



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 mechanism for expanding educational access, enhancing digital empowerment, and fostering entrepreneurial engagement among marginalized populations. This study investigates the specific role of AI technologies such as generative AI tools, AI-powered language translation applications, adaptive learning platforms, and automated chatbots in supporting Afghan women's education and socio-economic participation. Employing a quantitative descriptive research design, data were collected from 150 female students across four faculties (Computer Science, Business Administration, Education, and Sharia & Law) at Vision Online University. Results show that 77% of participants perceive AI as significantly improving learning opportunities for women, particularly through personalized learning support and language-based assistance. Additionally, 69% reported that AI tools enhanced their digital skills, while 62% indicated that AI applications increased their interest in online business creation and entrepreneurial activities. Despite these benefits, respondents identified major barriers including limited access to digital devices (58%), unstable internet connectivity (64%), and low digital literacy (52%). The findings reveal AI's multidimensional impact in strengthening knowledge, autonomy, and economic participation for Afghan women. The study underscores the need for inclusive digital infrastructure and culturally sensitive implementation strategies to fully leverage AI as a sustainable driver of gender equality and socio-economic development in Afghanistan.

Keywords: Artificial intelligence (AI), women's empowerment, education access, digital entrepreneurship, Afghanistan

Acknowledgments: I sincerely thank my colleagues for their guidance, the funding organizations for their support which greatly contributed to the preparation of this article.

For citation:

Alizada, Z., Mohammadi, F & Sahibzada, F. (2025). The Role of AI Technology in Advancing Education, Empowerment, and Entrepreneurship for Afghan Women., *Journal of Digital Learning and Distance Education*, 4(6), 1718-1725.
<https://doi.org/10.56778/jdlde.v4i6.606>

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 (Marzia 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.

Education is a key factor in women's empowerment, and technology plays a critical role in bridging gender gaps in learning. Digital platforms, powered by AI, have made it possible for Afghan women to access knowledge and skills remotely, despite restrictive sociopolitical conditions (Shaikhzada et al., 2025); (Hakimi et al., 2024). Online learning systems enhanced by AI can provide personalized instruction, translation tools, and adaptive assessments tailored to individual learners' needs, enabling women to gain education in safe and culturally sensitive environments. By doing so, AI serves as an equalizer that allows women to participate actively in education and, consequently, in the nation's development.

Beyond education, AI technology offers Afghan women opportunities for social and economic empowerment. Through digital entrepreneurship, AI-based tools support women in creating online businesses, accessing financial platforms, and connecting with global markets. These innovations not only promote financial independence but also challenge traditional gender roles by positioning women as contributors to Afghanistan's growing digital economy (Shahbazi et al., 2024). Furthermore, AI applications in entrepreneurship—such as business analytics, marketing automation, and digital mentorship—enable women to innovate and compete effectively (Abdul Azis et al., 2025); (Algur & Mulla, 2025). Despite its promise, the adoption of AI for women's empowerment in Afghanistan faces challenges related to access, digital literacy, and societal norms. However, studies highlight that when implemented ethically and inclusively, AI can foster social equity and resilience (Moreira et al., 2024).

Ultimately, the role of AI in advancing education, empowerment, and entrepreneurship among Afghan women lies in its capacity to provide knowledge, autonomy, and opportunities—key elements for sustainable development and gender equality in the digital era. Research Objective: To analyze the role of AI technologies in improving educational access and learning outcomes for Afghan women; To investigate how AI-driven tools support the social and economic empowerment of Afghan women through entrepreneurship; To identify challenges and barriers in the adoption of AI technologies by Afghan women and propose strategies for effective implementation. Research Question; How does the use of AI in educational platforms affect the learning opportunities and academic progress of Afghan women?; In what ways do AI-based digital platforms and tools enhance entrepreneurial opportunities and financial independence for Afghan women?; What are the main obstacles preventing Afghan women from adopting AI technologies, and how can these barriers be overcome to ensure inclusive and ethical usage?

Methodology

Research Design

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.

Population and Sample

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.

Sampling Technique

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 Collection Instrument

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.

