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## Avinash Kumar



*Avinash Kumar has completed his Ph.D. in International Investment Law from the Dept. of Law & Governance, Central University of South Bihar. His research work is on "International Investment Agreement and State's right to regulate Foreign Investment." He qualified UGC-NET and has been selected for the prestigious ICSSR Doctoral Fellowship. He is an alumnus of the Faculty of Law, University of Delhi. Formerly he has been elected as Students Union President of Law Centre-1, University of Delhi. Moreover, he completed his LL.M. from the University of Delhi (2014-16), dissertation on "Cross-border Merger & Acquisition"; LL.B. from the University of Delhi (2011-14), and B.A. (Hons.) from Maharaja Agrasen College, University of Delhi. He has also obtained P.G. Diploma in IPR from the Indian Society of International Law, New Delhi. He has qualified UGC - NET examination and has been awarded ICSSR - Doctoral Fellowship. He has published six-plus articles and presented 9 plus papers in national and international seminars/conferences. He participated in several workshops on research methodology and teaching and learning.*



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# **HARNESSING ARTIFICIAL INTELLIGENCE FOR WOMEN EMPOWERMENT: A CATALYST FOR SOCIOECONOMIC PROGRESS**

AUTHORED BY: ADV. BHUMI TANDON

BBA (Marketing, LL.B (Professional) , Pursuing LLM

## **Abstract**

Artificial intelligence (referred to herein as AI) stands as a transformative force with the potential to reshape societies and economies worldwide. Amidst its multifaceted applications, one promising avenue lies in its ability to advance women empowerment across various domains. This research investigates the intersection of artificial intelligence (AI) and women empowerment, exploring how AI technologies can be harnessed to advance gender equality and socioeconomic inclusion. Women worldwide face multifaceted challenges, including limited access to education, economic opportunities and decision-making roles compounded by entrenched societal biases and structural barriers. Against this backdrop, AI emerges as a potent tool with the potential to catalyze transformative change. Furthermore, the study scrutinizes the ethical implications and potential risks associated with AI deployment in the context of women's empowerment, emphasizing the importance of fairness, transparency and inclusivity in AI systems. It also examines the role of policy framework, regulatory mechanisms, and stakeholder collaborations in shaping the ethical and equitable development and deployment of AI technologies for women empowerment.

**Keywords:** AI, Women empowerment, Technology, Gender equality, Socioeconomic Inclusion

## **1. Introduction**

As the world is moving toward digitization and innovative technologies, it is creating opportunities and challenges for working women all across the globe. Growing technology is one of the significant factors that is helping to bridge the gender gap in workplaces. This approach has looked for strategies and measures that compensate for women's social disadvantages. Digital transformation provides new routes for the economic empowerment of women. It is a unique opportunity to expand the scope of flexible work environment for both males and females. Studies

have shown that women are paid less than their male counterparts and hold fewer senior positions in science and technology<sup>1</sup>. Several global organizations, including UNESCO, are trying to promote gender equality in the workplace. The development of a civilization can only be seen when all its participants, regardless of gender, come together and support each other for a successful future. Women and girls are less likely than men and boys to use the internet or own a smartphone. In fact, only 54% of women in Asia and the Pacific have digital access, cut off from opportunities to move any digital needles forward<sup>2</sup>.

From corporate press conferences to media houses and even casual group discussions, AI creeps in everywhere. It has been around for years, but the conversation got serious after Microsoft-backed OpenAI released ChatGPT, an artificial intelligence chatbot.

Innovative and ground-breaking, the tool holds incredible value for all industries and individuals, with many touting it as one of humanity's great inventions. ChatGPT and other Large Language Models (LLMs) deserve such recognition as they're fantastic tools that enhance human capability and efficiency and bring change to society.



The root causes are many and varied deep-rooted discriminatory social norms; increased gender-based violence, including online violence; and the unequal distribution of unpaid care and domestic work. Addressing these impediments to women realizing their full potential requires joint and immediate attention and response.

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<sup>1</sup> Harnessing the Power of AI With Women available at: <https://onpassive.com/blog/harnessing-the-power-of-ai-with-women/> (Last visited on February 11, 2024)

<sup>2</sup> Harnessing the Digital Age to Empower Women and Girls available at: <https://sdg.iisd.org/commentary/guest-articles/harnessing-the-digital-age-to-empower-women-and-girls/> ( Last visited on February 11, 2024)

The rapid growth of AI is swiftly changing the world of work and business. Embedded in this growth is its potential to create new opportunities for gender equality. However, if not properly engaged or utilized, AI also has the capacity to reinforce gender bias, stereotypes, and discrimination. AI is gaining a lot of attention through advancements in machine learning and the increasing use of algorithms for pattern recognition. It is used across various fields and sectors to shape our economic, political, cultural, and social interactions; used in areas such as approval of bank loans, job recruitment, medical diagnostics, etc.<sup>3</sup>

The creation of intelligent computer systems that are capable of carrying out activities that normally require human acumen, like visual perception, natural language processing, decision-making, and speech recognition is known as artificial intelligence (AI). This discipline is expanding quickly. Applications for AI are numerous and include banking, education, healthcare, transportation, and more. By offering creative answers to the particular problems that women encounter, artificial intelligence (AI) can empower women and advance gender equality. These include AI-based tools for women's health and safety, platforms that offer career advice and skill development, financial and business management solutions for female entrepreneurs, and learning and education materials for girls and women<sup>4</sup>.

