creating a strong environment for AI integration among women entrepreneurs. Urban women are particularly adopting AI-driven solutions for business intelligence, customer engagement and operational efficiency. However, many challenges remain, especially in rural areas, due to social and cultural barriers, gaps in digital infrastructure and limited exposure to new technologies. The study highlighted that while more women entrepreneurs were adopting AI, the spread of this technology was uneven and affected by social, economic, cultural and regional factors. Targeted efforts such as inclusive policies, community training programs and better access to funding are crucial to addressing these gaps and ensuring fair participation in the digital economy. Equipping women with the necessary skills and infrastructure will not only boost their entrepreneurial success but also support inclusive and sustainable economic growth.

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