persist unless there is a greater appreciation for the value of girls. (UNICEF INDIA, 2019)
There is a global gender equality problem, and AI reflects the biases in our society. While more women are accessing the internet each year, only 20% in low-income countries are connected. This digital gender divide creates a data gap, which contributes to the gender bias seen in AI. The developers of AI and the biases in AI data can either perpetuate, widen, or help bridge gender equality gaps (UN WOMEN, 2024). The Global Gender Gap Report 2023 reveals that women make up only 30% of the current workforce in AI. Integrating diverse fields of expertise, especially gender knowledge, is vital for developing AI that enhances our world and supports equality and sustainability. The fast-paced AI industry risks reinforcing deep inequalities without gender perspectives, data, and decision-making. The AI sector needs more women, necessitating improved access to and leadership in STEM and ICT education and careers for girls and women.

AI is gaining traction in various business and management fields (e.g., marketing, finance, retail) due to its potential to automate repetitive tasks and increase revenues via personalization and adaptation. Additionally, AI's role in promoting sustainable development and achieving the SDGs is noteworthy.

## 2. LITERATURE REVIEW

The field of gender studies is seeing an increase in empirical work, much of which focuses on how genders are represented in different sectors. Chaurasia et al. (2024) stood by the opinion that the pressing necessity is to harness the power of women by providing education and encouraging skill enhancement through training in both conventional and unconventional sectors. Their study aimed to investigate the capability for women's upliftment through learning and vocational approaches. They found that empowering girls through AI technology training, schooling, and innovation involves equipping them with knowledge, skills, and opportunities to engage actively in the AI field. This active participation not only promotes gender diversity but also leads to AI solutions addressing gender-specific challenges, fostering inclusivity, and assisting women in achieving economic and social empowerment.

Ai (2023), an EY Report outlined the possible effects of Generation AI on India and extensively explored multiple facets of initiatives that both companies and the government can undertake to foster leadership in this arena. Sengupta & Puri (2022) sought to focus on an exhaustive study of the gender wage gap in the Indian context. This study considered the personal characteristics and job features of the employees. It was found that age was a highly significant wage determinant for women, whereas men’s wages were more significantly influenced by industry-specific factors. Rus et al. (2022) intended their study to reduce the gender wage gap by providing fair job recommendations based on the resumes submitted by job seekers. It was noted that, in the absence of bias control, women receive job recommendations with notably lower salaries. Introducing adversarially fair representations closes this wage gap, showing that their debiased job recommendations lessen wage discrimination.

Women in Ai (2022) is a Deloitte Report which throws light on the fact that enhancing women's roles in important technical AI positions is not just about recruitment measures; initiation happens with creating an all-embracing environment & providing enhanced availability and opportunities as evolvement occurs. Businesses which aim to be extremely customer focused acknowledge the significance of diversity, equity, and inclusion (DEI) to achieve the set goals. It was determined that creating a culture of inclusivity involves a relentless search for and removal of biases and discrimination against women in the workforce, alongside placing qualified women in roles that have historically been underrepresented by female employees.

The UNESCO (2020) report offered recommendations on how to incorporate gender equality considerations into AI principles. It also provided guidance to diverse parties who are invested, including the public and private sectors, community-based organizations, and others, on operationalizing both gender equality and AI principles. Further, drawing on nationally representative data from the Employment-Unemployment Surveys conducted in 1999-2000 and 2009-10, Deshpande et al. (2018) looked into gendered disparity in wages of Regular Wage/Salaried (RWS), at both the mean and across the whole wage distribution to determine 'what happens where.' It was demonstrated that in the past ten years of the timeframe, women's soaring income-generating indulgences have done a very meager job when it comes to the expanding disparity in pay.

