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Gender Disparities In Technology Training: Analyzing Participation And Outcomes

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Abstract

Gender disparities in technology training have persisted over time, leading to unequal representation and outcomes for women and men in the field. This study aims to analyze Gender wise Disparities in Technology Training. The research objective is to shed light on the challenges faced by women in accessing and benefiting from technology training, offering insights into potential solutions to bridge the gender gap. The study combines quantitative and qualitative research methods to collect and analyze data, with a sample size of 130 individuals in the IT industry. Results show significant gender disparities in technical training, with men having a significantly higher mean score in technical training compared to women. The findings emphasize the importance of early education initiatives, mentorship, and creating inclusive workplaces to address gender disparities in technology training. Closing the gender gap in technology training is not only a matter of equity but also a strategic imperative for the industry's future success, as a diverse workforce leads to higher innovation and financial performance. This research has the potential to inform policymakers, practitioners, and academics, whose efforts to promote gender equality and social inclusion in the technology sector may benefit from the study's findings.

Keywords: *Gender Disparities, Technology Training, Gender Equality, Gender Gap in Tech*

Introduction

In 2020, just 18% of bachelor's degrees and 21% of doctoral degrees in computer science (CS) were awarded to women. This gender disparity is also found in the workforce, with women making up only 25% of workers in technology fields. Due to the limited number of women in the Technology Training industry, there is a lack of diversity among product developers, and women are being deprived of lucrative careers. A wealth of research has been conducted to explore the reason for this pervasive gender disparity. Gender disparities in technology training have been a persistent issue in the field of education and workforce development. Technology training is a vital component of preparing individuals for the digital economy and enhancing their employability. However, there is a significant gender gap in the participat[1]ion and outcomes of technology training programs, especially in developing countries. The findings of this research will shed light on the challenges faced by women in accessing and benefiting from technology training and will provide insights into potential solutions to bridge the gender gap in this critical field. This study will also discuss the implications of the findings for policy makers, practitioners, and researchers who are interested in promoting gender equality and social inclusion in the field of technology.(BANERJEE, 2011)

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Gender Gap in Tech

The rapid progress of technology is causing profound changes in our environment. Everything from mobile devices and social media to artificial intelligence and machine learning is reshaping human life.

There is still a large gender gap in the workplace, despite the rapidly growing business. Women's underrepresentation in IT is a key barrier to advancement.

The latest statistics show that just 24% of India's STEM workforce consists of women. The percentage is much lower in the IT sector. The percentage of women in the workforce is just 20%, and even fewer women are in leadership roles in the IT industry. This disparity is magnified for women of color due to the fact that they are already underrepresented in the information technology field.(White, 2021)

Several explanations have been proposed for why women are underrepresented in the field of information technology (IT). Overcoming implicit bias is a significant obstacle for women. It shows up when hiring managers have trouble finding qualified female applicants and when fewer women hold positions of authority in the workplace. The lack of strong female role models in IT is another challenge. These resources are essential for women to advance in their careers.

Despite the fast expansion of the industry, there is still a significant gender disparity in the workplace. The lack of female participation in IT is a major roadblock to progress.

The most recent statistics show that women make up just 24% of STEM jobs in the United States. This fraction is substantially less in the IT industry. Women make up just 20% of the workforce, and significantly fewer hold positions of leadership in the IT sector (11%). Since women of color are already statistically less likely to work in IT, this discrepancy is exacerbated for them.

Women are underrepresented in the IT industry for a variety of reasons. One of the biggest challenges women have is overcoming unconscious prejudice. It manifests itself in the recruiting process's lack of female candidates and in the workplace's underrepresentation of women in leadership roles. Another obstacle is the dearth of female leaders and mentors in the IT industry. Women need these tools to climb the corporate ladder.(Erath, 2011)

Challenges and Opportunities

Despite these challenges, a number of paths exist to go forward. It is essential to have a good education. Perhaps the gender gap in technology might be narrowed if we can pique the interest of more young women in the STEM fields. Businesses may take steps toward a more inclusive and inviting workplace via initiatives such as unconscious bias training and female mentorship programs. If there was a more inclusive culture in the workplace, more women would be encouraged to enter the field of technology.

