Investigating the Impact of Artificial Intelligence on Future Employment

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ABSTRACT

This study aims to evaluate the impact of AI on job displacement and to identify strategies for mitigating its negative effects. The main objectives are to gather primary data on trends related to AI adoption and automation across various industries; to identify occupations and tasks that are most vulnerable to automation by AI technologies; to understand the viewpoints of workers, employers, and policymakers regarding the potential consequences of AI-induced job displacement; and to explore strategies for adapting to the evolving work landscape in the age of AI.

Keywords: AI boom, automation, job displacement, upskilling, workplace

INTRODUCTION

Artificial intelligence (AI) is a specialty within computer science that concerns creating systems that can replicate human intelligence and problem-solving abilities. The concept of AI goes back thousands of years, when people invented mechanical machines called automatons that moved independently of human intervention.

In the period between 1900 and 1950, there emerged curiosity and discussion amongst the scientific community that centred around artificial humans, thus prompting scientists to ask the question, “Is it possible to create an artificial brain?”

In 1950, Alan Turing introduced the concept of assessing machine intelligence in his paper “Computing Machinery and Intelligence,” where he proposed the Turing Test. By 1952, Arthur Samuel developed a checkers program that could learn to play independently. In 1955, John McCarthy coined the term “artificial intelligence” during a workshop at Dartmouth College. The 1980s experienced an "AI boom," fueled by research breakthroughs, government funding, and advancements in Deep Learning and Expert Systems. In recent years, innovations in AI, including virtual assistants and Big Data, have become integral to our daily lives.

In the last decade, Artificial Intelligence has touched our lives in more ways than could have been imagined. Although AI has been around for a while now, it has been in the shadows and has only now stepped into the spotlight with the launch of Large Language Models, the most popular one being ChatGPT. As it gets immersed into society, by some it is seen as a boon and by others as a bane.

LITERATURE REVIEW

Now that AI is on the rise and is gradually becoming an irreplaceable part of our lives, will it continue to aid us, or will it evolve and surpass us? Although it is an interesting question to ask, it is far too early to ascertain what the future holds. However, we can still identify certain jobs and occupations that are particularly vulnerable to automation by AI.

Jobs that require high levels of creativity or emotional intelligence, as well as complex problem-solving, are relatively safe from AI threats. In contrast, positions that involve repetitive tasks or basic skill sets are

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increasingly likely to be automated.

We can already see the advent of this shift in various industries. In factories, for example, where workers once used to assemble products, now automated machines do the assembling with greater efficiency.

Several job categories are particularly vulnerable to automation, highlighting the risk that artificial intelligence presents to the workforce. In the realm of administrative and clerical work, positions such as data entry clerks, bookkeeping and accounting assistants, and payroll processors are under threat. Similarly, in customer service and support, roles like chat support representatives and retail cashiers face the potential for replacement by AI-driven systems.

The manufacturing and logistics sectors are also affected, with assembly line workers, inventory managers, and warehouse pickers and packers finding their tasks increasingly automated. In transportation, truck drivers are at risk due to the rise of autonomous vehicles, while delivery drivers may increasingly be supplanted by drones and self-driving technology.

Healthcare jobs are no exception, as radiologists could be impacted by AI image analysis, and pharmacy technicians may be replaced by automated dispensing systems. Additionally, roles in financial services, such as stock traders engaged in algorithmic trading and tax preparers, are becoming more susceptible to automation as technology evolves.

These occupations are susceptible to the advent of AI for a few key reasons. Farooq Zafar, an engineer at Meta Platforms/Scale AI, said, “The primary reason is efficiency; AI systems can often complete tasks faster, more accurately, and at a lower cost than human workers.”

Since AI can work faster, longer, and at a more consistent pace compared to humans, it is naturally a more suitable choice for manufacturers as it increases their business output. Additionally, jobs that require the analysis and processing of large amounts of data can also be easily taken over by AI. This is due to AI’s ability to analyse and process data at greater speeds than humans.

However, this does not mean that these jobs will be gone tomorrow or in a week. It will take time, but gradually these jobs will be replaced.

To prevent such a predicament, upskilling is crucial. Upskilling is the process of providing training and development opportunities to enhance a person's abilities and minimize skill gaps. It focuses on improving the existing skill sets of employees, professionals, and business owners so they can progress in their roles and find new opportunities.

Upskilling is vital for the survival of individuals and companies in today’s economy. Technology is continually evolving, resulting in updates and new tools that enhance efficiency and improve task performance. To keep up with changes in job roles and requirements, individuals must regularly update their technical and other skills. It is often more efficient for companies to train their existing employees rather than hire new talent whenever job requirements change. This approach not only brings greater stability to the company but also to its workforce.