Gurumurthy Kasinathan & Yogesh K S (2019) opined that incorporating AI into education typically involves leveraging data from curriculum resources and pertinent metadata to generate valuable insights. Democratizing AI could help address these challenges, potentially safeguarding us from a Kafkaesque future. They emphasized AI's capacity to reshape education in India by prioritizing learner-centric learning methodologies. Sahni (2018) brought forth the point that in the context of international development, 'empowerment' was a term often paired with discussions of girls' education and gender equality, suggesting that girls' education is inherently linked to their empowerment. Even with substantial increases in female enrollment in primary and secondary education, educational outcomes still favored male

students. Turning policy into actionable curricula, teacher training initiatives, and classroom practices was critical. While achieving gender parity in school enrollment is a crucial milestone for gender equality, it's essential to thoughtfully consider the educational content and approaches.

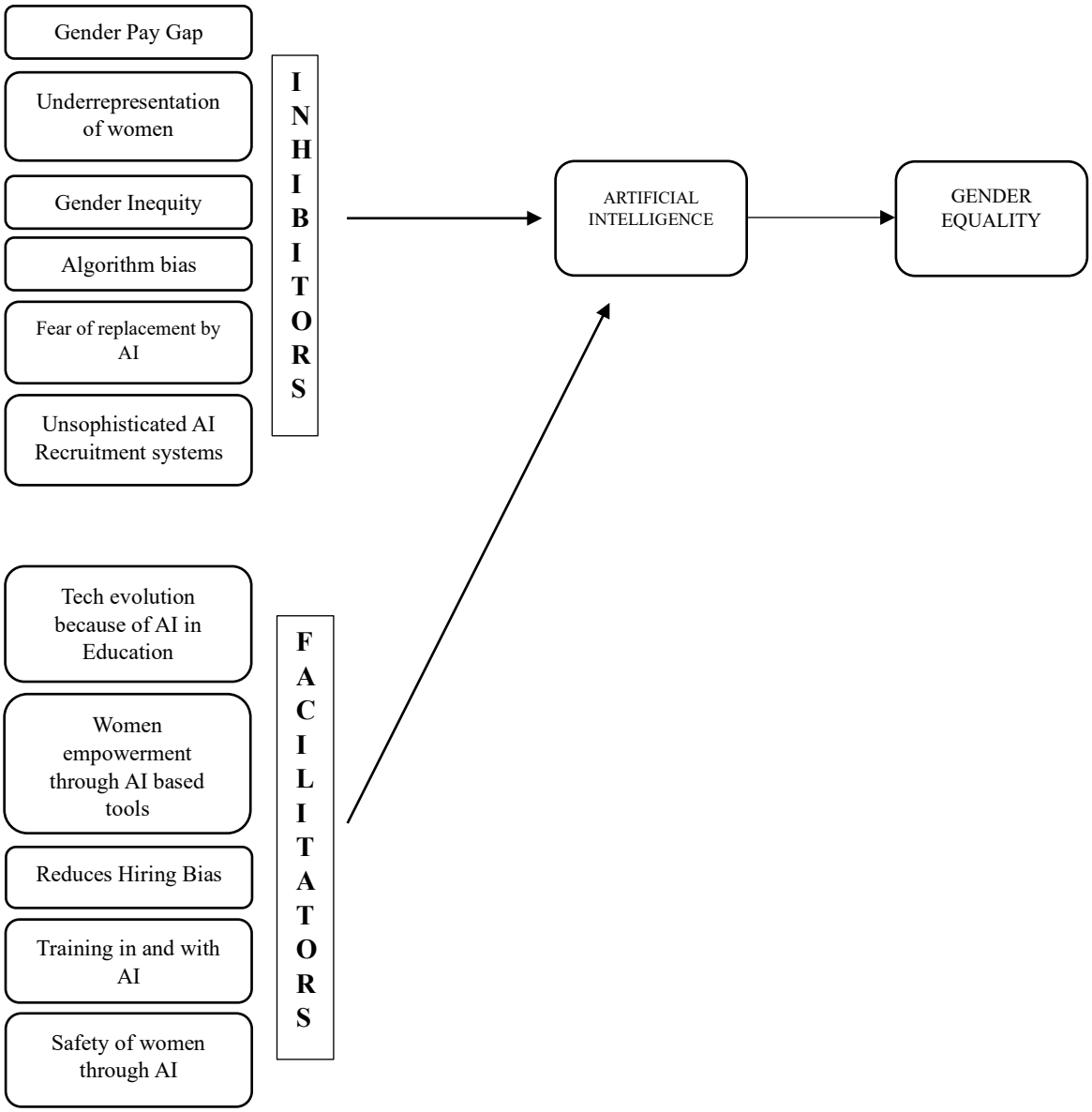
## 3. CONCEPTUAL FRAMEWORK

AI acquires its intelligence by identifying patterns in large volumes of data. For AI to be effectively used in education, it generally needs data from curriculum resources and associated metadata. Despite its potential, AI in education is still in its infancy. Given this, its association with Gender is even more nascent.

AI holds the power to uplift women via cutting-edge alternatives to the specific issues they are engulfed in. This technology yields its usefulness through AI-driven educational and training tools, along with specialized educational resources for women.

AI's usefulness extends further, as it can help address and reduce pay disparities for women by eliminating hiring biases, assisting in better salary negotiations, enabling data-informed pay adjustments, and supporting female entrepreneurs.

The conceptual framework of this study thus encompasses:



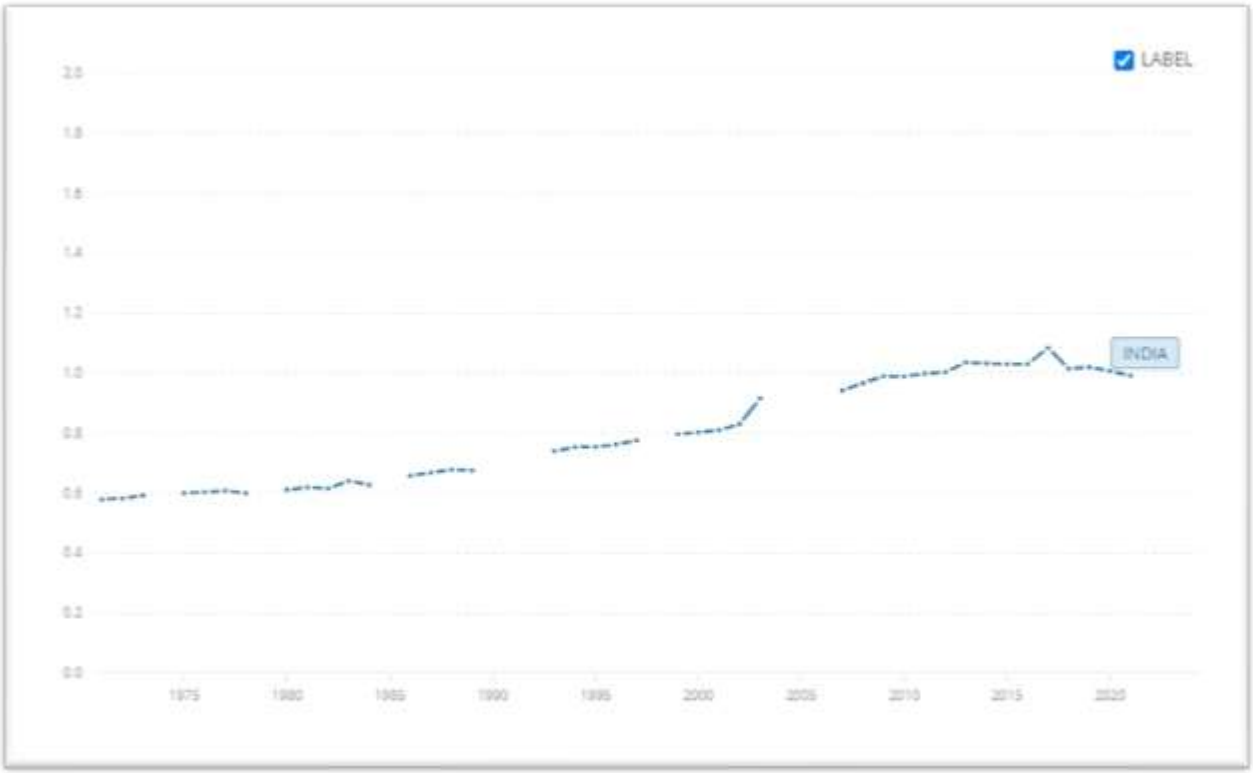
## 3. THE TRINITY OF EDUCATION, GENDER AND AI

