



The impact of Artificial Intelligence on Jobs.

¹Aasiya Qureshi, ²Sneha Gokarnkar

¹Student at Sheth L.U.J. and Sir M.V. College of Arts, Science and commerce, ²Asst. Professor at Sheth L.U.J. and Sir M.V. College of Arts, Science and commerce

Abstract : With the rapid growth of artificial intelligence (AI) technology, concerns regarding job displacement have grown in prominence. The study is undertaken to investigate whether the displacement of jobs due to Artificial Intelligence has had a harmful or a favorable impact on society. The primary data for this study has been collected by a survey of 92 people of various age groups. This study will help people learn more about Artificial Intelligence and its impact, as well as understand various points of view as a result of the survey that was conducted to determine the results. The applicability and the scope of this study are pertinent across various industries and fields like Information Technology, Education, Media, Telecommunication, Pharmaceutical Industry, Finance, and others. The result of the study is based on the qualitative and quantitative data analysis of the responses received. The conclusion suggests measures that can be practised, to reduce the risk of jobs being displaced by an AI.

IndexTerms - Artificial Intelligence, Employment, Society, Industries.

I. INTRODUCTION

The simulation of human intelligence in computers and other technology is known as artificial intelligence (AI). It comprises developing algorithms and technologies that enable machines to perform jobs that would otherwise require human intelligence. Understanding natural language, detecting patterns, making decisions, solving problems, and learning from experience are some of these activities. Artificial intelligence (AI) can automate repetitive and routine tasks, freeing up human workers to focus on more creative and complex aspects of their jobs. This can lead to increased efficiency and productivity in several areas, including manufacturing, data entry, and customer service. AI systems can quickly process and analyze enormous amounts of data, enabling better decision-making through insights and projections. This is especially useful in fields like banking, where AI systems can evaluate market trends and suggest investments. Chatbots and virtual assistants powered by AI are becoming more common in customer service roles. They can answer client questions, provide information, and resolve problems without requiring direct human contact.

The impact of artificial intelligence on jobs is a strongly discussed topic. Understanding this impact will help us to examine how artificial intelligence technologies are revolutionizing the workplace, both in terms of job creation and job displacement, as well as develop strategies for effectively managing these changes. One of the primary worries is that AI and automation may be utilized to replace occupations that need routine and repetitive labor. But, as AI technologies advance, there is an increased demand for specialists in AI development, machine learning, data science, and related fields. This study aims to investigate the impact that Artificial Intelligence has on society and jobs. This is done by using the primary data collected through an online survey in the Mumbai region, across various sectors like Information technology, Healthcare, Media, Telecommunication, and others. This will help in understanding whether the impact of Artificial Intelligence has been considered an opportunity or an obstacle. Further, to identify the primary elements associated with the work that can be readily replaced by artificial intelligence, and mitigate this impact of displacement.

1.1 Literature Review

(Schiff, 2020), a paper on the future of artificial intelligence published on the 9th of August 2020 by Daniel Schiff¹ focuses on the impact that artificial intelligence has on education technology [along with the social implication of technology with the use of responsible research and innovation]. The Author concludes that considerations of pedagogy, curricula, the role and possible automation of teachers, international development, ownership of educational choices, and behavioral manipulation are important factors to be evaluated while implying AIEd for our educational systems. The author found that AIEd gives special attention to intelligent tutoring systems and anthropomorphized artificial educational agents and further discusses the abilities to simulate teachers, robust student differentiation, and foster socio-emotional engagement.

Another paper, Coupe, 2019, focuses on automation, job characteristics, and job insecurity, while the author emphasises on various skills possessed by employees and their job insecurities relating to advancements in technology and introduction of new technologies like robots in the field of jobs and computers too. The author studies the impact of automation on employment by studying the relationship between individuals, job and company characteristics, and their feelings about their job security. Their result in conclusion suggests that interpersonal skills such as having great personal interaction is associated with lower concerns about job loss. Having a typical or repetitive job is found to be a major concern in being replaced by machines and computers. The result of the study also stated that those concerned about losing their jobs to automation are also concerned about their insecurity related to

jobs due to other reasons. In conclusion, if there are successful policies that solve automation-related concerns about one's job, although not being sure if it would make all of the concerned employees feel secure even after the implementation of the policies.

Stating the concerns about how AI might change what it's like to be a human run parallel to uncertainty about how AI will impact the future of work, the author of the paper, Howard, 2019, further declares that 152 AI-enabled applications are starting to appear in the workplace. When using AI, consideration must be given to introducing devices or systems to complete pre-employment safety and health evaluation. The study further states that safety and health experts need to gain a comprehensive understanding of AI and its implications for the future of work and must prepare for the potential effects of AI-enabled technologies on workers and their challenges.