According to a report published by the World Economic Forum, approximately 133 million new jobs will be created by artificial intelligence by 2025<sup>5</sup>. Now that's a big number, isn't it? AI education can empower women and open up new career opportunities. AI-based technologies are helping overcome the gender gap in the technology industry that many studies show. Let's have a look at a few reasons why we need women in AI:

- Diversity can drive innovation and helps in solving critical problems with alternative viewpoints.
- Women are considered more visionary and hence bring dissimilar perspectives.
- It will avoid entrenching bias and bad behaviour of AI systems.
- Women can make a real difference in the tech industry and minimize the gender gap.
- Women can significantly contribute to the talent pool of skilled professionals.

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<sup>3</sup> Artificial Intelligence (AI) & Gender: Bridging the gap available at : <http://southernvoice.org/artificial-intelligence-ai-gender-bridging-the-gap/> ( Last visited on February 11, 2024)

<sup>4</sup> Sagar Dnyandev Patil, "Empowerment of Women Through Education and Training in Artificial Intelligence" IGI Global 1-18 (2022)

<sup>5</sup> Artificial Intelligence: Offering ways to empower women available at: <https://aischoolofindia.com/indian-mamas-code/artificial-intelligence-offering-ways-to-empower-women/> (Last visited on February 11, 2024)



As per the World Economic Forum's Global Gender Gap Report 2022, women make up only 22% of the AI workforce.<sup>6</sup>

This not only limits the diversity of perspectives and experiences that are shaping the future of AI, but also perpetuates the gender pay gap and limits career growth. 43% of Science, Technology, Engineering and Mathematics (STEM) graduates produced in India are women which is higher than most advanced economies. However, a lot more needs to be done on the work front, as only 14% of STEM jobs in India go to women.

Additionally, 81% of women in STEM face gender bias during performance evaluations during their career.<sup>7</sup> Tech giants like Google and Facebook have only 10-15% AI specialists as women and this disparity exists in research as well.

A study published by Nesta found that only 13.83% of AI research publications are authored by women. Studies suggest that biased AI systems can exacerbate existing gaps in the workforce and even harm under-represented communities.<sup>8</sup>

## **1.2 AI empowering women in different domains**

AI has played a transformative role in empowering women across the world, enabling them to overcome barriers, pursue their goals, and contribute more fully to their communities and economies. Some of its instances are as follows.

### **1.2.1 AI in Education**

AI-powered educational platforms have the potential to revolutionize learning by providing personalized and adaptive experiences tailored to individual needs and learning styles. This can be particularly beneficial for women and girls in underserved communities who may face barriers to accessing quality education. AI can help bridge the gap by offering interactive learning materials, virtual tutors, and personalized feedback, thereby empowering women to acquire new

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<sup>6</sup> AI and Gender Equality available at : <https://www.drishtias.com/daily-updates/daily-news-editorials/ai-and-gender-equality#:~:text=AI%20systems%20that%20are%20designed,their%20gendered%20names%20and%20voices.> (Last visited on February 11, 2024)

<sup>7</sup> Supra Note 6

<sup>8</sup> Ibid

skills and knowledge and pursue their educational aspirations.

### **1.2.2 AI in Employment**

Gender bias in recruitment and hiring processes remains a significant barrier to women's economic empowerment. AI can help mitigate bias by analyzing large datasets and identifying patterns to make more objective and merit-based decisions. Additionally, AI-driven job matching platforms can connect women with job opportunities that align with their skills and qualifications, increasing their access to meaningful employment and career advancement opportunities.

### **1.2.3 AI in Healthcare**

Access to healthcare is essential for women's empowerment, yet many women face barriers to accessing quality healthcare services. AI applications in healthcare, such as predictive analytics and telemedicine, can improve access to care by enabling remote consultations, facilitating early detection of diseases, and personalized treatment plans. AI-driven diagnostics can also help reduce diagnostic errors and improve health outcomes, thereby empowering women to take control of their health and well-being.<sup>9</sup>

### **1.2.4 AI in Entrepreneurship**

Entrepreneurship offers women the opportunity to achieve economic independence and contribute to economic growth and social development. AI-powered tools and platforms can support women entrepreneurs by providing access to resources for marketing, finance management, and customer service.<sup>10</sup> AI-driven analytics can offer valuable insights into market trends, helping women make informed decisions and grow their businesses.