Lately, perspective on the encouragement and acknowledgement of women's rights has witnessed transformations with a renewed attention to prioritizing justice alongside aiming for health. It involves amplifying their footing and hold over various aspects. It is possible to achieve that by doing away with the institutional barriers & alleviating burdens on them through increased access to education and earning opportunities. The advent of artificial intelligence has led to novel teaching and learning techniques, which are being tested in various environments.

AI's influence extends beyond education, significantly transforming workforce arenas, industry-related outlets, agrarian methods, distribution chains, and workplace structures. As far as education is concerned, AI is indispensable. The effectiveness of personalized education systems, which are well-established, is increasingly being demonstrated. AI also has the potential to empower women by offering innovative solutions to the challenges they face, such as AI-based educational tools and resources for women's education and training. (Chaurasia et al., 2024)

Education is crucial to uplift people and societies, with a singular impact on women and girls. The levels of education and literacy within a society are strong indicators of its development (Khanna, 2018). At the all-India level, it is evident that the literacy gap between genders is shrinking, and female literacy rates are climbing each decade. Nonetheless, a gap remains. Census data indicates that women have consistently been behind in literacy and educational achievements. The figure below illustrates the gender parity index (GPI) for gross enrollment in primary and secondary schools.

**Figure 1**




*Source: UNESCO Institute for Statistics (UIS)*

A GPI lower than 1 suggests girls face more barriers to learning than boys. Historically, India's GPI has been below 1. However, since 2011, India achieved a GPI of 1, continuing to improve until 2021 with a GPI of 1.01, before slightly dropping to 0.99 in 2022. (The World Bank data, 2022)

Education underpins a prosperous and empowered society, playing an essential role in national development. However, lack of retention of students in the Indian education poses a grave issue for governance administrators and academicians. The UDISE+ 2021-22 data indicates school dropout rate in India to be 1.5 percent; an improvement from last year's 1.8 percent. Nonetheless, the rate remains concerning, especially in certain states. The secondary level (grades 9-10) has the highest dropout rate at 12.6 percent, followed by upper primary (grades 6-8) at 3 percent and primary (grades 1-5) at 1.5 percent. The data further shows that girls have higher dropout rates than boys at all educational levels. (Education for All in India, 2022)

Various reports and studies highlight several reasons behind school dropouts in India, including poverty, insufficient availability of premium academic

opportunities, lacking school infrastructure and resources, societal and traditional concerns, child labor, child marriage, & gender disparity. The emergence of Artificial Intelligence has proved to be a boon in this respect.

Bettering the safety of women and a greater availability of digital technology not only boosts the economy but also helps solve development and humanitarian issues, creating new solutions that empower women. New ways of teaching and learning using artificial intelligence are being tried out in many places. AI is changing how we work, from labor markets to industries, farming, value chains, and even workplace setups, besides affecting education (Chaurasia et al., 2024). By leveraging big data, AI can identify effective learning methods for different settings, thus enhancing the overall quality of education.

But it cannot be obliviated that disparities remain here as well. A 2020 report from the World Economic Forum highlights that women represent merely 26 percent of data and AI job holders. Furthermore, the Stanford Institute for Human-Centered AI's 2021 AI Index Report found that women account for just 16 percent of tenure-track AI faculty globally. ("Women in Ai," 2021) Presently, a wealth of evidence underscores the importance of gender diversity, especially in leadership positions, in driving rising optimal outcomes, cost-effectiveness, and market value industry-wide. An analysis conducted by Harvard Business Review, examining the correlation between productivity and gender-variety, indicated that, a 7% gain in market value was linked to a 10% increase in the ratio of women to men in Western European companies' workforces.

