

A GENDER-BASED STUDY OF EMPLOYMENT RATE IN STEM AND HEAL FIELDS IN INDIA

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Abstract

This research paper is based on primary and secondary data collected, with the objective of studying, the rate of employment in STEM and HEAL jobs based on gender in India, using, the percentage of men and women in STEM and HEAL jobs in India are identified. The results show that the percentage of men in both STEM and HEAL jobs is much higher compared to women. Even though there are certain job sectors where women are more in percentage compared to men these results are taken out using statistical tools. Along with the secondary data used for this research paper, primary data was collected in the form of a survey. In this survey, 40 Indian youth between the age of 20-30 years answered questions regarding the work environment and their interests in STEM or HEAL.

Keywords: *Employment, gender, youth, STEM, HEAL*

Introduction

India being a densely populated nation has been facing a lot of challenges in the employment sector especially after AI has reduced the value of manpower due to its high efficiency.

This has impacted certain areas of employment way more than the other ones. For example: STEM and HEAL.

The term "STEM" stands for Science, technology, engineering, and mathematics, it is an umbrella term used to group the distinct but related technical disciplines of science, technology, engineering, and mathematics. The term is typically used in the context of education policy or curriculum choices in schools. The STEM acronym was introduced in 2001 by the scientific administrators at the U.S. National Science Foundation (NSF).

Whereas the term "HEAL" is coined by Richard Reeves, a psychologist, to describe jobs in health, education, administration, and literacy. STEM jobs are largely affected by AI and new

technologies compared to HEAL due to their technical and objective nature, whereas HEAL jobs are a lot more subjective; they require emotional quotient and human intelligence more than artificial intelligence. This has led to an imbalance in employment sectors affecting both genders separately. Therefore, it's important to study the rate of employment and participation of both genders in STEM as well as HEAL.

Statement of the Problem: To study the rate of employment in STEM and HEAL based on gender in India.

Objectives:

1. To study the rate of employment in STEM jobs based on gender in India.
2. To study the rate of employment in HEAL jobs based on gender in India.

Hypothesis:

1. The rate of employment of men is higher than women in STEM jobs.
2. The rate of employment of women is higher than men in HEAL jobs.

Methodology: primary data collection (survey) and secondary data collection
Sampling for primary data: Age-based survey (20-30 year)

Sampling size: 40

Tool applied: t- test

HYPOTHESIS 1:

of men is higher than women in STEM jobs.

- As per the secondary data collected for some of the jobs that come under STEM, In 2023, 16.7% of professionals in engineering and architecture were women and 83% were men.
- Government says, the percentage of women in R&D is 16.6% among the total number of scientists working in S&T organizations, whereas the percentage of males is 83.3%.
- In 2024, a global developer survey revealed that approximately 80% of the developers identified as male, while the share of females was only 20%.
- The reports highlight a significant gender disparity, with an estimated 36.21 % women compared to 63.78% men in the tech industry as of 2024.

Table- 1

Job Sectors	Architecture	Scientists	Developers	Tech Industry	Mean	SD		t- value	p- value
Females	16.70%	16.60%	20%	36.21%	22.5		8.1	-8.369	0.00016
Males	83%	83.30%	80%	63.78%	77.5		8.03		

(Table I in two parts)**Part 1 :- Data**

Job Sectors	Architecture	Scientists	Developers	Tech Industry
Females	16.70%	16.60%	20%	36.21%
Male	83%	83.30%	80%	63.78%

PART 2:- Mean, standard deviation (SD), t- value and p-value

MEAN	SD		t- value	p- value
22.5		8.1	-8.3689	0.00016
77.5		8.03		

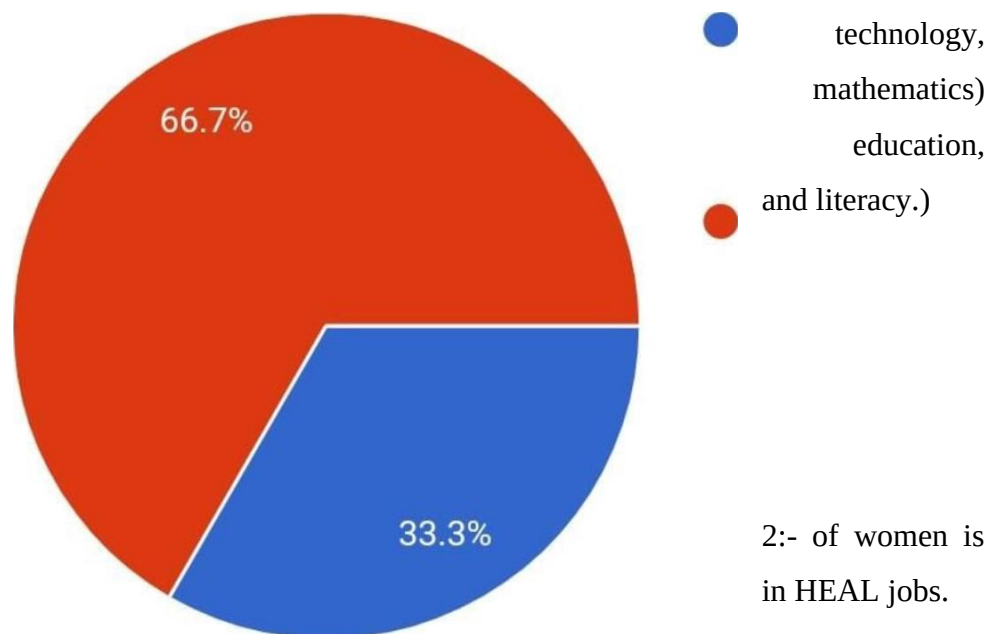
The t-value received is -8.3689 and the p-value received is 0.00016 ($p < 0.05$), which shows the result is significant. Hence, it is evident that the rate of employment of men is much higher in STEM jobs compared to women.