The study, Koo et al., 2021, aims to examine hotel employees' perception of AI and its impact by identifying the critical role of job insecurity, Job engagement and turnover intention through a pragmatic approach. The author uses a mixed-method design by conducting both qualitative and quantitative study i.e. using an empirical survey followed by a case study method. The quantitative study's findings showed that felt work insecurity had a significant impact on perceived job engagement and that, through the intermediary variable of perceived job engagement, perceived job insecurity also indirectly affected turnover intention. Between management and non-managerial positions, there were no statistically significant differences. The qualitative research offered complete support for these findings. The ramifications of these studies were given to explain how AI affects hotel staff.

According to the research study, van Esch et al., 2019, prospects' perceptions regarding companies that employ AI in the hiring process have a big impact on how likely they are to finish the application process. The novelty of utilizing AI in the hiring process mediates and further enhances the likelihood of a job application. These favourable associations between attitudes toward the employment of AI in the hiring process and the propensity to apply for jobs have numerous significant practical ramifications. In conclusion, the paper states, that some HR practitioners' roles and needs may be disrupted by the adoption of AI recruitment technology in various HR tasks and hiring selections. Additionally, this might affect how HR professionals use and collaborate with AI recruitment technologies as well as how candidates react to organizations in the lack of human interaction. The threshold of job candidates' readiness to use AI and other technological breakthroughs in the recruitment process, as well as how this may affect their attitude toward the hiring firm and likelihood of applying for jobs, may be clarified by further research.

1.2 Objectives of the Study

- To understand the impact of Artificial intelligence on people and their occupations.
- To suggest measures that can be practiced by normal people to reduce the impact of Artificial Intelligence, and would be harder to replicate by an AI.

Hypothesis H0: The null hypothesis states that the displacement of Artificial Intelligence has caused people a downside.

Hypothesis H1: The alternate hypothesis states that the displacement of Artificial Intelligence has no downside impact on people.

1.3 Scope

The scope of this study includes people in various occupations like students, a business person, in service, or a homemaker. It helps in gaining the perspectives of various people in the society. The data analysis is done using factors such as age, gender, occupation, use of AI tools, the impact of AI, and other related fields from the survey.

II. RESEARCH METHODOLOGY

2.1 Data Collection

This study uses primary data acquired through a questionnaire in the Mumbai region. The acquired data were examined using the chi-square test to reach a study result.

2.2 Data Analysis and Interpretation

AGE GROUP	NO.OF PEOPLE	PERCENTAGE
Under 18	4	4.3%
18-25	68	73.1%
25-35	15	16.1%
35-45	0	0%
45-65	6	6.5%

Table 1. Age group of Respondents.

Out of 92 responses, above are the division according to the age groups of respondents, where the maximum respondents were aged between 18-25 years and the least were from 35-45 years of age.

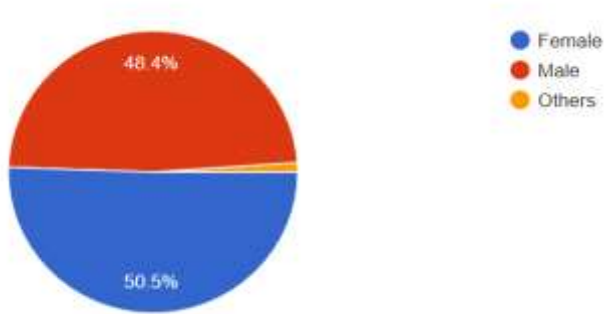


Figure 1. Gender classification of the respondents.
This study further classifies the respondents based on their genders.

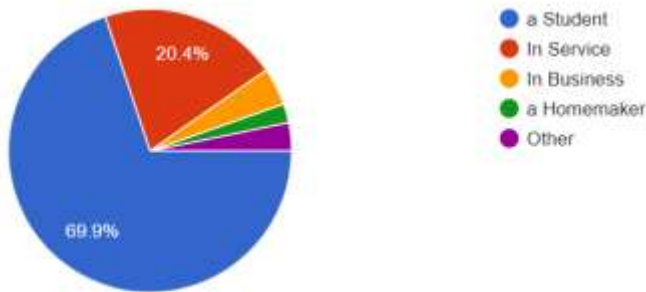


Figure 2. Sector-wise distribution of respondents.
Division of respondents based on their sector or industry.

