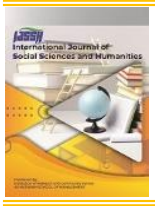

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# The Role of AI Technology in Advancing Education, Empowerment, and Entrepreneurship for Afghan Women

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**Abstract**

Artificial Intelligence (AI) has emerged as a transformative tool with the potential to advance education, empowerment, and entrepreneurship for marginalized populations. This study examines the role of AI technologies in enhancing educational access, social empowerment, and entrepreneurial opportunities for Afghan women, who have historically faced sociopolitical and cultural constraints. Using a quantitative descriptive research design, data were collected from 150 students across four faculties at Vision Online University. Findings reveal that the majority of participants are at least somewhat familiar with AI technologies, with 77% perceiving AI as significantly improving learning opportunities for women. AI is recognized not only as a facilitator of personalized education and digital skills acquisition but also as an enabler of financial independence and entrepreneurial engagement. Participants identified key barriers, including limited access to devices and the internet, low digital literacy, and societal restrictions, which impede effective adoption. The study highlights AI's multidimensional impact in fostering knowledge, autonomy, and economic participation, while emphasizing the need for inclusive implementation strategies. By addressing infrastructural and cultural challenges, AI can serve as a sustainable mechanism for promoting gender equality, social inclusion, and economic development in Afghanistan. These insights underscore the potential of AI to empower Afghan women as active contributors to national progress.



**Contents**



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## Introduction

Artificial intelligence (AI) has emerged as a transformative force with the potential to reshape education, empowerment, and entrepreneurship across the globe. For Afghan women, who have faced decades of social, political, and economic marginalization, AI technology represents not only an innovation but also a tool for liberation and progress. The integration of AI into educational systems can help overcome barriers to access, promote digital literacy, and create new pathways for professional and entrepreneurial development (Ebrahimi et al., 2024; Nesari et al., 2025). As Afghanistan continues to rebuild its social infrastructure, leveraging AI in education is crucial for ensuring inclusivity and sustainable empowerment for women. In contexts where physical mobility, institutional access, and public participation are often constrained, AI-enabled digital environments provide alternative avenues for learning and engagement that transcend geographic and social limitations. Thus, AI becomes not merely a technological advancement but a strategic instrument for gender-responsive development.

Education remains one of the most powerful determinants of women's empowerment. Historically, Afghan women's access to formal education has been inconsistent, influenced by political instability, security concerns, and restrictive gender norms. Technology, particularly AI-driven platforms, offers a way to bridge these systemic gaps. Intelligent tutoring systems, adaptive learning software, and AI-supported virtual classrooms can personalize educational experiences according to learners' pace, language proficiency, and prior knowledge (Shaikhzada et al., 2024; Hakimi et al., 2024). For women who may not be able to attend traditional schools or universities, AI-enhanced online learning provides a safe and flexible alternative. Machine learning algorithms can recommend customized content, monitor progress, and provide instant feedback, thereby improving learning outcomes and motivation.

Moreover, AI-powered translation and speech-recognition tools can overcome linguistic barriers in multilingual communities. Afghanistan's linguistic diversity, including Dari and Pashto, sometimes limits access to global educational resources predominantly available in English. AI-based translation systems enable Afghan women to engage with international academic materials, online courses, and professional certifications without language being a prohibitive obstacle (Quraishi et al., 2025). This accessibility broadens their intellectual horizons and enhances their competitiveness in the global knowledge economy. In addition, AI can support inclusive education by accommodating learners with disabilities through text-to-speech, speech-to-text, and assistive technologies, ensuring that empowerment efforts leave no one behind.

Beyond formal education, AI contributes significantly to skill development and vocational training. Digital platforms offering AI-curated courses in coding, digital marketing, data analysis, and graphic design empower women with practical competencies aligned with contemporary labor market demands. These skills are particularly valuable in remote or home-based work arrangements, which may align more closely with prevailing cultural expectations. By equipping women with digital proficiencies, AI strengthens their capacity

to participate in emerging sectors such as freelancing, e-commerce, and remote consultancy. Consequently, AI not only enhances individual capabilities but also contributes to national human capital development.

The empowerment potential of AI extends into the economic sphere through digital entrepreneurship. In Afghanistan's fragile economic context, traditional employment opportunities for women remain limited. AI-driven business tools, however, enable women to establish and manage online enterprises with relatively low startup costs. Platforms integrated with AI analytics can provide market insights, customer behavior predictions, and inventory optimization strategies (Nabizada et al., 2025; Bashardost et al., 2025). Such tools allow women entrepreneurs to make data-informed decisions that improve efficiency and profitability. For example, AI-based marketing automation systems can tailor promotional content to specific audiences, enhancing customer engagement and brand visibility.

