Mind and Society
A Peer Reviewed Research Journal in Humanities and Social Sciences

REVIEW ARTICLE
ISSN:2277-6907
doi: 10.56011/mind-mri-133-20245

Artificial Intelligence as a Catalyst for Gender Equality: Empowering Women across Healthcare, Education, and Entrepreneurship

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Abstract

Artificial intelligence, the frontier of technological innovation, empowers machines to learn, adapt, and perform tasks with a level of intelligence that is transforming the way we live, work, and interact with the world. AI is rapidly transforming societies all around the world, offering creative solutions to visible challenges. As we embark on the convoluted journey to accomplish the sustainable development goal (SDGS), empowering women or prioritizing gender equality emerges as the cornerstone, unlocking pathways to inclusive progress. This academic dialogue meticulously man oeuvres the transformative domain of AI- driven entrepreneurship, elucidating the surreptitious depths of women's latent abilities. Within the dynamic context of developing economies, we unravel the tapestry where artificial intelligence intertwines with the gender empowerment, orchestrating a symphony that propels sustainable development. AI-powered tools and platforms hold the potential to augment women's access to education, healthcare, and financial services, especially in remote or underserved communities. In the realm of healthcare and safety, AI-driven virtual assistants, wearable devices, safety apps, and simulated counselors are revolutionizing access to medical information, monitoring health, ensuring safety during travel, and providing mental health support. The impact of AI also extends to career development, where AI-enhanced models offer personalized career counseling, job matching, skill-building, mentorship, and interview training tools. These tools empower women to classify opportunities and develop competency, thereby bridging the gender gap in the workforce. For women entrepreneurs, AI-supported financial management and data analytics tools are enhancing business efficiency, decision-making and growth. In the education sector, AI-assisted adaptive learning platforms, language learning apps, online tutoring platforms, and educational Chabot's are transforming learning experiences for girls and women. These tools provide personalized, engaging, and accessible learning opportunities, thereby promoting educational attainment and lifelong learning. Overall, this paper highlights the significant role of AI in facilitating women empowerment by providing them with access to essential services, resources, and opportunities. However, challenges such as algorithmic bias, privacy concerns, and digital divide must be addressed to ensure that AI's benefits are equitably distributed, fostering a more inclusive and equal society for all.

ARTICLE INFO

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Dates:
Received: 28-08-024
Accepted: 06-10-2024
Published: 15-10-2024

Keywords:
Artificial intelligence, Technological innovation, Sustainable development goals, Gender equality.

How to Cite:
Sharma, P. (2024). Artificial Intelligence as a Catalyst for Gender Equality: Empowering Women across Healthcare, Education, and Entrepreneurship. Mind and Society, 13(3): 34-41.
doi: 10.56011/mind-mri-133-20245

Introduction

Artificial intelligence (AI)

It is well known that defining and comprehending AI can be difficult. Consequently, we provide two corresponding definitions:

A body of knowledge, theories, and methods aimed at replicating human cognitive capacities in a machine. For example, current advancements seek to enable difficult jobs that were traditionally assigned to humans to be performed by a computer (European Council, 2021).

Machine-based systems that are able to forecast, suggest, or make decisions that affect real or virtual environments depending on a set of human-defined objectives. Artificial intelligence systems engage in direct or indirect interactions with humans and our surroundings. They frequently give the impression of functioning independently and are able to modify their behavior based on context awareness (Unicef 2021). Artificial intelligence has become ingrained in nearly every aspect of our existence. AI-powered devices may now operate intelligently and carry out a wide range of human tasks. With the development of this cutting-edge technology, workplaces and employment patterns are also changing. AI has a big part to play in promoting ethical behavior at work, especially when it comes to women. AI has the power to dismantle current biases and prejudices against female professionals and present them with a wealth of opportunities. By 2022, artificial intelligence will provide over 133 million new employments, according to World Economic Forum research. That is a significant amount, isn't it? Women can gain confidence and new job options with AI education. Numerous studies indicate that there is a gender gap in the IT business, but AI- based solutions are helping close this gap. In the domains of science, technology, and engineering, it is especially vital to support gender equality and women's empowerment. Women have historically been notably underrepresented in these fields for a variety of reasons, such as prejudice and cultural preconceptions. For science to progress and innovate, women's participation in these domains must be supported and encouraged. It is possible to create a scientific ecosystem that is more diverse, inclusive, and strong by empowering women and advancing gender equality.

