International Journal of Education, Modern Management, Applied Science & Social Science (IJEMMASSS)
An International Quarterly bi-lingual Multidisciplinary Double Blind Open Access Peer Reviewed Refereed Journal
ISSN:2581-9925, Impact Factor (Cosmos: 7.555 & I2OR: 5.105), Volume 08, No. 03(IV)(Special Issue), July-September, 2026, pp. 159-164

Leveraging Artificial Intelligence for Arrow is Women- Led Venture Business

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DOI Citation: Sinha, S. (2026). Leveraging Artificial Intelligence for Arrow is Women- Led Venture Business. International Journal of Education, Modern Management, Applied Science &Amp; Social Science, 08(03(IV)), 159–164. https://doi.org/10.62823/ijemmasss/8.3(iv).9603

ABSTRACT

In today's world Artificial Intelligence (AI) is modifying the way businesses grow, faster, making it easier and more efficient to operate micro enterprises. In India, many women entrepreneurs encounter obstacles like limited resources, market knowledge and limited access to finance. This paper illustrates how AI can help overcome these obstacles and pave the path for women-led businesses. Easy AI tools such as chatbots, automated marketing, and data analysis can support women, manage customers, unlock market trends and, ace in making business decisions without the need for large investments. AI also allows women entrepreneurs appealing to a broader demographic through digital platforms, supporting their competitive efforts. In today's rapidly growing digital economy. Via these tools, even micro businesses can boost efficiency, reduce costs, and amplify business growth. A snapshot showcases how micro ventures can avail oneself of using AI to enhance efficiency and sales. The research indicates that AI is not just a technology, but a powerful counterbalance that can elevate financial independence and self-assurance among women entrepreneurs, volunteering to inclusive and sustainable development.

***Keywords**: Artificial intelligence. Women Entrepreneurship, Growth, Digital Economy, Innovation, Financial Empowerment, Sustainable Development.*

Introduction

Artificial Intelligence (AI), is no longer Something we only imagined before it has rapidly blent in with day-to-day functions of a business, it moves from personalized product suggestions to immediate conversational help, with AI the business , implies a smarter, well-planned approach. The most fascinating part is, how these technologies are no longer restricted to the big companies only. In the current digital landscape, even micro businesses and home-based ventures use AI tools to grow. In India, women entrepreneurs are continuously growing, but their path is often not so easy. Many women start businesses with limited resources, minimal financial support, and restricted access to technology. Despite their determination, these challenges make growth difficult. According to the Ministry of MSME (2022), women own around 20% of MSMEs in India, yet expanding and sustaining these businesses remains a significant challenge. This is where AI comes into picture. It functions like a support system-assisting women entrepreneurs improving methods to achieve results without increasing efforts. Watching over and directing customers' work through chatbots or understanding trends through data, AI makes businesses run more effectively without any need of a large team or raising huge investment.

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* ***A Special Issue for the papers accepted for publication in the Two-Days Multidisciplinary National Seminar on Role of Entrepreneurship in Socio-Economic Upliftment of Women in India (22-23May 2026) Organized by Faculty of Commerce, The Graduate School College for Women, Jamshedpur, Jharkhand(A Constituent Unit of Kolhan University, Chaibasa, Jharkhand)in Collaboration with Jharkhand State Higher Education Council, Department of Higher and Technical Education, Govt. of Jharkhand & Punjab and Sind Bank, Sakchi, Jamshedpur.***

Methodology

- **Research Design**

For this study, a mixed methods research design has been used which includes both quantitative and qualitative methods that help to provide a thorough understanding of the role of Artificial Intelligence (AI) in helping women entrepreneurs grow their businesses through technology. The use of both methods in conjunction not only provides statistical reliability but also provides an in-depth insight into the issue being studied.

The research design used is exploratory and descriptive:

- Exploratory in order to look at new uses of AI by women-led businesses
- Descriptive in order to analyze the impact of using AI in growing revenues and scalability

- **Research Approach**

The research approach adopted in this study is a pragmatic approach wherein the emphasis is more on practical application than theoretical knowledge. It incorporates:

- Inductive approach to identify patterns from the qualitative findings
- Deductive approach to test hypotheses generated from the literature review

Data Collection Methods

- **Primary Data Collection**
  - **Structured Surveys**

The survey consisted of asking women entrepreneurs about:

Level of adoption of AI (high, moderate, low)

Business growth measures such as revenue growth (%) and customer acquisition rate Challenges faced in AI adoption such as cost, skills, algorithmic bias

A Likert scale (1-5) was used to quantify the effect of AI.