Financial inclusion is another domain where AI plays a transformative role. Digital financial services powered by AI, including mobile banking, micro-lending platforms, and fraud detection systems, increase women's access to secure and reliable financial resources. Many Afghan women historically lack access to formal banking due to mobility constraints or documentation challenges. AI-enabled fintech solutions can assess creditworthiness using alternative data, thereby expanding access to microcredit and entrepreneurial funding (Ebrahimi et al., 2025; Shahbazi et al., 2024). This financial autonomy not only strengthens women's economic resilience but also enhances their decision-making power within households and communities.

AI also facilitates networking and mentorship opportunities that were previously inaccessible. Virtual mentorship platforms can match aspiring Afghan women entrepreneurs with experienced professionals globally, using algorithms to align interests, expertise, and goals. Such connections foster knowledge exchange, confidence building, and strategic guidance. Additionally, AI-driven online communities create safe digital spaces where women can collaborate, share experiences, and support one another. These networks challenge isolation and reinforce collective empowerment, demonstrating that technology can cultivate both individual and communal resilience.

Importantly, AI's influence is not confined to economic metrics; it also reshapes social perceptions. As women become visible contributors to digital innovation and entrepreneurship, traditional gender stereotypes gradually erode. When Afghan women engage in AI-supported ventures whether in education, design, programming, or business managementntnthey redefine societal narratives about women's roles. This symbolic transformation is as significant as economic gains, as it fosters a culture of inclusivity and progressive gender norms. Over time, the normalization of women's participation in technology-driven sectors can contribute to broader societal shifts toward equality.

However, the promise of AI for Afghan women is accompanied by substantial challenges. Access to reliable internet connectivity, electricity, and digital devices remains uneven, particularly in rural areas. Without addressing infrastructural disparities, AI initiatives risk exacerbating existing inequalities. Digital literacy is another critical concern. Effective use of AI tools requires foundational competencies in technology, critical thinking, and information management. Therefore, capacity-building programs must accompany

technological deployment to ensure meaningful engagement rather than superficial adoption.

Societal norms and regulatory constraints also influence AI's implementation. In environments where women's public participation is restricted, digital spaces may represent one of the few viable avenues for engagement. Yet, concerns regarding online safety, data privacy, and cybersecurity must be carefully addressed. Ethical AI governance frameworks are essential to prevent misuse, algorithmic bias, or exploitation (Samuel et al., 2020; Smart Learning Environments, 2025). Inclusive policy design should involve women stakeholders to ensure that AI systems reflect their needs, cultural contexts, and aspirations.

Furthermore, sustainable empowerment requires collaboration among government agencies, non-governmental organizations, international donors, and private technology firms. Investments in infrastructure, teacher training, and community awareness are crucial for integrating AI effectively into Afghanistan's educational and economic ecosystems. Public–private partnerships can accelerate innovation while maintaining accountability and ethical standards. By aligning AI initiatives with broader development strategies, stakeholders can maximize long-term impact and sustainability.

In conclusion, artificial intelligence holds transformative potential for advancing education, empowerment, and entrepreneurship among Afghan women. Through personalized learning systems, digital skill development, financial inclusion, and entrepreneurial innovation, AI offers pathways toward autonomy and socio-economic participation. While challenges related to access, literacy, and societal norms persist, strategic and ethical implementation can mitigate these barriers. Ultimately, AI's significance lies in its capacity to provide knowledge, agency, and opportunity foundational pillars of sustainable development and gender equality. For Afghan women, embracing AI is not merely about technological adaptation; it is about redefining possibilities, asserting resilience, and shaping a more inclusive digital future.

## Methods

This study employed a quantitative descriptive research design to examine the role of Artificial Intelligence (AI) technologies in enhancing education, empowerment, and entrepreneurship among Afghan women. The design was chosen because it allows for the systematic collection and analysis of numerical data, enabling the researcher to identify trends, opinions, and perceptions about AI's impact on women's development. The study focused on understanding students' awareness, experiences, and attitudes toward the use of AI in educational and entrepreneurial contexts.

The target population of the study consisted of 6,000 students enrolled at Vision Online University. From this population, a sample of 150 students was selected to ensure representativeness across various academic disciplines. The sample included students from four faculties: 50 from Computer Science, 30 from Economics, 30 from Midwifery, and 40 from Nursing. This proportional sampling ensured diversity in academic background and gender representation, reflecting both health-related and non-health-related fields.