Based on a survey conducted on 40 people for the purpose of primary data collection, with 20 men and 20 women between the age group 20 to 30 years, it was shown that

66.7% of the total respondents were more interested in HEAL jobs compared to the smaller percentage of respondents being interested in STEM which was only 33.3%.

Pie chart -1

STEM:- (Science,
engineering, and
HEAL:- (health,
administration,



HYPOTHESIS
higher than men

2:- of women is
in HEAL jobs.

- As per the secondary data collected for some of the jobs that come under HEAL, In 2024, the labour force participation rate for men in India was projected to be 64%, a decrease from the previous year. Conversely, women's participation in the organized sector increased from 33% in 2023 to 36% in 2024, indicating a positive trend in female workforce engagement.
- In 2024, the percentage of teachers in India was 48.7% female and 46.3% male.
- The gender distribution of HRH (human resources for health) is 39.2% female and 60.8% male.
- According to available information, in India, a significantly higher percentage of psychologists are female compared to male, with some estimates suggesting that around 80% of practising psychologists are women, meaning that for every male psychologist, there are approximately four female psychologists in urban areas.

Table-2

Job Sectors	Organized Sector	Teaching	Psychologist	Health Care	Mean	SD	t-Value	p Value
Female	36%	48.70%	80.00%	39.20%	51.00%	17.39	0.22	0.83
Male	64%	46.30%	20.00%	60.80%	48.00%	17.36		

(Table 2 in two parts)**PART 1: - Data**

Job sectors	Organized sector	Teaching	Psychologist	Health care
Female	36%	48.70%	80.00%	39.20%
Male	64%	46.30%	20.00%	60.80%

PART 2:- Mean, standard deviation (SD), t- value and p-value

MEAN	SD		t-value	p- value
51.00%		17.39	0.22	0.83
48.00%		17.36		

The p- value obtained is 0.83 (>0.05) Hence, it is evident that the rate of employment of women is not much higher in HEAL jobs compared to men. Thus Proving the null hypothesis.

By 2050 it is predicted that the job opportunities in the HEAL sector will increase by 3 times therefore leading towards more opportunities for both women and men.

In the survey conducted on 40 people for the purpose of primary data collection, with 20 men and 20 women between the age group 20 to 30 years, two questions were specifically asked to know the understanding and the opinions of youth on unemployment the labour distribution. The

first question was " According to you, out of HEAL and STEM in which sector do women provide more workforce and in which sector do men provide more workforce?" And the responses received overall were as follows:

- HEAL might be more preferred by women because, generally, women excel in EQ (Emotional quotient) and STEM by men because they might have more IQ.
- HEAL is preferred by women because they are more concerned about development and STEM by men because they are concerned about money • men and women nowadays are almost equivalent in making career out of STEM as well as HEAL.
- Men prefer STEM typically, and Women HEAL. Due to false gender stereotypes, they are brought up with. • HEAL is preferred by both men & women because it promotes better living.

The second question which was asked was "What do you feel is the major issue with the work environment/culture of India?" And the responses received overall were as follows:

- Giving too much work to employees and not paying them enough according to their work, it will resolve by providing sufficient money according to their work. By encouraging business startups. We will definitely get more number of manpower which will ultimately to some extent will solve unemployment.
- Breaking the taboo of only being a doctor or an engineer can prove the potential you possess as an individual.
- Lack of opportunities.
- Functional lagging has been a true and major cause for individuals to get dissatisfied with their jobs.
- Professional stability standards are not well equipped, If there's a given chance to resolve, it would be to deliver professional development courses right when an individual is provided employment which can prevent functional lagging as well as raise the stability standards.
- Lack of labour laws enforcement and an overemphasis on just STEM and Medicine. More diversification would be great for society and mental well being.
- Indian workers should be treated like humans, not robots.
- Lack of skill and more greed.

Conclusion

This research paper has proved that even though in certain Job sectors more women are employed compared to men, but overall in both STEM and HEAL men have a higher percentage of employment. Based on the responses received in the survey, youth is not quite satisfied with their working environment and work culture. And 66.7% of youth are more interested in HEAL compared to only 33.3% interested in STEM.

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