Within the AI domain, gender inequality is chiefly demonstrated through biased and discriminatory behavior directed towards females, largely as a result of unfair decisions made by biased AI systems and algorithms. Within the advertising sector, studies suggest that Google online ads for higher-paying positions are often directed more towards male job seekers than females. Additionally, algorithms like 'Google Translate' reinforce gender bias and stereotypes by translating gender-neutral phrases related to certain professions into gender-specific terms, such as 'she is a nurse' or 'he is a doctor' (Tschopp & Salam, 2023). The relevance of all this comes from the fact that under the broader agenda of SDG 5, focusing on gender parity & uplifting womenfolk worldwide, the United Nations has outlined a specific target: to enhance the utilization of enabling technologies, with a particular emphasis on information and communications technology, to foster women's empowerment.

Ethically deployed and guided by human oversight, AI has the potential to broaden talent acquisition efforts, reduce biases in recruitment and hiring processes, and address real-time biases within talent management systems. Additionally, it can revolutionize communication methods and learning platforms to promote inclusivity, while also facilitating collaborative work environments through metaverse interactions. (Munshi & Wakefield, 2024)

In order to combat the underrepresentation of women, it is essential to begin by ensuring that women and girls receive equitable opportunities in STEM knowledge base & guidance. This will enable them to acquire the necessary expertise, techniques, and influence to mold the technologies which have a profound influence on the day-to-day common experiences. Furthermore, women need avenues that enable their entry into the technology field and encourage them to remain therein once hired (Marwala, 2024). This involves employers' allegiance for mentorship and engagement with female recruits and degree holders via internships and professional networks. Technology firms guaranteeing equal remuneration for both genders is also a part of this, implementing vigorous anti-sexual harassment measures, and providing family considerations via flexible work schedules, amidst various inducements. Without tailored safeguards, we are witnessing a surge in adverse effects on women and girls, encompassing social media platform stigmatization, technology-facilitated gender-based violence, and unequal employment prospects. Therefore, doing away with gender differentials present in the system powering AI technologies is paramount.

## 4. A LONG ROAD TO EQUITY- THE GENDER PAY GAP FACET

The World Economic Forum indicates that achieving gender parity will take another 131 years. The staggering picture of the reality reflects that pay inequality remains a challenge for women in the workplace, even with explicit legislation in place. Studies validate this conclusion. Encouragingly, the pay gap is considerably smaller for younger employees and tends to expand with age.

Collectively, latest disclosures by a myriad of UK companies indicate that in 79.5% of companies, men receive higher average pay than women, with men's median hourly wages surpassing those of women by 12.2%. The quest to end such inequities prompted Dr. Zara Nanu to establish Gapsquare in 2015, a platform using AI to track and evaluate pay data by gender, nationality, impairedness, & demographics of the like. Goldman Sachs forecasts that AI and similar technologies could displace as many as 300 million jobs. Administrative roles, which are mainly occupied by women, are anticipated to be heavily impacted, which could widen the gender pay gap if these jobs are completely replaced. (Forsdick, 2023)