Healthcare

A revolutionary revolution in the ever-changing field of healthcare is taking place, with a focus on addressing the special demands and complex issues that women face. Fundamentally, this paradigm shift is centered on the intersection of machine learning (ML) and artificial intelligence (AI), which has the potential to completely transform the way women's health is managed and celebrated.

Revealing the Potential of Prompt Identification and Evaluation

The foundation of breast health, mammography, is about to enter a new era propelled by advances powered by artificial intelligence. A recent exploratory study has demonstrated AI's amazing promise for breast cancer diagnosis. This study, which was published in The Lancet Oncology, offers strong proof that AI can considerably improve medical professionals' capacity to detect breast tumors from mammograms. When AI worked with radiologists, it was able to spot 20% more malignancies than when radiologists worked alone.

Creating Customized Accuracy

Women can receive individualized treatment plans thanks to AI-powered patient data analysis. Thanks to AI, doctors can now design customized treatment regimens that take into account a patient's medical history, lifestyle choices, and genetic markers. By addressing their specific requirements and reducing risks, women's healthcare can be improved through the use of tailored medicine. AI-enabled personalized medicine has enormous potential for the numerous individuals afflicted by endometriosis.

Understanding Menstruation Cycles: Exceeding Fertility

AI technology is now a vital tool for women, helping them track and understand their menstrual cycles, assist with fertility planning, and much more. Apps such as Flo and Clue that employ AI algorithms to

estimate when a woman will ovulate, provide fertility intelligence, and make tailored recommendations aimed at enhancing reproductive health. Due to this evolution, women are now free to choose how they want to procreate, including whether or not to seek therapeutic assistance or educated family planning methods.

Encouraging Pregnancy: Ongoing Watchfulness and Assistance

Ensuring maternal well-being during pregnancy requires proactive support and on-the-spot monitoring. According to recent research from the Diabetes in Pregnancy Study Group UK (DIPSI), 10 to 14% of pregnancies in the UK are affected by gestational diabetes, which highlights the need of tackling this illness. Women who give birth frequently go through a variety of changes, such as persistent issues like urine incontinence brought on by weakening pelvic muscles and discomfort from common procedures like episiotomies following vaginal deliveries. Sadly, postpartum care frequently receives little attention, depriving women of knowledge about possible difficulties. With the advent of AI, these issues may be resolved by customized solutions and real-time monitoring. AI-powered solutions can offer tailored workout plans, ongoing health monitoring, and risk-reduction recommendations. Through its emphasis on the sometimes-disregarded component of postpartum outcomes, AI-driven support can empower women by facilitating risk management and improving their general well-being.

Encouraging Mental Health: AI as a Mindful Friend

AI as a compassionate mental health partner offers a novel and highly promising path. AI is always available, providing prompt support even outside of regular therapy hours. It provides a safe haven for women who are reluctant to talk about their feelings by fostering an environment free from judgment. AI offers empathy and understanding through objective listening, as well as customized coping strategies that are in line with cultural preferences and personal requirements.

According to a recent poll by the mental health website miindmymiind.com, many women are aware of the need for psychological support but are hesitant to get it from a professional. Of the women who responded to the study, about 62% agreed that they needed psychological support, but only 9% really sought help from a professional. This pattern is consistent with other research showing that mental illness is becoming more widespread in women, with one in five of them suffering from typical mental illnesses including depression and anxiety. Women can take proactive measures to manage their mental health thanks to AI's capacity to monitor mood, provide crisis response, and provide mental health information. Via immersive experiences, AI-powered virtual reality platforms can support women in managing and navigating culturally and socially relevant fears through exposure therapy.