In today’s tight job market, organizations must often find new talent for required roles in-house. Upskilling enables this transition smoothly. Companies that choose to upskill rather than fill skill gaps with outside talent save money and time by reducing the need for hiring, onboarding, and training processes.

Additionally, companies benefit from optimizing collaboration between humans and artificial intelligence. To effectively integrate artificial intelligence, organizations should consider several key principles. First, they should reimagine business processes to leverage AI capabilities. Embracing experimentation and involving employees can lead to innovative solutions. Additionally, it's important to actively direct the AI strategy in line with business goals and to practice responsible data collection. Finally, redesigning work to incorporate AI while cultivating relevant employee skills is essential for success.

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A Harvard survey of 1,075 companies in 12 industries found that the more of these principles companies adopted, the better their AI initiatives performed in terms of speed, cost savings, revenues, or other operational measures. The study further found that firms achieve the most significant performance improvements when humans and machines work together. Through such collaborative intelligence, humans and AI actively enhance each other's complementary strengths: the leadership, teamwork, creativity, and social skills of the former, and the speed, scalability, and quantitative capabilities of the latter.

Through my survey, I have acquired a more accurate representation of the people who believe it is a boon versus those who believe it is a bane. More than 50% of respondents are aware of developments in the field of artificial intelligence. Interestingly, not all of these individuals regularly use AI tools for their daily tasks.

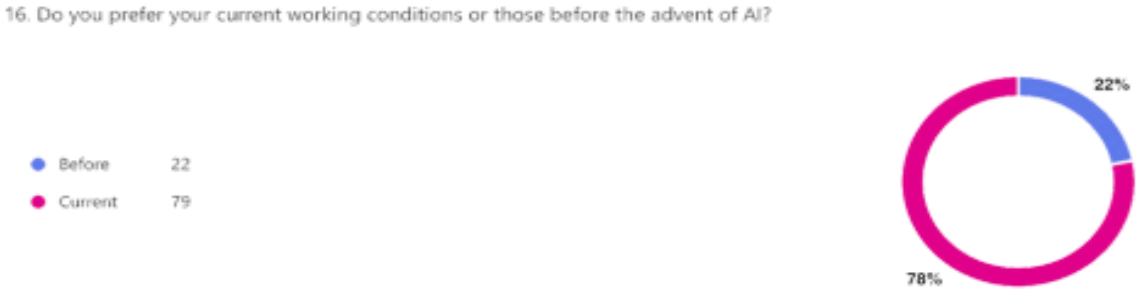
METHODOLOGY

To collect my data, I utilized convenience sampling, which is a non-probability sampling method. In this approach, individuals are selected for inclusion in the sample based on their accessibility to the researcher. This can be a result of geographical proximity, availability at a specific time, or their willingness to participate in the research. My sample size consists of 100 people, primarily drawn from my social circles, including family and friends. I further employed a mixed-methods approach, combining quantitative surveys with qualitative analysis, and data was collected through a structured questionnaire. This research aims to answer questions such as, "Will AI impact future employment?" and "If so, will that impact be positive or negative?"

Data Analysis

1. Preference for pre-AI or post-AI working conditions?

From the survey results, we can see that almost 80% of the people prefer the current working conditions where AI has a role compared to the old working conditions in the absence of AI. This is obvious as AI helps increase efficiency by researching and collating information at greater speeds, as agreed by almost 70% of the respondents.



2. Can the adoption of AI lead to higher efficiency?

With AI taking the spotlight and becoming a household topic, overall, there is general acceptance that it is for the better and will bring only positive changes. This is reflected in the survey, where 69% of respondents believe AI will lead to increased efficiency. Meanwhile, 28% are uncertain, and only 4% think it will not enhance efficiency.