A stratified random sampling technique was used to select participants. The population was first divided into strata based on faculty, and participants were then randomly chosen

from each stratum. This approach minimized sampling bias and ensured that each faculty was adequately represented.

Data were collected using a structured questionnaire developed by the researcher. The instrument consisted of four multiple-choice questions designed to assess participants' familiarity with AI, perceptions of its impact on education, views on its role in women's empowerment and entrepreneurship, and perceived barriers to its adoption. The questionnaire was distributed electronically through online platforms to ensure accessibility and convenience.

The collected data were analyzed using descriptive statistics, including frequencies and percentages. The results were presented in tables for clarity and ease of interpretation. Each table was accompanied by a narrative explanation to describe the distribution of responses and highlight key findings.

## Results and Discussions

### Results

The target population of this study consisted of students enrolled at Vision Online University, with a total population size of approximately 6,000 students. From this population, a sample of 150 students was selected to participate in the study. The sample was distributed proportionally across four faculties to ensure representation from different academic disciplines.

This sampling strategy ensured that the perspectives of students from both health-related and non-health-related programs were included. The diverse composition of the sample allows for a balanced analysis of responses across academic disciplines within the university.

**Table 1.** Distribution of Participants by Faculty

| Faculty | Number of Students | Percentage (%) |
|---|---|---|
| Computer Science | 50 | 33.3% |
| Economics | 30 | 20.0% |
| Midwifery | 30 | 20.0% |
| Nursing | 40 | 26.7% |
| **Total** | **150** | **100%** |

**Table 2.** Familiarity with AI Technologies in Education

| Response Option | Frequency (n) | Percentage (%) |
|---|---|---|
| a) Very familiar | 35 | 23.3% |
| b) Somewhat familiar | 55 | 36.7% |
| c) Heard of it but never used it | 40 | 26.7% |
| d) Not familiar at all | 20 | 13.3% |
| **Total** | **150** | **100%** |

The findings in Table 2 indicate that most respondents (36.7%) were somewhat familiar with AI technologies in education, while 23.3% reported being very familiar. This

suggests that although a considerable number of students are aware of AI tools such as chatbots, adaptive learning systems, and translation software, only a smaller portion have engaged deeply with them. Around 26.7% of participants had heard of AI but never used it, and 13.3% were not familiar at all. These results highlight a growing awareness of AI among students, yet they also reveal the need for increased exposure and training in AI-driven learning systems.

**Table 3.** Perceived Impact of AI on Learning Opportunities for Afghan Women

| Response Option | Frequency (n) | Percentage (%) |
|---|---|---|
| a) To a great extent | 60 | 40.0% |
| b) To some extent | 55 | 36.7% |
| c) To a small extent | 25 | 16.7% |
| d) Not at all | 10 | 6.6% |
| **Total** | **150** | **100%** |

According to Table 3, 40% of students believed that AI improves learning opportunities for Afghan women to a great extent, while 36.7% said it helps to some extent. This shows a strong positive perception of AI as a transformative educational tool. Only 16.7% believed its impact was small, and a minimal 6.6% saw no benefit at all. The majority of participants recognize AI's potential to enhance educational access, especially for women who face sociocultural restrictions. These responses reflect optimism about the role of AI-based tools in creating more inclusive, flexible, and accessible learning opportunities for Afghan women.

**Table 4.** AI's Contribution to Women's Empowerment and Entrepreneurship

| Response Option | Frequency (n) | Percentage (%) |
|---|---|---|
| a) Provides access to online business and financial opportunities | 30 | 20.0% |
| b) Helps women gain digital skills and confidence | 35 | 23.3% |
| c) Reduces barriers caused by traditional gender norms | 25 | 16.7% |
| d) All of the above | 60 | 40.0% |
| **Total** | **150** | **100%** |

Table 4 shows that 40% of respondents selected "all of the above," suggesting that AI contributes to women's empowerment and entrepreneurship in multiple ways through financial inclusion, digital skills, and social transformation. Meanwhile, 23.3% emphasized skill development and confidence building, while 20% highlighted AI's role in enabling online business access. Only 16.7% identified the reduction of gender barriers as the primary benefit. These results illustrate that students view AI as a multidimensional enabler of empowerment, offering Afghan women new avenues for education, business, and participation in the digital economy, which collectively strengthen their independence and social status.