Simultaneously, digital technology is creating new avenues for women's global empowerment. As a result, there is an increased need to create a gender-responsive digital education and learning ecosystem for women's holistic digital development, where AI can be a significant asset in identifying career opportunities. This will assist level the playing field for women and help eliminate any discrepancies or inequalities.

Governments, legislators, and representatives of both public and private organizations must step up to establish fair platforms that enable women to exercise their digital rights and improve, secure, and egalitarian working environments.

If we take a closer look at this idea, we can see that tomorrow's women can become more professional with better productivity and performance if they receive the proper Artificial Intelligence-led education from business and career development perspectives. They will also be more aware of their roles in the digital ecosystem and have the knowledge of social and legal resources to help them protect themselves. To put it simply, the information technology revolution both domestically and internationally has given rise to a large number of women technologists skilled in software development and other facets of the IT industry.

However, the digital potential of the modern day are significantly more demanding. The incumbent woman must be more knowledgeable about lead-

ership and tactics for keeping the firm afloat in the face of environmental and societal pressures. Technology alone would not be sufficient. Women must become knowledgeable about the commercial and sustainability aspects of artificial intelligence (AI) and machine learning (ML) if they hope to take advantage of the huge array of opportunities in a gender-equitable workplace in the future. Women may rule and establish gender equity for themselves and others by possessing extensive expertise as business leaders in the artificial intelligence field.

AI Education for Empowering Women

Artificial intelligence (AI) is revolutionizing the landscape of women entrepreneurship by providing valuable tools and resources that enhance their capabilities and success rates. One significant contribution of AI is its ability to provide women entrepreneurs with access to crucial market insights. Through data analysis, AI enables entrepreneurs to make informed decisions about their products or services, giving them a competitive edge in the market.

AI also plays a key role in improving customer engagement for women entrepreneurs. Tools like AI-powered catboats can enhance customer support and interaction, leading to improved customer satisfaction and potentially increased sales. Additionally, AI enables personalized marketing strategies, allowing women entrepreneurs to target their audience more effectively and drive business growth.

Financial Management

Financial management is another area where AI is making a significant impact. AI-powered tools assist women entrepreneurs in managing their finances efficiently, including budgeting, forecasting, and expense tracking. By automating these processes, AI frees up time for entrepreneurs to focus on strategic aspects of their business, promoting growth and sustainability. Furthermore, AI facilitates networking and mentorship opportunities for women entrepreneurs. AI platforms connect entrepreneurs with industry experts and peers, providing valuable insights and guidance for business success. Additionally, AI can automate repetitive tasks, further enhancing operational efficiency and allowing entrepreneurs to allocate their time and resources more effectively.

Access to funding is a common challenge for women entrepreneurs, and AI is helping address this issue. AI- powered platforms assist women entrepreneurs in identifying funding opportunities and navigating the funding process, increasing their chances of securing funding for their businesses.

In order to achieve gender equality, women's empowerment is a process rather than a goal, so in this paper, I'll be concentrating on some of the problems I found to be advancing this process for Indian women. The following highlights are taken from various research findings, observation reports, and diaries.

Digital tools

Information and communications technologies, or ICTs, include the contemporary means of communication and knowledge exchange that are employed in the increasingly digital age of today. Examples of these include computers, MP3 players, mobile devices, and the internet. The internet, mobile devices, and digital technology offer a lot of potential to empower women.

Online Learning (e-learning) and Mobile Learning (m-learning)

Thanks to the use of desktop, laptop, and tablet computers, MP3 players, and mobile phones, e-learning and m-learning opportunities can empower women with broader, more flexible access to both informal and formal education. They can also transform the delivery and reception of knowledge by providing people with a more collaborative, contextualized, and interactive learning experience.

Online and Mobile Banking

These two methods allow low-income and even illiterate women to access safe, low-cost banking services that support their businesses' financial operations, help them better manage their families' income, and motivate them to save for their children's futures. Women can avoid wasting time, money on transportation, and/or missed wages by using digital and mobile technology instead of traveling to banks.