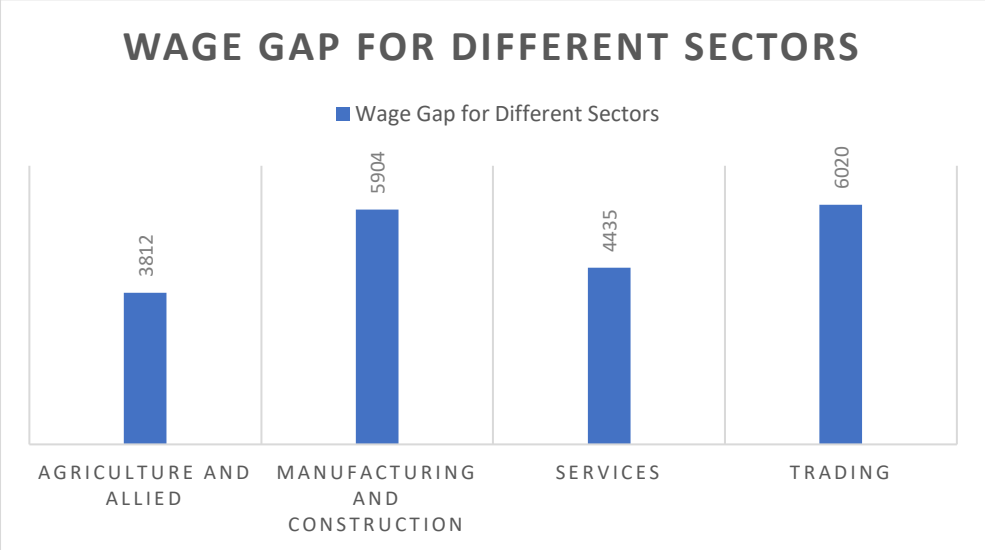
ILO's Global Wage Report 2018/19 has delved into causes triggering global gendered pay disparity. The report highlights that occupational segregation and gender-based industry polarization are significant contributors. Women tend to be underrepresented in male-dominated sectors and receive lower compensation, regardless of their educational qualifications.

The gendered disparity in remuneration is a serious aspect of consideration in India as well. Among the BRIC economies (Brazil, Russia, India, and China), India ranks the lowest for gender parity, including wage equality, according to the Global Gender Gap Report (2010). The World Economic Forum's survey ranks India among the bottom 10 nations globally in terms of women's participation in the economy (Sengupta & Puri, 2022). An optimistic result from the study was academia as a levelling factor for men and women alike, allowing women with advanced education to earn higher wages. Nonetheless, women's growing presence in diverse sectors and manufacturing segments failed to bring down the disparity.

Highlighting the strong correlation between a country's gender gap and its competitiveness, the Global Gender Gap report draws on Mao Zedong's famous words, 'Women hold up half the sky.' This underscores the idea that long-term competitiveness is contingent upon a nation's capacity to educate and make use of the talents of half its population (Deshpande et al., 2018). Employment and remuneration disparities continue to exist between ethnic and gender groups. As a result, unsophisticated AI recruitment systems risk perpetuating these inequalities. Bias in the input data is one reason an algorithm may display discriminatory behavior. Disregarding these biases can perpetuate existing gender stereotypes and inequalities in the workplace. (Rus et al., 2022)

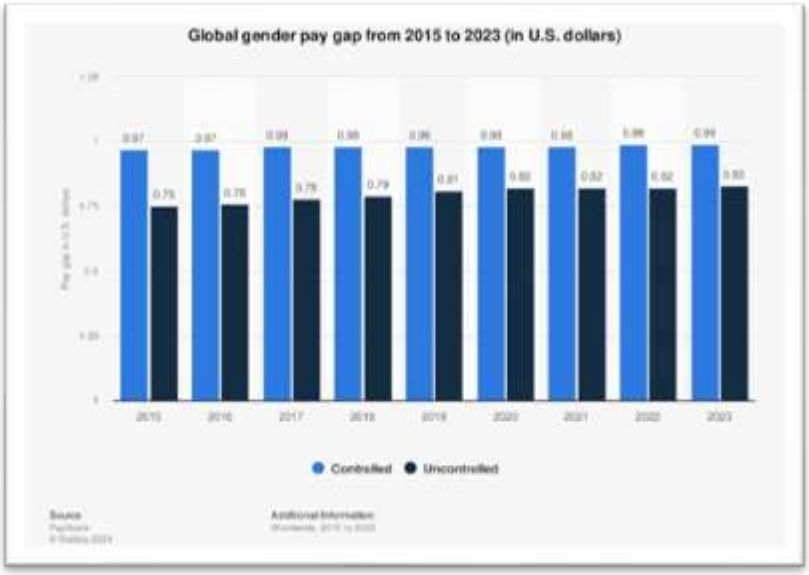
Displayed in the graph are variations in wage gaps across diverse sectors of employment, with the most significant disparity evident among the trading segment.
This is only a peek into the actual scenario which is even more grave. AI has become the need of the hour.