## **1.3 Artificial Intelligence (AI) for a Change**

The growing prominence of artificial intelligence gives hope that gender equality can be addressed. AI systems are unbiased, relying on data-driven algorithms rather than societal prejudices. By removing human intervention and relying on objective data, AI can help reduce gender disparities and ensure fair treatment. Below are a few areas we think artificial intelligence

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<sup>9</sup> In the eye of the beholder: AI optimism and female empowerment available at : <https://mbzuai.ac.ae/news/in-the-eye-of-the-beholder-ai-optimism-and-female-empowerment/> ( Last visited on February 11, 2024)

<sup>10</sup> Ibid

can profoundly impact and support the cause of gender equality.

### 1.3.1 Recruitment

Recruitment has been plagued by gender biases for decades in the corporate world. Men are preferred in certain roles, especially those requiring programming and tech skills.

Despite their skills and experience, women are often overlooked in such roles.<sup>11</sup> AI-powered systems can solve this problem and revolutionize the recruitment processes by analyzing resumes and applications without preconceived notions. By focusing on skills and skills alone, AI algorithms can identify candidates best suited for the job. This can help overcome unconscious biases, promoting a more diverse and gender-balanced workforce.<sup>12</sup>

### 1.3.2 Pay

Men are paid more than women. It is an open secret, yet no one wants to address it. Women are paid less than men in multiple roles across industries, but artificial intelligence can solve this. AI can assist in eliminating this by providing tools for monitoring and fair performance analysis. AI-powered analytics can assess salary data and link it to employee performance metrics, helping companies identify if women are paid less than men for the same role and performance.

AI can further assess promotion rates to identify patterns of gender discrimination. Organizations can use these data points to take proactive steps to rectify pay disparity and create a more inclusive work environment.

### 1.3.3 Education

Gender inequality begins at home and in schools. Girls are devoured with the same learning and extra-curricular opportunities as boys. The problem stems from there to various aspects of society, amplifying gender inequality.<sup>13</sup> Combining artificial intelligence with gender equality is an excellent solution, as AI can find ways to provide equal access to learning opportunities, thus solving gender biases. AI-enabled platforms also have broader benefits, as they can make

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<sup>11</sup> Artificial Intelligence Supporting The Cause of Gender Equality available at : <https://www.smilefoundationindia.org/blog/artificial-intelligence-supporting-the-cause-of-gender-equality/> (Last visited on February 11, 2024)

<sup>12</sup> Ibid

<sup>13</sup> Supra Note 9

education more accessible, affordable, and personalized.

Virtual tutors and adaptive learning systems powered by AI can cater to individual learning needs, helping girls, as well as boys, overcome educational disadvantages.

### 1.3.4 Social Issues

Gender-based violence has been a massive problem in India. Until a few years ago, media houses reported violence and harassment against women, with many even losing their lives.

This is another area where artificial intelligence can affect human life. AI can play a critical role in combating gender-based violence and harassment due to its amazing data analysis abilities. Natural Language Processing (NLP) algorithms can analyze data from social media platforms to detect harassment, hate speech, and gender-based violence.<sup>14</sup>

This can enable intervention and quick action to protect victims and hold perpetrators accountable. AI can also assist in identifying patterns and predicting potential hotspots for violence, allowing the police to allocate resources strategically and prevent incidents before they occur.



### 1.3.5 Healthcare

Healthcare is one of the most important areas where artificial intelligence can impact human life

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<sup>14</sup> Ibid

and help support the cause of gender equality. AI is already revolutionizing the diagnosis and treatment of diseases by accounting for gender-specific factors.

It is an underrated feature as, historically, medical research has focused primarily on male subjects, leading to gaps in understanding diseases and their effects on women. AI-powered systems can analyze chunks of medical data, considering gender a critical variable. This can help identify gender-specific symptoms, risk factors, and treatment approaches, leading to accurate diagnoses and personalized healthcare for women.<sup>15</sup>

### **1.4 Closing Thoughts**

Artificial intelligence in education, healthcare, recruitment, and corporate life can address the issue of gender inequality faster. However, caution is equally necessary as AI tools also possess threats.

Tech companies must focus on avoiding bias in AI algorithm training. LLM models are essentially trained by humans, who, unlike machines, have gender biases. If the training data is biased or limited, AI systems may inadvertently reinforce gender stereotypes and discrimination. Therefore, it is essential to ensure diverse and representative training data and implement rigorous testing and auditing processes to minimize bias.

The lack of diversity in the AI field itself also deserves attention. It is necessary to have diverse teams of developers, researchers, and engineers who can bring different perspectives and experiences to the table to build inclusive AI systems. Only by promoting diversity in the AI workforce can the world move towards an equitable and unbiased world.

By leveraging AI technologies effectively, women can overcome barriers, access opportunities, and contribute more fully to their communities and economies. However, it's essential to ensure that AI initiatives are developed and deployed in ways that are ethical, inclusive, and respectful of women's rights and dignity.

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<sup>15</sup> Supra Note 11