Mobile Health (m-health) and Online Health (e-health)

These technologies also have the capacity to increase healthcare workers' access to training opportunities and their capacity to diagnose illnesses and follow patients. The internet provides quick and convenient access to healthcare and essential health information for women and girls, especially those living in remote and isolated places. Thus, AI progress maintains the health of more women and girls.

Social Media

Social media are platforms that facilitate social communication. This is one of the most useful tools for using ICT for education. It is the ideal thing for quickly moving information from one area to another in anydepartment. The various forms social media can take, including micro blogging, social blogs, weblogs, content communities, social networking sites, and collaborative projects, etc., make this possible. It should be noted that the self-disclosure and media richness criteria used by media theory to categorize different types of social media are different for these forms of social media. The concept of "the amount of information a medium can transmit within a given time, and self-disclosure" refers to media richness.

AI-Powered Educational Resources and Instruction for Girls and Women

AI-powered adaptive learning platforms can provide tailored learning experiences that take into account each student's unique learning preferences and pace. With the help of AI-powered language learning apps, women and girls can acquire a new language through interactive lectures and practice exercises. Learning may be made fun and engaging with the help of AI-enabled games and simulations, which will encourage and attract female students. AI-powered online tutoring platforms can provide affordable, high-quality tutoring services to women and girls across the globe. AI-powered educational chatbots can provide girls and women with timely guidance and support as they navigate their educational experiences.

AI Access to Work and Education

Women in India encounter many obstacles in their pursuit of work and education. For instance, according to World Bank figures, only about 50% of Indian women and 80% of Indian males are employed. This is partly because women face social and cultural obstacles that keep them from entering the workforce, in addition to limited access to training and education.

The Benefits of Digitalization for Women

Digitalization can, in theory, help women in a number of ways. E-commerce is a key element of the digital economy. Women have access to a wide range of products and services as customers, with advantages in terms of choice, affordability and the absence of a requirement for close closeness. ICT-enabled services include things like maternal health care and medical treatments that aren't always accessible where women reside. Women have the ability to purchase a wide range of goods and services without requiring physical proximity, and with advantages in terms of choice and cost. Examples of ICT-enabled services are maternal health care and medical treatments, which are not always readily available. Production methods that are less labor-intensive, more sustainable, and more efficient might be advantageous to women as producers. As employees, they will have less physical labor, more flexible work schedules, and less obstacles to entry into the labor market. Digital trade facilitation can lessen the need for in-person encounters by cutting down on the duration and complexity of the products clearing processes, which are particularly onerous for small traders who are often women.

Let's examine a few justifications for the necessity for women in AI

Diverse perspectives can spark creativity and aid in finding alternate solutions to pressing issues. Because they are viewed as having greater vision, women contribute different viewpoints. It will prevent ingrained prejudice and unprofessional AI conduct. In the tech sector, women can really

make an impact and close the gender gap. Women have a lot to offer the talent pool of accomplished professionals.

Opportunities for E-commerce and Entrepreneurship

E-commerce can assist small enterprises, many of which are owned by women specially for women who are time and mobility constrained, the advantages of online trading over offline trade include the increased time flexibility and the ability to work from any location (World Bank and WTO, 2020). Women can also combat discrimination by using digital solutions that eliminate the necessity for in-person encounters (OECD/WTO, 2017; World Bank and WTO, 2020). Eloped nations, by lowering the startup costs associated with starting up. How can gender equality and digital empowerment be realized? The answer is to provide women with the ideal combination of leadership and digital skills, enabling them to demonstrate their competence in business, technology, and other fields in which they operate. These notions can be explained in following ways as shown in Figure 1.