Should we make an increased effort to attract women to STEM occupations? Research shows that a more diverse workforce leads to higher innovation and more informed choices. Companies with a more diverse workforce tend to do better financially, according to research. It may be financially beneficial for women to narrow the gender gap in the computer science field since jobs in this field are in great demand and pay highly.(Slotboom, 2022)

The gender gap in technology abilities is a subset of the larger issue of sexism in the workplace. It would take 132 years to close the gender gap, the World Economic Forum estimates, compared to 100 years before the pandemic. However, it will take another 155 years until there is female parity in political participation. Twenty-two percent of the total in this component index is missing. Together, we can find a solution by fighting for women's and girls' rights.

Finally, encouraging more girls and women to pursue careers in STEM might help close the gender gap in IT. Expanding possibilities for women in computing and addressing the underlying misunderstandings and hurdles they provide are the best ways to ensure a varied, inclusive, and creative future for the IT industry. The moment has come to create a more equitable future for all people.

Several feminist and women's liberation movements were exposed to me when I was very young. We just supported the launch of Alter State, a company helmed by a formidable and diverse group of women. This experience acted as a case study in the creation of an online community to encourage women to assume leadership roles in IT, and it also taught me more about gender studies and the female workforce in the sector.(Einikyte, 2022)

Participation Disparities

Enrollment Rates

There has historically been a huge gender difference in the number of students enrolled in CS degree programs. Women have historically been underrepresented in STEM fields like CS, EE, and IT.

Stereotypes and Biases

Societal stereotypes and biases contribute to the lower participation of women in technology training. Perceptions that certain tech fields are male dominated can deter women from pursuing these educational opportunities.

Early Education

Disparities often begin in early education, with girls receiving fewer opportunities and encouragement to explore STEM subjects, leading to reduced interest and self-efficacy in technology-related fields.(Nielsen, 2006)

Behavioral Similarities of Men and Women in Technical Fields

The fact that men and women have diverse emotional and psychological motivations for choosing careers in technology raises interesting new concerns. Males' natural competitiveness leads them to overestimate their abilities, according to previous studies. Evidence from a number of research suggests that women are less likely to take part in competitive situations due to their lower 11 self-efficacy. Women in technical areas may have a higher level of self-efficacy comparable to males than women in other sectors, according to data from the STEM field. Moreover, women may depart from the general trend of lower self-efficacy among women and be comparatively over-confident if they choose to work in male-dominated fields like mathematics. Given these considerations and the caveats of previously published data on gender attitudes about competition, we conclude that this is an empirical topic of great complexity.(Williams, W. M., & Barnett, 2009)

Gender Disparities

The number of women attending colleges that award bachelor's degrees has increased dramatically in recent years. Because of this increase, there are currently more women than males attending university. Women accounted up 57% of all first-year students at India's four-year colleges in the projected 2020-21 academic year, according to the Indian Department of Education.

There are more women than males in higher education, yet men make up a larger percentage of the information technology workforce. There will be fewer women with advanced degrees in computer science and information technology than males by 2020. In 2020, just 12.9% of computer science bachelor's degree holders will be women. In 2020, 21% of

women, 13% of women, and 26% of women received bachelor's degrees in information technology, computer science, or management information systems, respectively.

Women now make up a larger percentage of STEM degree recipients than men did 30 years ago. The number of women working in computer-related fields increased substantially from the late 1970s to 1984. In 1984, women obtained 37.2% of all computer science degrees, making it the second most frequent major among college graduates after only law school. There has been a dramatic drop in the number of women choosing to study computer technology as a major since 1985 (National technology Foundation, 1). There has been a steady decline in the percentage of women working in computer science, and that decline culminated in 2010. The figure from 1985 was much larger. When compared to other STEM disciplines, such as law and medicine, the rate at which women are quitting the computer and information technology area is far greater.(Jacobsen, 2011)

Major influences

A thorough examination of the data revealed that advertising, media representation of women in technology, role models, social encouragement, and the impact of education were the most crucial elements affecting women's choice.