  - **In-depth Interviews**

Semi-structured interviews were held with selected women founders/executives in order to get insights about:

- Decision-making process AI strategies
- Experiences with digital transformation.

Such interviews brought an individual perspective and emphasized lived experiences rather than only statistics.

  - **Case Studies**

Case studies of successful businesses that were led by women were conducted in order to analyze:

Integration with AI solutions growth paths innovation patterns.

- **Collection of Secondary Data**

Secondary data was collected from:

Industry reports (for eg.- McKinsey, World Bank, NASSCOM) academic journals

Government sources startups databases

  - **Sampling Technique**

Stratified random sampling will be used to ensure representation in the following categories: geographic location (eg.- urban, semi-urban and rural) size (eg.- startups, SMEs and scaling enterprises) industries

  - **Sample Size**
    - Surveys: 10-15 female entrepreneurs Interviews: 10-15 key informants
    - Cases studies: 5-10 startups/ventures

- **Data Analysis Techniques Quantitative Analysis**

Descriptive statistics (eg.- mean, median, SD)

Correlation analysis to estimate relation between adoption of AI and business growth regression analysis in order to predict the influence of AI on revenues/scale-up

- **Qualitative analysis: thematic analysis**

Narrative analysis coding techniques

Conceptual Framework

- The research follows the framework that is comprised of the three-level AI influence model:

Input Layer

AI applications (eg.- automated solutions, predictive analytics, chatbots) Process Layer

- Enhancements in business operations through AI utilization: Marketing customization

Efficiency of business operations Enhanced customer interaction Output Layer

- Quantifiable growth in the business:
  - Higher profits Increased market reach
  - Better business efficiency

Research Hypotheses

H_1: AI utilization has a significant positive effect on revenue growth in women-owned enterprises.

Ho: AI utilization has no significant effect on revenue growth in women-owned enterprises.

H_1: AI-based personalization significantly improves customer acquisition and retention.

Ho: AI-based personalization does not significantly impact customer acquisition and retention.

H_1: There is a positive relationship between AI application and business efficiency.

Ho: There is no significant relationship between AI application and business efficiency.

H_1: Barriers such as cost and lack of technical knowledge negatively affect AI integration in women-led ventures.

Ho: Barriers such as cost and lack of technical knowledge do not significantly affect AI integration.

Ethics in Research

Obtaining informed consent from all participants involved Anonymization of collected data to guarantee confidentiality Prevention of any misuse of business information

Avoidance of bias in interpretation of gendered aspects of entrepreneurship

Limitations of the Study

Difficulty accessing higher-level financial information Possibility of response bias in self-reporting surveys

Frequent changes in AI technology might diminish its relevance

Methodological Innovation

- What makes this approach unique?
  - By combining human knowledge with data analysis
  - By addressing gender issues in entrepreneurship
  - By giving real-life examples of AI utilization rather than theoretical assumptions
  - By performing multilevel verifications

Challenges faced by Women Entrepreneurs

Nowadays, women entrepreneurs tackle hurdles that slow down their growth.

- **Limited Access to Finance**

Receiving financial support is often very difficult. Most of the women do not have collateral or a quite strong credit background, this becomes a reason for banks to be hesitant to provide loans (World Bank, 2021).

- **Lack of Market knowledge**

Smoothly functioning a business requires understanding customer needs and trends. However, the masses lack access to proper guidance and market insights (OECD, 2020)

- **Resources Constraints.**

Many women-led businesses are micro power and operate with limited man-power and infrastructure. This makes expansion difficult (NASSCM, 2023)

- **Social - Cultural Barrices**

Social 181 rusponsiblities and expectations women afters StoPustricts fuom taking & new and or exploring more risks. new opportunities (UN Women, 2020)

Role of Al in overcoming these challenge

Al helps in solving most of the above problems in practical and simple ways.

- **Chartbots and Customer Management**

Imagine you are running a business where there is a daily interaction with the customers. Al Chatbox makes this work simpler by handling common questions in automated format. Al works 24/7 and significantly reduces the workload. Evidence suggests that chatbot can control up to 80% of routine queries (IBM, 2022).

- **Automated Marketing**

Marketing is high-priced and time- lacking. Al tools can spontaneously run ads, recommend the best time to post, and target the right audience. This assists Small businesses compete with bigger brands (PwC, 2019).

- **Data Driven Decision. Making**

In place of guessing what customers want, Al tools give clear insights. They analyse buying systems and trends, providing and guiding entrepreneurs to make better decisions (Davenport & Ronanki, 2018).