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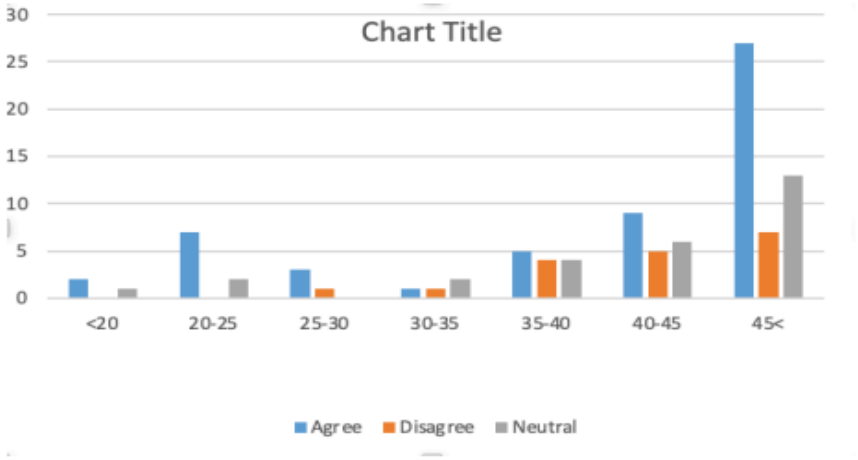
3. Do you believe AI has impacted your current role and its requirements?

Nonetheless, a vocal segment of the population is raising concerns about the advancement of AI and the impact it will have on their skill sets, current roles and responsibilities, whether in a job or profession, or how the future will unfold. The graph* below represents the number of people who agree, disagree, or are neutral to the question



**x-axis = Age in years*

y-axis = Number of respondents

The concerns regarding the impact of AI on their jobs or professions emerge from not only graduates, but also post-graduates and other highly educated individuals who agree that AI is likely to replace some skill set or the other of theirs in the future.

Also, this concern is reflected by professionals across various industries such as banking and finance, media and marketing, healthcare, education, defence, manufacturing, etc.

4. Is your job susceptible to AI?

Out of the 100 respondents to my survey, 33 people believe that their jobs could be displaced by AI, while 41 believe their jobs will not be impacted by the rise of AI. Additionally, 27 people expressed uncertainty about the potential impact of AI on their jobs.

Among the 41 respondents who felt their jobs would not be affected by AI, 28 were over the age of 40. From this data, we can infer that individuals with more experience in their respective fields are more likely to hold jobs that require emotional and creative thinking, as well as complex problem-solving skills—qualities that are less susceptible to AI displacement.

Additionally, people who fall in the age bracket of 20-30 years of age have agreed that AI can replace their current skill sets, from which we can infer that their current roles require basic skill sets and could tend to be repetitive, i.e., skill sets AI can replace.

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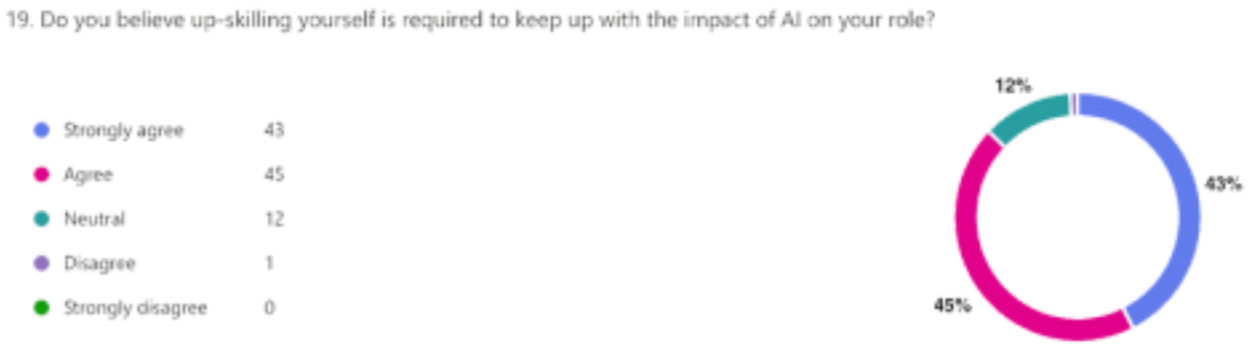
5. Attitude towards upskilling to keep up with the impact of AI

Job roles and their requirements can change quickly. Employees increasingly expect more opportunities for growth within their organizations. By closing skill gaps, organizations can remain more competitive and reduce the need to recruit externally. Upskilling also increases employee satisfaction, boosting motivation, performance, and morale while promoting employee retention.

Upskilling is relevant and will remain essential for anyone engaged in employment, professions, or running a business. It is necessary for people at every stage of their careers, as changes and new ideas will continuously emerge, making it important to keep pace with these developments.

This is also validated by the respondents, and as shown below, almost 90% of the sample size believes that upskilling is required to keep up with the impact of AI on their role:



6. Attitude towards receiving training to adapt to AI

Continuing professional education has been an integral part of many traditional professions such as accounting, legal, medicine, engineering, etc. Other professionals have also always sought to acquire additional education and upskill themselves to keep up with the changes in their fields.