Influence of Marketing

The influence of marketing on people's worldviews is substantial. All marketing collateral has to be geared toward the target audience for it to be effective. This helps the intended consumers see themselves making use of the goods. Due to the idea that "individuals are influenced by the majority" and that "when a large portion of an individual's referent social group holds a particular attitude, it is likely for the individual to adopt it, as well," marketing personal computers to males may have altered women's perspectives on the technology. Apple marketed the Apple II and numerous of its sequels largely to males, helping to perpetuate the gendered assumption that only men are PC users. The stereotype of males in IT that has lasted for over two decades is one of the numerous factors leading to a lack of women in the profession.(Shevinsky, 2015)

Media Portrayal of Women in Technology

There are very few female computer science and technology majors in college because of the media's pervasive impact on young people's perceptions of these fields. People's perceptions and interactions with members of a social group are strongly influenced by the media's portrayal of that group in many forms, from television and movies to blogs and newspapers. It is possible for bias and stereotyping to exist even in the realm of higher education.

More young women could choose a career in technology if media outlets presented those working in that field in a more favorable light. Women's self-doubt was reduced and their ambition for leadership roles was raised when they were exposed to media depictions of successful women. The field of forensics was mostly male in the 1980s. Women are currently the majority in forensic science. This rise could be attributable to a rise in the popularity of primetime series with strong female characters (whether based on actual people, like Temperance Brennan in Bones, or on fiction, like Sara Sidle in CSI).(Chen, M., & Gupta, 2020)

Outcomes Disparities

Completion Rates

Women who do enroll in technology training programs may face challenges in completing their studies due to a variety of factors, including unequal access to resources and support.

Employment Disparities

Gender disparities continue into the workforce, with women in technology-related fields often experiencing wage gaps, lack of advancement opportunities, and underrepresentation in leadership positions.

Workplace Culture

Hostile or unwelcoming workplace cultures can further hinder women's career progression in technology, discouraging them from pursuing long-term careers in the field.

Barriers and Challenges

Lack of Role Models

The scarcity of female role models in technology fields can limit aspirations and the belief that women can succeed in these roles.

Implicit Bias

Implicit biases can influence hiring decisions, promotions, and workplace interactions, making it difficult for women to achieve equitable outcomes.

Work-Life Balance

The tech industry's demanding work schedules can create challenges for women who often bear a disproportionate share of caregiving responsibilities.

Solutions

Early Education Initiatives

Implement programs that encourage girls to explore STEM subjects from a young age, dispelling stereotypes and fostering interest in technology.

Mentorship and Support

Promote mentorship and support networks for women in technology, helping them navigate challenges and build confidence.(Adler, N. E., & Rehkopf, 2008)

Inclusive Workplaces

Tech companies must work towards creating inclusive and diverse workplaces, combating implicit bias, and promoting policies that support work-life balance.

Literature Review

(BenYishay et al., 2020) It's very uncommon for women to encounter bias even when compared to similarly qualified males. We did a field study in Malawi, randomly assigning 143 villages to have either men or women learn and spread a new farming technology. Objective assessments show that men and women are equally capable of learning and using this innovative technology. Based on interviews with more than 6,000 farmers, it seems that male farmers are less responsive to advice from female farmers because they believe that women are generally less competent about farming. Men's knowledge of the technology and its effects on crop yields are not diminished when women are the sole sources of information.

(Beura, 2017) Women have historically been underrepresented in several male-dominated industries, including science, around the globe. As a consequence of society's continual revaluation of women's status in STEM sectors, more and more women are joining these fields. Despite some progress, the number of women working in STEM fields remains

disappointingly low. Women are making strides in STEM fields, but men continue to perform the vast majority of experiments and produce the vast majority of scientific publications. Many women may not enter STEM fields because of ingrained societal and psychological barriers. To close the gender gap in STEM disciplines, we need to keep a close eye on the situation, disseminate knowledge widely, and foster encouraging working circumstances. The scientific advancement of society stands to benefit from closing the gender gap in STEM sectors, and the prosperity of all citizens depends on the establishment of fair employment practices.