Al Assumption Flow

Business Problems.
↓
Use of Al tools
↓
Automation
↓
Better Customer Interaction
↓
Smart Decisions.
↓
Higher Salis
↓
Business Growth

Case Studies

- **Small House Business (India)**

A woman operating a micro online clothing store established using Al tools for replying to customers and programme posts.

What happened?

Her Sales rapidly increased almost five times in just six months. Along with that she also spent less time managing messages and most of her time improving the quality of the products.

This evidence supports findings that digital tools remarkably improve micro business growth (Google India & BCG, 2020)

- **Amazon Saheli Initiative**

  This program helps women entrepreneurs sell products online using AI tools.

  Impact

  - The earning(income) increased about 2-3 times.
  - The products got recognition and reached a wider audience. (Amazon India, 2022)

- **SHEROES Platforms**

SHEROGS provides a digital space for women where they can connect new people, learn new things and grow. AI recommends new contents and opportunities.

Impact

- The reach increased over 20 million users
- They were able to tap and provide more employment and support opportunities. (Kumar, 2021)

Data- Based Insights

The impression of AI is just not theoretical - it is clearly evident in numbers:

- The productivity improved by about 40%. (Mckinsey, 2018)
- The revenue increased by 20-25%% (Pwc, 2019)
- Costs reduced by 15-20% (18M,2020)

Here's a much more **human, natural, and powerful version** of your content—while still keeping it professional and research-backed:

Expanding Market Reach

In today's digital world, AI is breaking down barriers that once limited small businesses—especially those led by women. Earlier, reaching customers beyond local markets required huge investments in marketing and distribution. Now, AI-powered platforms make this possible with just a smartphone and internet connection.

Smart algorithms study customer behavior—what people like, search for, and buy—and then recommend products accordingly. This means a woman entrepreneur sitting in a small town can now showcase her products to customers across the country, or even globally. As highlighted by Google and BCG (2020), this kind of personalized visibility significantly boosts both reach and sales.

In simple terms, AI acts like a smart assistant that connects the right product to the right customer at the right time.

AI and Financial Independence

One of the most powerful impacts of AI is how it supports financial independence. Many women entrepreneurs face challenges such as limited access to funding, fewer networks, and dependence on intermediaries.

AI helps reduce these barriers. It automates tasks, lowers operational costs, and improves efficiency—allowing businesses to earn more while spending less. For example, AI tools can manage inventory, predict demand, and even handle customer service, reducing the need for large teams or external support.

According to the World Bank (2021), such technological support strengthens women's ability to generate steady income and make independent financial decisions. Over time, this leads not just to business growth, but also to personal empowerment and confidence.

AI and Sustainable Development

AI is not just about profit—it also plays an important role in building a more inclusive and sustainable future.

It contributes to:

- **Reducing inequality** by giving equal opportunities through digital access
- **Supporting entrepreneurship** by lowering entry barriers
- **Encouraging innovation** by enabling creative, data-driven solutions

These outcomes are closely connected to the **United Nations Sustainable Development Goals (SDGs)**, particularly those focused on gender equality, decent work, and economic growth. Reports by UN Women (2020) highlight how digital tools like AI can help create a more balanced and fair economic system.

In this way, AI doesn't just grow businesses—it helps build a better society.

AI can be seen as a "counterbalance" to the challenges women entrepreneurs have traditionally faced. Many of these challenges—such as lack of mobility, limited access to markets, and restricted resources—are deeply rooted in social and structural barriers.

What AI does is shift the playing field.

By reducing dependence on physical infrastructure and enabling online operations, AI allows women to participate fully in the digital economy. Whether it's running an online store, managing finances, or marketing products through social media, AI tools make it all more accessible and manageable.

In essence, AI gives women entrepreneurs the power to compete, grow, and succeed—regardless of location or background.

Conclusion

In this modern world Artificial Intelligence (AI) is not just a modern technology—it is a powerful enabler of change for women-led ventures.

It improves efficiency, supports smarter decision-making, and opens doors to new markets. More importantly, it creates opportunities for financial independence and long-term empowerment.

As discussed throughout this paper, AI has the potential to transform not only businesses but also lives.

However, to truly unlock this potential, there is a need to:

- Increase awareness about AI tools
- Provide proper training and skill development
- Strengthen policies that support women in technology and entrepreneurship

AI is not just a tool for growth—it is a pathway toward a more inclusive, equal, and sustainable future.

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