However, rapid advancement of AI has brought the need for upskilling to the centre stage, and now every person must adapt and upskill. This is also supported by the survey results, as the respondents who believed that upskilling was necessary comprise people from varied professions and educational backgrounds.

As shown by the survey results below, on average, 75% of the respondents would be interested in upgrading their current knowledge to keep up with AI-driven advancements.

7. Types of skills critical to remain competitive in an AI-driven industry

Although upskilling is almost mandatory in today's day and world, it is essential to understand some core skills that transcend the impact of AI. This is validated by the qualitative responses shared by the respondents, as

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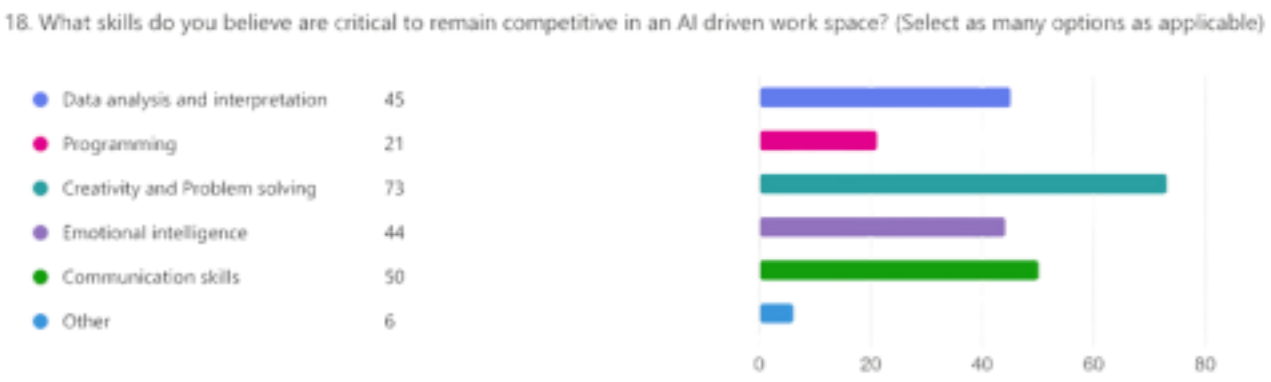
shown in the graph below.



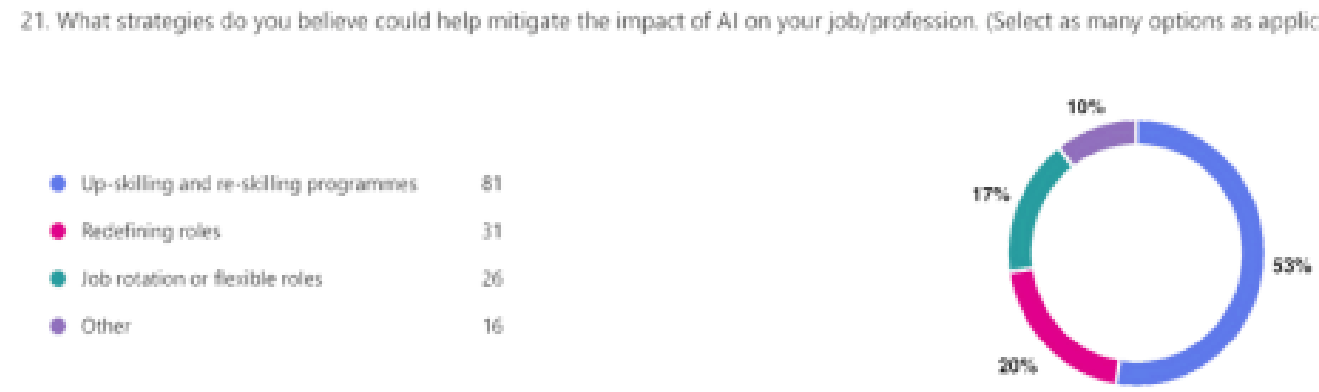
8. Belief in Coexistence with AI

As individuals and organisations adapt to a new world order influenced by AI, they have to come up with strategies to enable people to coexist with AI.

Interestingly, 75% of the respondents in my survey expressed confidence that their careers can very well coexist and keep up with the development of AI. This is encouraging since the will to change, adapt, and upgrade is essential for one to succeed in this dynamic environment.

9. Strategies to keep up with AI

As discussed in previous sections, upskilling is one of the most essential requirements to keep up with the advancement of AI in the workplace. Apart from upskilling, organisations are also adopting other strategies to help their workforce stay ahead of the learning curve. These include retraining employees for new roles that complement their existing skills. Redefining roles allows for better alignment with strengths and needs. Job rotation offers opportunities to experience various positions and broaden competencies, while flexible working options empower individuals to apply their skills effectively.