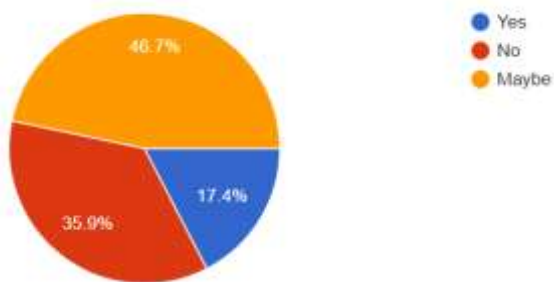


Figure 3. Job under threat due to AI.
Personal opinions of the people on whether their job becomes threatened under the implication the AI.

III. RESULTS AND DISCUSSION

3.1 Chi-square test

The chi-square test is used to find out the relation between Artificial Intelligence and jobs and the impact of it’s on the people across various sectors on the bases of stated hypothesis.

Formula:

Chi-square (χ^2) Test in r x c Contingency Table = $\sum_i \sum_j ((O_{ij} - E_{ij})^2 / E_{ij})$

Where: O =Observed values, E = Expected values

Table 2. Observed Values

	Responses for job threat due to AI			Total
	Maybe	No	Yes	
Female	23	16	7	46
Homemaker	1	1		2
No	1			1
Yes		1		1
Student	15	11	5	31
Yes	1			1
No	14	11	5	30
Business	1			1
Yes	1			1
Service	5	4	2	11

Yes	5	4	2	11
Other	1			1
Yes	1			1
Male	19	17	9	45
Student	17	9	7	33
Yes	17	9	7	33
Business	1	2		3
Yes	1	2		3
Service	1	5	1	7
No			1	1
Yes	1	5		6
Other		1	1	2
No		1		1
Yes			1	1
Other	1			1
Student	1			1
Yes	1			1
Total	43	33	16	92

Expected value = (Row Total * Column Total) / Grand Total

Table 3. Expected Values

	Maybe	No	Yes
Female	21.5	16.5	8
Homemaker	0.934782609	0.7173913	0.347826087
No	0.467391304	0.35869565	0.173913043
Yes	0.467391304	0.35869565	0.173913043
Student	14.48913043	11.1195652	5.391304348
Yes	0.467391304	0.35869565	0.173913043
No	14.02173913	10.7608696	5.217391304
Business	0.467391304	0.35869565	0.173913043
Yes	0.467391304	0.35869565	0.173913043
Service	5.141304348	3.94565217	1.913043478
Yes	5.141304348	3.94565217	1.913043478
Other	0.467391304	0.35869565	0.173913043
Yes	0.467391304	0.35869565	0.173913043
Male	21.0326087	16.1413043	7.826086957
Student	15.42391304	11.8369565	5.739130435
Yes	15.42391304	11.8369565	5.739130435
Business	1.402173913	1.07608696	0.52173913
Yes	1.402173913	1.07608696	0.52173913
Service	3.27173913	2.51086957	1.217391304
No	0.467391304	0.35869565	0.173913043
Yes	2.804347826	2.15217391	1.043478261
Other	0.934782609	0.7173913	0.347826087
No	0.467391304	0.35869565	0.173913043
Yes	0.467391304	0.35869565	0.173913043
Other	0.467391304	0.35869565	0.173913043
Student	0.467391304	0.35869565	0.173913043
Yes	0.467391304	0.35869565	0.173913043

Table 4. Calculating $((O_{ij} - E_{ij})^2 / E_{ij})$

	Maybe	No	Yes
Female	0.104651163	0.01515152	0.125
Homemaker	0.004550051	0.1113307	0.347826087
No	0.606926188	0.35869565	0.173913043
Yes	0.467391304	1.14657444	0.173913043
Student	0.018012655	0.00128565	0.028401122
Yes	0.606926188	0.35869565	0.173913043
No	3.37041	0.00531401	0.009057971
Business	0.606926188	0.35869565	0.173913043
Yes	0.606926188	0.35869565	0.173913043
Service	0.003883629	0.00074859	0.003952569
Yes	0.003883629	0.00074859	0.003952569

Other	0.606926188	0.35869565	0.173913043
Yes	0.606926189	0.35869565	0.173913043
Male	0.196432985	0.04568145	0.176086957
Student	0.161051874	0.67993173	0.277009223
Yes	0.161051874	0.67993173	0.277009223
Business	0.115352208	0.79325867	0.52173913
Yes	0.115352208	0.79325867	0.52173913
Service	1.577386971	2.46757952	0.038819876
No	0.467391304	0.35869565	3.923913043
Yes	1.160936973	3.76833553	1.043478261
Other	0.934782609	0.1113307	1.222826087
No	0.467391304	1.14657444	0.173913043
Yes	0.467391304	0.35869565	3.923913043
Other	0.606926188	0.35869565	0.173913043
Student	0.606926189	0.35869565	0.173913043
Yes	0.606926189	0.35869565	0.173913043