(Charlesworth & Banaji, 2019) The status of women in academia and the workforce has improved for decades, with more women gaining success and distinction. Even though STEM areas have improved, scientists and engineers differ on fundamentals. This Viewpoints article discusses STEM gender imbalance, its causes, and solutions. The first portion evaluates disparities in representation, salary, and recognition (awards, grants, publications) across areas and professional paths (say, bachelor's degree and senior professorship). The second half shows that aptitude, preferences, and overt and covert bias are the most prevalent causes for these discrepancies. Both men and women experience implicit prejudice, or gender-based stereotyping. Because of its ubiquity, recognizing and overcoming unconscious prejudice is crucial. Third segment: current results on treatments that change attitudes and habits extensively. Recognition and resolution of gender in STEM is vital even if moral problems are overlooked since ensuring the full participation of all bright and talented individuals may benefit STEM and society.

Problem of the Statement

Gender disparities in the field of technology training have persisted over time, leading to unequal representation and outcomes for women and men. Despite the increasing importance of technology skills in the modern workforce, women continue to be underrepresented in technology-related training programs, and this imbalance has profound implications for their career opportunities and financial well-being. This study aims to examine the root causes of these disparities, analyze the participation rates of women and men in technology training programs, and investigate the resulting differences in skill acquisition, career advancement, and income levels. By addressing these gender disparities, we can work towards creating a more equitable and inclusive technology sector that benefits society as a whole.

Research Objective

The main objective of our study is to analyse Gender wise Disparities in Technology Training

Hypothesis

Alternative hypothesis-There is significant difference Gender wise in Technology Training

Null hypothesis- There is no significant difference Gender wise in Technology Training

Research Methodology

Data collection procedures, measurement instruments, and ethical considerations are described. Research acquires its scholarly status when seen from an academic viewpoint. Research involves a number of steps, including issue identification and formulation of hypotheses, data collection and analysis, and hypothesis testing via experimentation. Scientists have discovered this.

Research design.

Study design is the process of figuring out which method will most likely provide helpful findings based on research goals and any confounding factors. The overall research objectives of the study may serve as a guide for a systematic approach to data collection and analysis in this study. Descriptive studies might use either qualitative or quantitative techniques. Quantitative and qualitative methods were used in this research. This strategy employs a multipronged strategy. Objectives, sampling, and data analysis are the pillars of every research endeavor. This research looks at Gender Disparities in Technology Training Analyzing Participation and Outcomes.

Proposed methodology

There are several approaches that may be used to investigate an issue. This study is helpful for researchers since it provides a concise summary of the benefits and drawbacks of various approaches. The research methodology lays out the steps that will be taken to collect and evaluate the information needed for the analyzing.

The study procedure is outlined in detail in this study. Data collecting techniques, variables, a sample, and selection criteria are all laid out in great detail in this study. The sample is provided, along with the method and rationale used to make the selection. In order to provide a more complete picture of the issues being studied, researchers often blend qualitative and quantitative approaches in the same study. When data is triangulated from three different sources, confidence in the results increases. The results of one research technique may be complemented by those of another in mixed-methods investigations. The use of one technique may enhance the performance of another, which is still another advantage of mixed methods research. This suggests that the study's breadth and depth might be expanded by using several approaches for different elements of the investigation. Therefore, a mixed-methods research is needed to analyze the Gender Disparities in Technology Training: Analyzing Participation and Outcomes.

