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Artificial Intelligence and Job Displacement

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ABSTRACT: Artificial intelligence (AI) has advanced significantly across a number of sectors, including transportation, healthcare, finance, and even entertainment. Nowadays, machines are able to carry out duties that were previously only performed by people. These developments have sparked worries about job loss, with some asserting that automation powered by AI may make many human employees redundant. This essay investigates the connection between job displacement and artificial intelligence. This essay examines how AI is affecting the labour market, with a focus on job displacement. We examine the literature that has already been written on the subject and talk about the possibility of job displacement in different industries. We also look at the possible effects of job loss on employees and society, as well aspossible governmental solutions.

KEYWORDS: AI, job, job displacement.

I. INTRODUCTION

In recent years, there has been a sharp increase in the integration of machine learning (ML) and artificial intelligence (AI) across numerous industries. The potential effects of new technologies on employment possibilities and job displacement are thus causing significant worry. Up to 800 million jobs might be eliminated by automation by 2030, with 375 million of those requiring extensive retraining, according to research by the McKinsey Global Institute (Manyika et al., 2017). The World Economic Forum also forecasts that by 2022, AI and ML would create 133 million new jobs while eliminating 75 million existing ones (WEF, 2020). Machine learning (ML) and artificial intelligence (AI) are projected to significantly affect the workforce and are already transforming how organizations run. As AI and machine learning (ML) technology progress, there are many jobs that are currently carried out by human workers that are anticipated to be automated. Concerns about job displacement and potential harm to employment possibilities have arisen as a result of this. Examining recent studies on the effects of AI and ML on job displacement and employment opportunities is the goal of this literature review.

The evaluation will examine how AI and ML might affect various sectors of the economy and professions, as well as if these technologies might lead to the creation of new job opportunities. The assessment will also look at how AI and ML affect salaries, income inequality, and economic expansion. Insights from this assessment of the literature on the effects of AI and ML on the workforce can be used to guide future research and inform policy decisions.

II. BACKGROUND

Artificial intelligence (AI) and machine learning (ML) have been quickly integrated across a variety of businesses in recent years. These technologies are anticipated to automate several tasks that are currently carried out by human workers as they develop. Concerns have arisen because of the possible harm to employment possibilities and job displacement. Questions concerning the future of employment and how it may affect the labour market have been raised by the growing usage of AI and ML in several industries, including manufacturing, retail, finance, and transportation (Frey and Osborne,
2017).

Technology's effect on employment is not a recent development. Technology developments have historically caused the displacement of some occupations while generating new employment prospects in other fields. Yet, given the speed at which technology is developing, the growing power of artificial intelligence (AI), and Some express worries that the effects on employment could be more severe than in the past (Autor, 2015).

Low-skilled, routine employment may be particularly vulnerable to automation, according to prior studies (Frey and Osborne, 2017). Yet, as AI and ML technology develops, it is anticipated that tasks that were previously considered to be the purview of highly qualified individuals will also be automated. Concerns regarding the possibility of widespread job displacement across a variety of industries and vocations have arisen as a result of this (Acemoglu and Restrepo, 2018).

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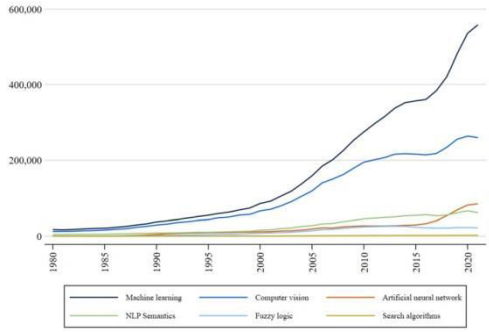
It's crucial to remember that AI and ML can also have advantageous effects on employment, such as generating new employment possibilities and boosting productivity (McKinsey Global Institute, 2018). To fully comprehend the variety of implications for the workforce, it is crucial to investigate the possible impact of AI and ML on employment possibilities and job displacement.