**Figure 2**




*Source: PLFS 2019-20 Data*

Turning to the global picture, the condition doesn't seem much better. The figure below portrays the controlled gender pay gap, which compares the median salary for men and women in identical positions with comparable qualifications. In this comparison, women made one US cent less than males. On the other hand, the uncontrolled gender pay gap assesses the median salary for all men and women across various sectors and industries, disregarding location and qualifications. As of 2023, the overall gender pay difference across the globe was 0.83, meaning that for every dollar earned, women took home $0.83.
Figure 3




*Source: PayScale*

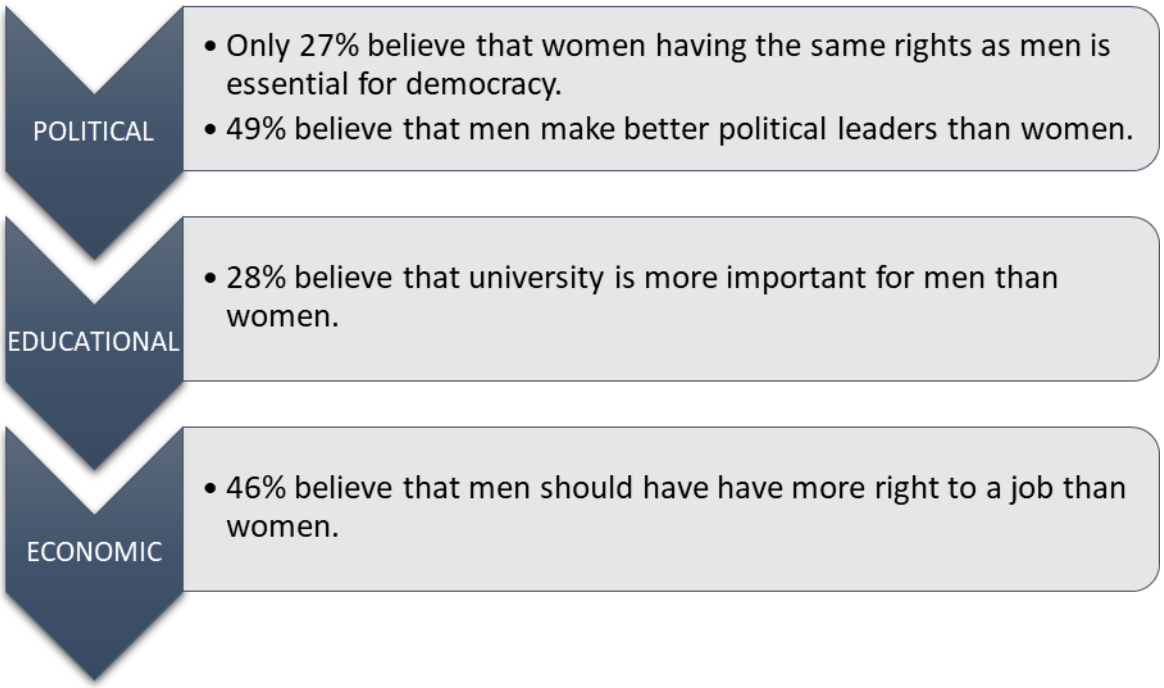
## 5. MEN FOR GENDER EQUALITY – A BEHAVIORAL LOOKOUT

Women remain disproportionately underrepresented in numerous sectors of the workforce, particularly in senior roles. Despite the existence of numerous programs and initiatives by well-meaning companies globally aimed at tackling this inequality by focusing on 'fixing the women,' the contribution of men to gender equality receives less attention.