Calculating the summation of values of $((O_{ij} - E_{ij})^2 / E_{ij})$, to derive χ^2 .

$$\sum_i \sum_j ((O_{ij} - E_{ij})^2 / E_{ij}) = 45.3300$$

To test the hypothesis at 0.05 level of significance, deduce the p-value generated using the formula;

$$p\text{-value} = \text{CHISQ.DIST.RT}(\chi^2, \text{Degree of Freedom})$$

Where Degree of Freedom = (Total number of Rows - 1) * (Total number of Columns - 1)

$$\text{Degree of Freedom} = 52$$

Therefore,

$$p\text{-value} = \text{CHISQ.DIST.RT}(45.3300, 52)$$

$$p\text{-value} = 0.7317$$

IV. FINDINGS

Calculated p-value becomes greater than the acceptance level of significance at 0.05, hence rejecting the null hypothesis and accepting the alternate hypothesis at a 0.05 level of significance, it now becomes evident that there is no downside impact of Artificial Intelligence on jobs in the society.

V. CONCLUSION

Through analysis and study, we conclude that we reject H_0 , which asserts that Artificial Intelligence has caused a downside to people, and accept the alternate hypothesis, which states that Artificial Intelligence has had no downside impact on people. So, the study can conclude that the beneficial impact of Artificial Intelligence on people and their jobs have overpowered the known downsides of it. It has been found that the use of AI tools saves our time and resources, gives satisfied results and are easy to engage and hence, 95.7% of the total responses, use AI tools. People believe that the information technology, media, and education sectors will be the most affected by AI displacement. On the other hand, sectors such as education, information technology, media, and manufacturing are likely to see new job opportunities as a result of AI's growth and adoption.

VI. SUGGESTIONS

On a concluding note, artificial intelligence indeed has a lot of scope to perform humanly tasks. However, AI still has some major challenges to overcome in order to replicate what a human being can do in terms of employment.

1. Human brain is an intricate organ with the capacity to come up with thoughts, ideas and solutions like no other. The biggest example of this thinking ability is artificial intelligence itself. Without the creativity and out-of-the-box thinking of Alan Turing, artificial intelligence would not have been known to human kind.
2. There is no doubt that AI is smart but when it comes to dealing with people, AI is not "street smart" enough. People and their temperaments are varied. To connect with another human being at an emotional level to manage a group of such varied people is something that AI is not ready for, yet.
3. Artificial intelligence is a right now a bot that works on commands and prompts. Of course it matches the capabilities of an employee to a certain extent. What it lacks is the ability to lead and give commands. Leadership is not something that AI can learn easily. It is a human ability that actually helps AI to perform tasks.
4. The best time one has is one where you get to have a conversation with a person who can reciprocate to you at the same level in terms of emotions and interests. AI is excellent at finding the answers for your questions. It can do a really good research within seconds to find you your answers but you cannot expect AI to be that person with whom you can have an emotional conversation around the topic.

5. Job roles such as customer service has seen a great increase in the use of AI in the form of bots in the last decade. However, it comes with a limitation. An AI bot can help the customer navigate through FAQs but it cannot emotionally handle a disgruntled customer who is having an outburst over a grievance. Here the best of human empathy comes at play.

REFERENCES

- [1] Coupe, T. (2019, October 7). Automation, job characteristics and job insecurity. *International Journal of Manpower*, 40(7), 1288–1304. <https://doi.org/10.1108/ijm-12-2018-0418>
- [2] Howard, J. (2019, August 22). Artificial intelligence: Implications for the future of work. *American Journal of Industrial Medicine*, 62(11), 917–926. <https://doi.org/10.1002/ajim.23037>
- [3] Koo, B., Curtis, C., & Ryan, B. (2021, May). Examining the impact of artificial intelligence on hotel employees through job insecurity perspectives. *International Journal of Hospitality Management*, 95, 102763. <https://doi.org/10.1016/j.ijhm.2020.102763>
- [4] Schiff, D. (2020, August 9). Out of the laboratory and into the classroom: the future of artificial intelligence in education. *AI & SOCIETY*, 36(1), 331–348. <https://doi.org/10.1007/s00146-020-01033-8>
- [5] van Esch, P., Black, J. S., & Ferolie, J. (2019, January). Marketing AI recruitment: The next phase in job application and selection. *Computers in Human Behavior*, 90, 215–222. <https://doi.org/10.1016/j.chb.2018.09.009>