Achieve Gender Equality

Women are underrepresented in the field of artificial intelligence, which is an issue that has to be addressed. There are just 12% of female AI researchers. We cannot deny ourselves the opportunity to tap into the talent pool of women, who make up 52% of humanity's talent. For women to succeed in the workforce and truly make an impact, they need to acquire these new abilities. In order to achieve gender equality, as defended by SDG 5 of the 2030 Agenda, actions must be conducted in all areas of knowledge. AI has proven to be an increasingly important actor in the development of new and innovative systems used by all levels of society (Lu *et al*., 2018). That is why it is vital that the entire life cycle of these systems is committed to achieving a better society and, therefore, gender equality must play an important role in this regard. Thus It is a matter of human rights to see more women developing AI algorithms and modeling for them. You find yourself wondering, "Why?" The reason behind this is that algorithms will utilize skewed historical data. Humans are biased, not algorithms, and it is our duty to ensure that AI systems do not reinforce human biases.

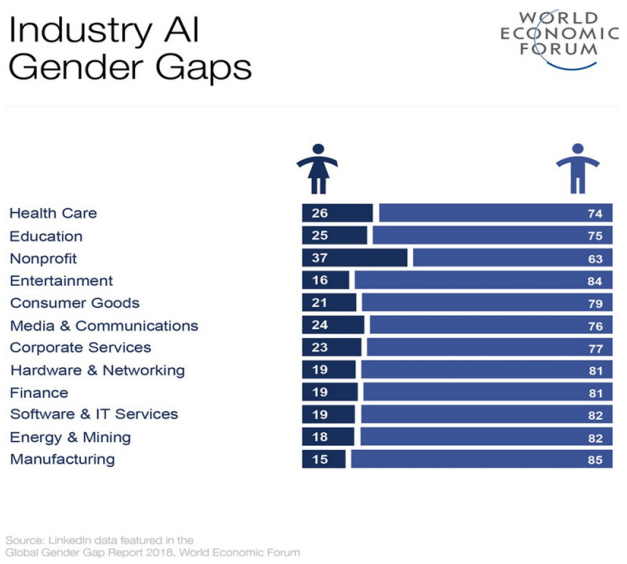

Figure 1: Industry AI gender gaps

AI can Guarantee Impartial Hiring

In the future, AI tools will help with the hiring process by concentrating on choosing the best applicant with the appropriate skill set for open positions. This will prohibit employment practices that involve unconscious bias. A lot of companies, like Unilever, have embraced digital hiring powered by AI. Women who possess the most in-demand abilities may find themselves in higher-paying positions.

AI might Reduce the Workload at Home

Artificial intelligence can help us organize our work and strike a balance between your responsibilities at home and at work. AI abilities can also help us to support our child's growth and provide a positive example for them to follow in their personal and professional lives. In conclusion, AI is a powerful tool that is transforming women entrepreneurship by providing access to valuable insights, improving customer engagement, enhancing financial management, facilitating networking and mentorship, and addressing funding challenges. By leveraging AI, women entrepreneurs can overcome barriers and achieve greater success in their entrepreneurial ventures.

Conclusion and Recommendation

Artificial intelligence (AI) holds significant potential as a catalyst for gender equality, particularly in the domains of healthcare, education, and entrepreneurship. By leveraging AI technologies, we can address systemic barriers, enhance access to opportunities, and create more inclusive environments for women. In healthcare, AI-driven tools can improve women's access to personalized medical care, facilitate early diagnosis, and promote health literacy. In education, AI can provide tailored learning experiences, break down gender stereotypes, and encourage more women to pursue STEM careers. In entrepreneurship, AI can democratize access to resources, optimize business processes, and enable women entrepreneurs to scale their ventures.

However, the deployment of AI must be approached with caution to ensure that it does not perpetuate existing biases or create new forms of inequality. Ethical considerations, transparency, and the inclusion of diverse perspectives in AI development are crucial to maximizing its positive impact.

Recommendations

Promote Gender-Sensitive AI Development

Encourage the inclusion of diverse voices, particularly women, in AI research, design, and deployment processes. This will help ensure that AI solutions are developed with a comprehensive understanding of gender dynamics and do not inadvertently reinforce biases.

Invest in AI Education and Training for Women

Governments, educational institutions, and private sector organizations should invest in AI education and training programs targeted at women. This will empower more women to participate in the AI-driven economy, reducing the gender gap in tech-related fields.