Men frequently encounter obstacles in embracing gender equality for several reasons:

- Apathy/Disinterest: Research shows that 74% of male leaders advocating for inclusion perceive apathy as a contributing factor to men's inaction on gender equality.
- Fear: The same research indicates that 74% of male leaders supporting inclusion also experience fear of losing status, making errors, facing criticism, and being negatively judged by other men as deterrents.
- Ignorance: Studies suggest that 51% of men refrain from taking action due to perceived or actual ignorance, feeling ill-prepared to advocate on the topic due to lack of awareness. (Thompson, 2023)

**Figure 4**




*Source: 2023 GSNI Report*

It is, therefore imperative to aim for the psyche of men to begin with. Through endeavors aimed at involving men in efforts to combat aggression, foster accountability in responsibilities of fathers, or attend to neglected requirements related to sexual and reproductive health, the objective is betterment of the well-being as well as fulfilment of men themselves. Development projects involving men generally trace patterns resembling traditional feminist organizing which includes women. They initiate by providing men with avenues to foster solidarity, identify shared interests and needs, and recognize the urgency for change. (Sweetman, 2013)

At its essence, involving men and boys revolves around acknowledging that societal norms surrounding power and gender shape individuals—men and women. This includes their interactions within relationships and their positions within societal structures and institutions, with the objective of integrating this understanding into gender equality programs (International Center for Research on Women, 2018). While highlighting the advantages that men can derive from gender equity and non-violence is important, it's equally crucial to recognize how men may benefit from existing power imbalances, which will diminish as patriarchal structures are reformed. It's especially important to approach with caution when employing a 'soft approach' that emphasizes the negative impacts of rigid gender norms on men and the potential benefits of fostering more equitable relationships with women.

There is a strong push to include men in gender equality work. The idea that ‘men are both part of the problem and part of the solution’ is one straightforward way to put this. There are four common themes among men's opinions concerning gender equality in different countries. First, majority of males are generally in favor of it. Secondly, there is a gender disparity, with males supporting gender equality at lower rates than women. Third, although development is uneven, younger men tend to feel more positively about gender equality than older men do. Fourth, racial and cultural background, educational attainment, and geographic location all influence men's views on gender equality. (Flood, 2015)

Recently, men’s participation in awareness towards gender equality has become a focal point in international discussions. This topic was notably highlighted at the Fourth World Conference on Women, which took place in Beijing in 1995. At this conference, Paragraph 25 of the Beijing Declaration called on governments to "encourage men to participate fully in all actions towards equality”. Several trends define the 'engaging men' field. The first Global Symposium on Engaging Men and Boys in Achieving Gender Equality occurred in Rio de Janeiro, Brazil, in 2009, and the second MenEngage Global Symposium was held in New Delhi, India, in November 2014. (Connell, 2003)

The idea of enlisting men to promote gender equality is not new; it has just acquired traction. International organizations such as the United Nations have demonstrated active involvement in this subject and acknowledge its global significance. It is important for programs to intentionally acknowledge and address the intersectionality of different oppression systems. Exploring how racism, classism, and heterosexism intersect with and strengthen patriarchy and power structures is critical. Programs should consider the diversity in men’s power and privilege in various contexts and address feelings of disempowerment among men.

## 6. CONCLUSION

The progression of technology has come with its own boon. With Gender equality making it to the Sustainable Development Goals. It cannot be debated that it has become one of the most important factors to be taken care of internationally. The boom that AI has been experiencing and the nudge it has given economies all over the world make it noteworthy to study about the interconnectedness that prevails. The paper therefore attempted to do the same by delving into the facets that are related with AI and Gender.

Women's economic empowerment encourages income equality and economic diversity to thrive globally. Reducing the gender gap is predicted to benefit the world economy by USD 7 trillion (UN Women, 2024). Given the scope of the impact, delving into the issue is undebatable.

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