With so many strategies in play, it's crucial to prioritize data collection and implementation. Due to the sheer volume of information, a combination of methodologies was required, with quantitative data taking center stage. It is common practice to begin data collection with a qualitative study. The first approach included investigating the issue, collecting numerical data, and then applying the analytical method to a statistically significant population. With so many strategies in play, it's crucial to prioritize data collection and implementation. Due to the sheer volume of information, a combination of methodologies was required, with quantitative data taking center stage. It is common practice to begin data collection with a qualitative study. The primary goal was research, with secondary and tertiary goals of data collection and application to the Gender Disparities in Technology Training: Analyzing Participation and Outcomes, respectively. The present research and any follow-up inquiries might benefit from combining quantitative and qualitative data. The purpose of this study is to analyse the Gender Disparities in Technology Training and Analyzing Participation and Outcomes.

After collecting and analyzing data, a value is assigned to the phenomena in SPSS. Taking a quantitative approach lessens the chance of lying. Sometimes, researchers conducting quantitative studies may use statistical analysis to bolster the trustworthiness of their findings.

Research Approach

The study relies heavily on its methodology. The goal of the study is to analyze the Gender Disparities in Technology Training: Analyzing Participation and Outcomes study will guide the selection of a suitable research approach. Methods for gathering information

using surveys. Past survey results will be mined for information. It's up to the responder, as they may choose between structured and open-ended inquiries.

Sample and sample technique.
Sampling is the practice of picking members of a population to generalize about that population as a whole. There are two main categories of sampling methods: probability sampling and non-probability sampling. The phrase "probability sampling" is used to describe a method of statistical analysis in which a sample is chosen at random from a larger database. This method of population sampling needs less chance than others. Careful participant selection was essential to the success of our qualitative study exploring the Gender Disparities in Technology Training: Analyzing Participation and Outcomes.

Sample size: The sample size of this study is 130 peoples of Technology Training IT industry.

Sources of the sample

One primary data source was used for analysis in this study. These bullet points are meant to provide a quick recap.

Primary data

A Gender Disparities in Technology Training, Analyzing Participation and Outcomes.is the most important source of secondary data. Information was gathered mostly via the use of questionnaires in this research.

Secondary data

Primary data were used to create datasets that were derived from secondary sources. The literature in this area is extensive. Books, magazines, the internet, and even official government archives may all be good places to look for secondary sources you can trust.

Statistical analysis

Using statistical analysis, conclusions may be drawn from raw data. Before beginning the data preparation process (data input, editing, and coding), it is necessary to do an initial appraisal of the data. Without software that can swiftly and properly analyze data, that data is useless. The study findings were put into a data analysis spreadsheet. Each respondent's replies were given a number value and entered into a spreadsheet. SPSS was used for extensive data modeling and analysis.

SPSS 26.0 was used to perform the statistical analysis of the data collected for this investigation. Significant data were evaluated using methods including analysis of variance and percentage-based approaches. The investigation's most important components were broken down into percentages. Percentages are a fantastic tool for contrasting two numerical groups. A basic method of communicating with your target audience is through.

Significance level: there was predetermined statistical significance threshold. To begin with, the value of 0.05 is used.

Result

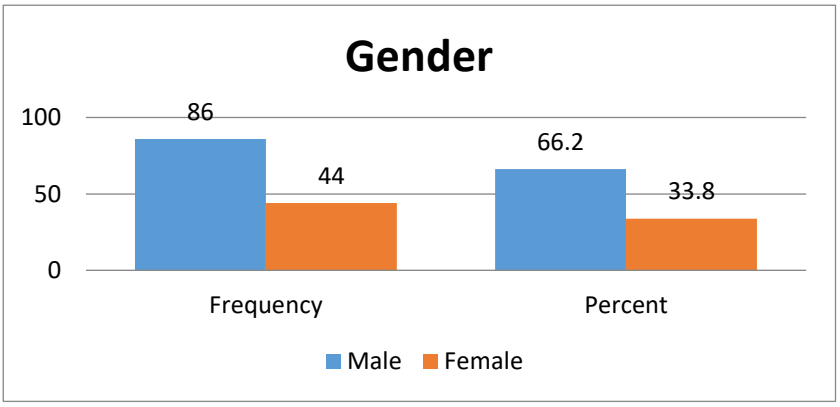
“The result has been achieved in this section. An in-depth description of how the survey results were interpreted”. “With the help of the graph, it provides in-depth analyses of the Frequency and Percentage table. Statistical evaluations were carried out using T test”.