**Table 5.** Main Barriers Preventing Afghan Women from Using AI Technologies

| Response Option | Frequency (n) | Percentage (%) |
|---|---|---|
| a) Limited access to digital devices and internet | 50 | 33.3% |
| b) Lack of digital literacy or technical skills | 40 | 26.7% |
| c) Cultural and societal restrictions | 45 | 30.0% |

| | | |
|---|---|---|
| d) Lack of awareness about AI opportunities | 15 | 10.0% |
| **Total** | **150** | **100%** |

As shown in Table 5, the most significant barrier identified by participants was limited access to digital devices and the internet (33.3%), followed closely by cultural and societal restrictions (30%) and lack of digital literacy (26.7%). Only 10% cited lack of awareness as a major obstacle. These findings suggest that while awareness of AI is increasing, infrastructural and cultural challenges still hinder women's ability to fully engage with technology. The results emphasize the importance of improving digital infrastructure, promoting digital literacy training, and fostering supportive cultural attitudes to ensure Afghan women can effectively benefit from AI technologies.

## Discussion

The results of this study reveal that at Vision Online University hold generally positive perceptions toward the role of Artificial Intelligence (AI) in advancing education, empowerment, and entrepreneurship for Afghan women. The findings show that a majority of participants were at least somewhat familiar with AI technologies, although many still lacked in-depth engagement. This aligns with Shaikhzada et al. (2024), who found that while awareness of AI is growing in Afghanistan, practical application remains limited due to infrastructural and educational barriers. The data suggest that AI literacy among university students is improving but still requires structured educational initiatives to strengthen digital competence.

Participants overwhelmingly agreed that AI-based educational tools improve learning opportunities for Afghan women. Nearly 77% believed AI positively influences education either to a great or some extent. This supports Nesari et al. (2025) and Quraishi et al. (2025), who emphasize that AI-driven platforms enhance accessibility and personalized learning, particularly for women constrained by sociocultural or geographical limitations. The increasing adoption of online and AI-supported learning environments demonstrates the transformative potential of technology to create inclusive education systems that promote equality and empowerment.

The survey further indicates that students perceive AI as a multidimensional tool for empowerment and entrepreneurship. Respondents believed that AI not only helps women acquire digital skills and confidence but also facilitates access to online business and financial opportunities. This finding aligns with Ebrahimi et al. (2024) and Bashardost et al. (2025), who argue that AI can serve as an economic equalizer by enabling women to participate in digital markets, fostering independence, and challenging traditional gender roles. Similarly, Algur and Mulla (2025) highlight that AI-driven business tools enhance women's innovation and competitiveness in emerging economies.

Despite the optimistic perspectives, significant challenges persist. The most commonly reported barriers were limited access to technology and cultural restrictions, followed by insufficient digital literacy. These constraints mirror the issues identified by Samuel et al. (2020) and Smart Learning Environments (2025), which emphasize that without adequate infrastructure and cultural acceptance, the benefits of AI remain inaccessible to many Afghan women. Addressing these barriers requires coordinated efforts involving policy reform, infrastructure investment, and community-based awareness programs.

Overall, the findings underscore that AI technology holds substantial promise for advancing women's education and empowerment in Afghanistan. However, achieving its full potential demands inclusive strategies that combine technological development with social change, ensuring that AI becomes a sustainable force for equality and innovation

## Conclusion

This study explored the role of Artificial Intelligence (AI) in advancing education, empowerment, and entrepreneurship for Afghan women, using data collected from students at Vision Online University. The findings indicate that most participants were aware of AI technologies and recognized their significant impact on improving educational access and learning outcomes. Many respondents viewed AI as a powerful tool that enhances digital learning environments, supports personalized education, and provides opportunities for women who are otherwise restricted by social and cultural barriers.

The results also demonstrate that AI is widely perceived as a driver of women's empowerment and entrepreneurship. Students acknowledged that AI technologies help women develop essential digital skills, gain confidence, and participate in the digital economy through online businesses and innovative ventures. These insights highlight AI's potential to create new pathways for Afghan women to achieve economic independence and contribute meaningfully to their communities.

However, the study also revealed persistent challenges that limit women's engagement with AI. Limited access to technology, poor internet infrastructure, lack of digital literacy, and deep-rooted cultural restrictions continue to impede progress. Addressing these challenges requires a coordinated approach that includes educational reform, digital inclusion initiatives, and community awareness programs aimed at encouraging the ethical and equitable use of technology.

In conclusion, AI offers Afghan women transformative opportunities to pursue education, empowerment, and entrepreneurship despite the country's ongoing social and economic challenges. By promoting equal access to technology and fostering digital competence, AI can serve as a foundation for sustainable development and gender equality. Continued investment in digital education and inclusive innovation will ensure that Afghan women are not only beneficiaries of technological progress but also active contributors to the nation's future.

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