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10. Attitude towards the Government of India's policies concerning AI

The Government of India has implemented several initiatives to promote upskilling and reskilling in the field of Artificial Intelligence (AI). These initiatives include:

1. The Ministry of Electronics and Information Technology (MeitY) has launched a program called FutureSkills PRIME, in collaboration with NASSCOM. This program aims to reskill and upskill IT professionals in ten emerging areas, including Artificial Intelligence.

2. In June 2018, the government published the National Strategy for Artificial Intelligence, which seeks to develop an ecosystem for research and adoption of AI, encapsulated in the initiative known as #AIFORALL.

3. The government has also launched the National AI Portal, which serves as a central repository for AI-based initiatives in the country. As of 2022, the portal contained 1,024 national and international articles, 655 news entries, 200 videos, 90 research reports, 279 startups, and 120 government initiatives.

In addition, various steps have been taken to promote capacity building in Artificial Intelligence. The Government of India has joined global leaders, including the USA, UK, EU, Australia, Canada, France, Germany, Italy, Japan, Mexico, New Zealand, the Republic of Korea, and Singapore, as a founding member of the Global Partnership on Artificial Intelligence (GPAI). This international initiative aims to guide the responsible development and use of AI, focusing on human rights, inclusion, diversity, innovation, and economic growth.

In 2020, the government organized the Responsible AI for Social Empowerment (RAISE) summit, which was the first global meeting of its kind focused on AI. This event aimed to drive India's vision and roadmap for social transformation, inclusion, and empowerment through responsible AI. It attracted over 79,000 stakeholders from academia, research, industry, and government, representing 147 participating countries. Additionally, 320 distinguished speakers from 21 countries contributed to the discussions.

Despite these efforts by the government to assist individuals and organizations in adapting to AI, awareness among users remains low. A survey revealed that approximately 30% of respondents believed the government's policies regarding AI are ineffective, while 25% were uncertain about their effectiveness.

CONCLUSION

"Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks."

– Stephen Hawking, Theoretical Physicist, Cosmologist, and Author.

The quote above by Stephen Hawking is from a time long before AI became a topic for the common man rather than the scientific or tech community. This perfectly summarises how AI can have an impact on how we do things, how businesses are carried out, and how employment and professions will evolve.

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AI can be used to assist us with processing large amounts of data, finding patterns, etc., which can then allow us to focus more on creative thinking, complex problem solving, and other tasks that are hard for AI. By using AI to make up for our shortcomings, we can become more efficient overall as individuals, communities, and as nations.

However, if we are not cautious of the steps we take and depend too much on AI, we can lose the social, emotional, technical, creative, and other skills built over a long period of time, rendering them replaceable, which will lead to job displacement and loss.

Recognizing the importance of upskilling to keep pace with AI is just the first step. The next step is to implement strategies that support continual growth, enabling individuals to stay ahead in their fields.

The key steps to upskilling are:

Identify Skill Gaps: Assess the current skill gaps to align upskilling efforts with the needs of the respective occupation.

Evaluate Impact: Focus on long-term value while staying current with industry trends and technology.

Design Training Programs: Choosing the right training programs and best format (e.g., mentoring, online courses), and determining whether to use internal or external resources. *Tailor Plans:* Customise upskilling strategies for individual employees based on their roles and career goals.

Encourage Participation: Offer financial incentives like educational rebates or grants to motivate employees.

Various strategies, including job-specific training, personal development plans, and leveraging third-party services, can be effective. Methods like virtual courses, mentoring, and microlearning sessions can also enhance the upskilling experience.

Most importantly, the government can take several critical steps to enhance workforce readiness in the age of artificial intelligence. Collaborating with tech companies and educational institutions to provide affordable or free AI training is essential. Integrating AI and digital literacy into school and university curricula would also prepare students for the modern job market.

Establishing dedicated AI research and training institutes can offer specialized resources, while promoting STEM fields among underrepresented groups will cultivate a more diverse workforce. Additionally, encouraging industry-wide reskilling programs will help workers transition into AI-related roles.

Finally, facilitating collaboration between government, businesses, and academia will strengthen AI research and workforce training initiatives, creating a more skilled and adaptable workforce for the future.

The advent of AI has just begun, and although we have seen some job displacement around us, if we move ahead with caution, reason, and a positive approach to implement specific policies, we can create a future for ourselves where we can coexist with AI and use it to enrich our lives.

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