Implement AI-Driven Solutions in Healthcare with a Focus on Women's Health

Prioritize the development and adoption of AI tools that address specific healthcare needs of women, such as maternal health, reproductive health, and mental health. These tools should be accessible, culturally sensitive, and designed to improve health outcomes for women across diverse populations.

Use AI to Enhance Educational Opportunities for Women

Deploy AI-powered educational platforms that provide personalized learning experiences, mentorship, and career guidance to women and girls. These platforms should encourage more women to enter and succeed in STEM fields, helping to close the gender gap in these industries.

Support Women Entrepreneurs through AI-Driven Resources

Develop AI tools and platforms that provide women entrepreneurs with access to funding, market insights, and business optimization resources. These tools should be designed to address the unique challenges faced by women in entrepreneurship, helping them to grow and sustain their businesses.

Ensure Ethical AI Deployment

Establish regulatory frameworks and ethical guidelines to govern the use of AI in a way that protects against discrimination and ensures fairness. Continuous monitoring and evaluation of AI systems are necessary to prevent and mitigate potential negative impacts on gender equality.

By strategically leveraging AI, we can make significant strides toward achieving gender equality in healthcare, education, and entrepreneurship, ultimately empowering women to fully participate in and contribute to all aspects of society.

References

Bessen, J. E. (2019). AI and Jobs: The role of demand. *NBER Working Paper No. 24235*.

Gray, M. L., Sweeney, L., & Yablon, Y. B. (2021). Can AI help achieve gender equality? *American Economic Review:*

Insights, 3(2), 241-54.

Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial intelligence in education: Promises and implications for teaching and learning. *Center for Curriculum Redesign*.

Hutton, L., & Henderson, K. (2019). Towards a feminist AI: Interrogating gender stereotypes in AI Assistants. Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society, 205-211.

Kannan, S., Allen, K., Mishra, S., & Patel, J. (2021). Gender classification and intersectional bias in AI: Review, challenges, and mitigation strategies. Frontiers in Big Data, 4, 33.

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). Intelligence unleashed: An argument for AI in education. *Pearson Education*.

Mazzarol, T., &Reboud, S. (2020). The role of AI in entrepreneurship education: Emerging trends and challenges. *Journal of Small Business Management, 58*(1), 1-7.

O'Neil, C. (2016). Weapons of math destruction: How big data increases inequality and threatens democracy. Broadway Books.

Parra, D., & Dev, S. (2020). Shattering the glass ceiling with AI: A study on gender inequality in the workplace. *International Journal of Computer Science and Information Technology, 12(1),* 46-60.

Reddy, S., Fox, J., & Purohit, M. P. (2019). Artificial intelligence-enabled healthcare

Sharma, A., & Bathla, S. (2020). A systematic literature review on AI and its impact on gender equality. https://giwps.georgetown.edu/resource/the-global-gender-gap-report-2018/

Soni, N., Sharma, E. K., Singh, N., & Kapoor, A. (2019). Impact of artificial intelligence on businesses: From research, innovation, market deployment to future shifts in business models. *Procedia Computer Science, 167*, 2200-2210. DOI: 10.1016/j.procs.2019.03.250

Topol, E. J. (2019). High-performance medicine: The convergence of human and artificial intelligence. *Nature Medicine, 25*(1), 44-56. DOI: 10.1038/s41591-018-0300-7

UNESCO. (2020). Artificial intelligence and gender equality: Key findings of UNESCO's Global Dialogue. *United Nations Educational, Scientific and Cultural Organization*.

Wang, F., Preininger, A. (2019). AI in health: State of the art, challenges, and future directions. *Yearbook of Medical Informatics, 28*(1), 16-26.

West, S. M., Whittaker, M., & Crawford, K. (2019). Discriminating systems: Gender, race, and power in AI.

World Economic Forum. (2020). Global Gender Gap Report 2020. *World Economic Forum*. delivery. *Journal of the Royal Society of Medicine, 112*(1), 22-28.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic

review of research on artificial intelligence applications in higher education – where are the educators? *International Journal of Educational Technology in Higher Education, 16*(1), 39.