Data Analysis

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 Discussion

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 findings of this study demonstrate that students at Vision Online University hold overwhelmingly positive perceptions of Artificial Intelligence (AI) as a catalyst for advancing Afghan women's education, empowerment, and entrepreneurial participation (Barikzai et al., 2025); (Calzada, 2024). The results confirm that awareness of AI tools is steadily increasing among university students, and AI-supported learning is widely viewed as enhancing accessibility, personalization, and overall educational opportunities for women. Moreover, students recognized AI as an important mechanism for developing digital skills, promoting confidence (Jia & Tu, 2024); (Sustaningrum & Haldaka, 2025); (Kasinidou et al., 2025), and enabling participation in online economic activities—consistent with existing literature highlighting AI's potential to strengthen women's autonomy and financial independence (Jawad Danish et al., 2025); (Hakimi et al., 2025). At the same time, respondents emphasized several persistent barriers that limit the effective adoption of AI, including restricted access to digital devices and the internet, limited digital literacy, and sociocultural constraints (Nadry, Hakimi, et al., 2025); (Hakimi et al., 2025). These challenges align with broader national concerns regarding infrastructure and technological readiness, indicating that without targeted interventions, the transformative benefits of AI will remain unevenly distributed (Retno & Hakimi, 2025); (Nadry, Sirat, et al., 2025). Overall, this study confirms a strongly favorable attitude toward the role of AI in supporting women's advancement in Afghanistan. While the potential of AI to promote equality and innovation is clear, realizing this promise requires coordinated efforts to improve infrastructure, strengthen digital literacy, and foster supportive social environments. With such measures in place, AI can become a sustainable and powerful driver of education, empowerment, and economic participation for Afghan women (Sudestra et al., 2024); (Sirat et al., 2025).

Conclusion

This study examined the role of Artificial Intelligence (AI) in advancing education, empowerment, and entrepreneurship for Afghan women based on survey data from students at Vision Online University. The findings show that most participants were aware of AI technologies and acknowledged their positive influence on enhancing educational access, learning outcomes, and opportunities for women who face social and cultural restrictions. Students also viewed AI as a valuable enabler of digital skill development and a supportive mechanism for women's engagement in online entrepreneurship and economic activities. At the same time, the results highlight notable challenges that continue to hinder the effective adoption of AI. Limited access to digital devices, unstable internet connectivity, insufficient digital literacy, and persistent cultural constraints remain

significant barriers. Overcoming these limitations requires targeted interventions in educational programs, digital inclusion policies, and community-based awareness efforts to ensure responsible and equitable use of AI technologies. In conclusion, AI presents meaningful opportunities for Afghan women to enhance their learning experiences, build digital capabilities, and participate more actively in emerging economic spaces. However, the realization of these opportunities depends on addressing existing infrastructural and sociocultural barriers rather than assuming broad, transformative outcomes. With sustained investment in digital education and inclusive technological initiatives, AI can contribute to expanding women's participation in educational and entrepreneurial domains within the Afghan context.

Conflicts of interest

The author declares that there are no conflicts of interest related to this research. All data, analyses, and interpretations were conducted objectively, without any financial, personal, or professional relationships that could influence the outcomes or conclusions of this study.

Funding

This research received no external funding.

Author contribution

Zohra Alizada: Conceptualization; Methodology; Software. **Fatima Mohammadi:** Data curation; Writing - Original draft preparation. **Fatima Sahibzada:** Visualization; Investigation. **Zohra Alizada:** Supervision. **Fatima Sahibzada:** Software; Validation. **Zohra Alizada and Fatima Mohammadi:** Writing - Reviewing and Editing.

Declaration of generative AI in scientific writing

The author acknowledges having used the Generative AI tool Grammarly-AI for grammar/language improvement. The author is solely responsible for all published content and has verified the accuracy and authenticity of the AI output.

References

- Abdul Azis, R., Mohamed, N. A., & Ashikin Ahmad, N. Z. (2025). Transforming Challenges into Opportunities: A Conceptual Exploration of AI's Impact on Women Entrepreneurs in Malaysia. *International Journal of Research and Innovation in Social Science*, IX(V), 4509–4518. <https://doi.org/10.47772/IJRIS.2025.905000347>
- Algur, S. M., & Mulla, Mr. M. (2025). AI-Driven Digitalization as a Catalyst for Women Entrepreneurship. *International Journal of Research and Innovation in Applied Science*, X(VII), 364–372. <https://doi.org/10.51584/IJRIAS.2025.100700032>
- Barikzai, S., Bharathi S, V., & Perdana, A. (2025). Digital learning initiatives forging inclusive education in post-conflict nations. *Cogent Education*, 12(1), 2457904. <https://doi.org/10.1080/2331186X.2025.2457904>
- Calzada, I. (2024). Artificial Intelligence for Social Innovation: Beyond the Noise of Algorithms and Datafication. *Sustainability*, 16(19), 8638. <https://doi.org/10.3390/su16198638>
- Hakimi, M., Quchi, M. M., Hasas, A., & Fazil, A. W. (2024). The Transformative Power of Information and Communication Technology in Empowering Women in Afghanistan. *Journal of Social Science Utilizing Technology*, 2(1), 275–287. <https://doi.org/10.70177/jssut.v2i1.702>