“Table: 1 Gender of the respondents”

Gender		
	Frequency	Percent
Male	86	66.2
Female	44	33.8
Total	130	100.0

The above table discusses gender wise distribution of respondents. In male respondents, frequency is 86 and percentage is 66.2%. In female respondents, frequency is 44 and percentage is 33.8%.

"Graph: 1 Graphical representation of gender of the respondents"



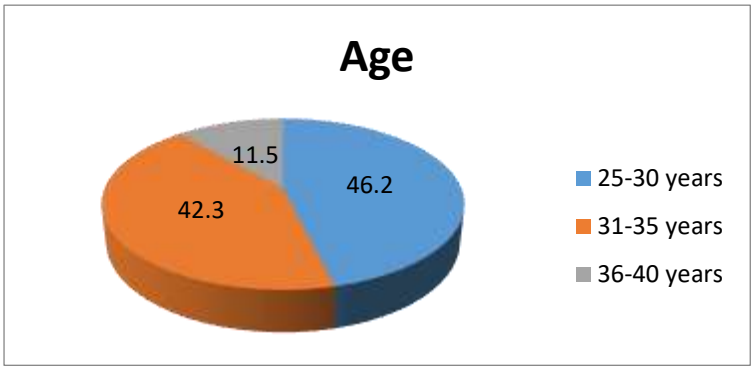
"Table: 2 Age of the respondents"

Age		
	Frequency	Percent
25-30 years	60	46.2
31-35 years	55	42.3
36-40 years	15	11.5
Total	130	100.0

The above table discusses age wise distribution of respondents. In 25 – 30 years, frequency is 60 and percentage is 46.2%. In 31 – 35 years, frequency is 55 and percentage is 42.3%. In 36 – 40 years, frequency is 15 and percentage is 11.5%.

"Graph: 2 Graphical representation of age of the respondents"

"Table: 3 Gender wise disparity"



Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Technical training	Male	86	31.8023	9.24925	.99737
	Female	44	20.0909	4.25806	.64193

Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Technical training	Equal variances assumed	21.786	.000	7.967	128	.000	11.71142	1.47002
	Equal variances not assumed			9.874	126.946	.000	11.71142	1.18610

The above table discusses gender wise disparities in technical training in which sig. value is 0.00 indicates there is significant gender wise disparity in technical training.

Conclusion

In conclusion, the data presented in this study highlights the persistent gender disparities in the field of technology training. The underrepresentation of women in technology-related programs and the subsequent impact on their careers is a significant concern. Despite the increasing importance of technology skills in today's workforce, women continue to face barriers in accessing and succeeding in technology training.

The data indicates that women are significantly underrepresented in technology training, with only 33.8% of the respondents being female. This gender gap is further emphasized when we look at the mean scores of technical trainings, where male participants scored significantly higher than their female counterparts. These findings reflect the ongoing challenges women face in pursuing careers in technology-related fields.

The study also reveals that disparities in technology training often start early, with societal stereotypes and biases affecting girls' interest and self-efficacy in STEM subjects.

Furthermore, the lack of female role models and mentors in the tech industry exacerbates the gender gap. Hostile or unwelcoming workplace cultures can also hinder women's career progression in technology.

However, there are potential solutions to address these disparities. Initiatives such as early education programs that encourage girls to explore STEM subjects and mentorship programs can help dispel stereotypes and provide support for women in technology. Creating more inclusive workplaces, combating implicit bias, and promoting work-life balance are crucial steps in narrowing the gender gap in the technology sector.

In the broader context, achieving gender equality in technology training is not only a matter of social justice but also economic necessity. A more diverse and inclusive technology workforce can lead to higher innovation, more informed decisions, and better financial outcomes for companies. As the data suggests, the time has come to create a more equitable future for all individuals, regardless of their gender, in the field of technology. Policymakers, academics, and business leaders must collaborate to solve these inequities and establish a more inclusive and diverse technological sector.

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