- Hakimi, M., Zarinkhail, S., & Sahnosh, F. A. (2025). Artificial Intelligence and Legal Reform in Developing Countries: Advancing Ethical, Rights-Based, and Accountable Digital Governance. *Jurnal Ilmiah Telsinas Elektro, Sipil Dan Teknik Informasi*, 8(2), 127–144. <https://doi.org/10.38043/telsinas.v8i2.6934>
- Jawad Danish, Abdul Wahid Samadzai, Hakimi, M., & Mohammad Aziz Rastagari. (2025). Integrating IoT in Healthcare Systems: A Socio-Technical Approach to Improving Healthcare Delivery in Afghanistan. *APLIKATIF: Journal of Research Trends in Social Sciences and Humanities*, 4(1), 65–86. <https://doi.org/10.59110/aplikatif.v4i1.566>
- Jia, X.-H., & Tu, J.-C. (2024). Towards a New Conceptual Model of AI-Enhanced Learning for College Students: The Roles of Artificial Intelligence Capabilities, General Self-Efficacy, Learning Motivation, and Critical Thinking Awareness. *Systems*, 12(3), 74. <https://doi.org/10.3390/systems12030074>
- Kasinidou, M., Kleanthoys, S., & Otterbacher, J. (2025). Cypriot teachers' digital skills and attitudes towards AI. *Discover Education*, 4(1), 1. <https://doi.org/10.1007/s44217-024-00390-6>
- Marzia Ebrahimi, Behnaz Rahimi, Manizha Sharifi, Diba Sadat, Nahid Amiri, Sadaf Khalil, & Tamanna Quraishi. (2024). Empowering Women through Artificial Intelligence: Opportunities and Challenges. *Journal Electrical and Computer Experiences*, 2(2), 38–46. <https://doi.org/10.59535/jece.v2i2.346>
- Moreira, L. F. R., Soares, L. S., & Martinhago, A. Z. (2024). Inspiring Women in Technology: Educational Pathways and Impact. *Anais Do XVIII Women in Information Technology (WIT 2024)*, 325–330. <https://doi.org/10.5753/wit.2024.1910>
- Nadry, Z., Hakimi, M., Sirat, A. W., & Popal, Z. (2025). Strengthening Cybersecurity Awareness Through Education: The Expanding Role of Cyber Law in Academic Institutions. *Jurnal Analisis Hukum*, 8(2), 193–209. <https://doi.org/10.38043/jah.v8i2.7086>
- Nadry, Z., Sirat, A. W., Hakimi, M., & Quraishi, T. (2025). INTEGRATING BLOCKCHAIN IN EDUCATIONAL MANAGEMENT SYSTEMS: TRANSPARENCY AND ACCOUNTABILITY IN PUBLIC ADMINISTRATION. *Jurnal Ilmiah Dinamika Sosial*, 9(2), 286–309. <https://doi.org/10.38043/jids.v9i2.7079>
- Nesari, N., Hosseini, M., Saberi, N., & Quraishi, T. (2025). Bright Future: The Role of Online Educational Technology in Empowering the Academic Advancement of Afghan Women. *Gameology and Multimedia Expert*, 2(4), 114–121. <https://doi.org/10.29103/game.v2i4.23163>
- Retno, S., & Hakimi, M. (2025). Analysis of Clustering Results for Crime Incident Data in Indonesia Using Fuzzy C-Means. *Journal of Advanced Computer Knowledge and Algorithms*, 2(3), 73–79. <https://doi.org/10.29103/jacka.v2i3.22565>
- Shahbazi, H., Hakimi, M., Ulusi, H., Rahimi, B., & Quraishi, T. (2024). Exploring the Impact of Artificial Intelligence on Women's Empowerment: A Comprehensive Survey. *Journal of Community Service and Society Empowerment*, 2(03), 278–293. <https://doi.org/10.59653/jcsse.v2i03.856>
- Shaikhzada, N., Mohammadi, L., Rahmani, L., Asghari, T., Hosseini, M., & Quraishi, T. (2025). Challenges and Opportunities for Afghan Women in the Digital World in Afghanistan. *International Journal of Applied Research and Sustainable Sciences*, 3(3), 261–272. <https://doi.org/10.59890/ijarss.v3i3.5>
- Sirat, A. W., Hakimi, M., Himmat, B., & Enayat, W. (2025). Artificial Intelligence in Educational Leadership: Strategic, Analytical, Interactive, and Decision-Making Applications for the Digital Age. *Jurnal Ilmiah Telsinas Elektro, Sipil Dan Teknik Informasi*, 8(2), 210–224. <https://doi.org/10.38043/telsinas.v8i2.7044>
- Sudestra, I. M. A., Agustini, N. W. E., Gunawan, I. M. A. O., Indrawan, G., & Hakimi, M. (2024). IMPROVING DIGITAL LEARNING: EVALUATING THE U LEARN LMS WITH THE SYSTEM USABILITY SCALE. *JUPI (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, 9(4), 2325–2332. <https://doi.org/10.29100/jupi.v9i4.6910>

Sustaningrum, R., & Haldaka, M. (2025). Student utilization and perceptions of AI technology for academic purposes: A mixed-method analysis. *Cogent Education*, 12(1), 2553835. <https://doi.org/10.1080/2331186X.2025.2553835>