https://oecd.ai/en/trends-and-data

Figure 1. AI research publications by topic, 1980-2021

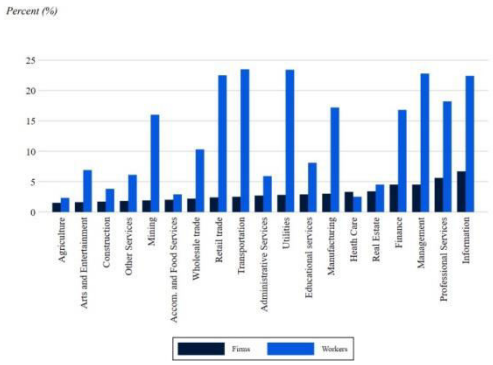
The Current State of AI Adoption in India

India has a rapidly expanding economy and a sizable number of tech-savvy citizens. The nation has a thriving startup scene that has been driving AI adoption. A lot of huge companies are likewise investing in AI technology to modernize their processes, boost productivity, and develop fresh goods and services.

The Indian government has created a national AI plan to encourage research and development in the field after realising the significance of AI. In order to promote AI use across a range of industries, including agriculture, healthcare, and education, the government has also launched a number of projects.Chatbots for customer care, predictive maintenance for manufacturing, and fraud detection for financial services are now some of the most well-known AI applications in India. AI is also being widely adopted in the healthcare industry, where solutions for personalised treatment and diagnostic tools are being created.

A dearth of qualified AI expertise and worries about data security and privacy are two obstacles to AI adoption in India. The use of AI in India is anticipated to increase further in the upcoming years thanks to government initiatives, a thriving tech ecosystem, and a high level of market demand.

Independent of a firm's size, significant variances in the adoption of AI also exist (see figure 3). First, businesses are most likely to employ AI technology in sectors including information, professional services, management, and finance. Nonetheless, employees in sectors like retail, transportation, and utilities are also more likely than average to be exposed to AI. Second, young companies are more likely to employ AI, regardless of their size. For instance, of all large companies in the 95th to 99th percentiles of the firm size distribution, over 7% of companies in the youngest age quartile have implemented AI, compared to just about 3–4% of companies in the oldest age quartile. Concentrated use of AI among larger and younger companies most likely reflects the reality that there are significant financial and organizational barriers to adopting this technology. Also, the use of AI is associated with businesses that have venture capital investment and other traits that McElheran et al. (2022) classify as "startup conditions consistent with high-growth entrepreneurship."



https://www.census.gov/programs-surveys/abs/data/tables.html

Figure 2. Percentage of firms and workers with some AI Adoption

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Artificial intelligence – current trends in India

Artificial intelligence (AI) has firmly established itself in our daily lives. Behind the scenes, AI is at work whether you are receiving emails, Netflix recommendations, or shopping recommendations on e-commerce websites. Winds of change have started to blow not just in the international environment but also in India.

This has been confirmed by the most recent report from International Data Corporation (IDC), India Artificial Intelligence Market, 2021, which projects that the country's AI market would increase from a market value of USD 3.1 billion in 2020 to USD 7.8 billion by 2025 at a compound annual growth rate (CAGR) of 20.2%. Additionally, by 2025, the AI services market in India is anticipated to develop at a CAGR of 35.8%, leading the worldwide AI market.

The Impact of AI on Work/Jobs

The loss of labour and income as a result of technical improvements is referred to as job displacement. Although job displacement's consequences on the economy are nothing new, the rate at which AI is displacing human labour has caused anxiety. AI-powered automation has the ability to replace human occupations, which might have an influence on various industries. According to a number of research, automation driven by AI will eliminate more jobs in the ensuing decades. According to a Pew Research Centre survey, the majority of employment specialists predict that AI would significantly reduce the number of jobs available by 2025.

The employment landscape is about to change as a result of artificial intelligence, with major job displacement already occurring in numerous industries. AI-programmed robots and technologies have made major advancements in automating repetitive and routine operations. These devices are typically more economical than human workers and can work for lengthy periods of time without rest or holidays. Data entry, phone answering, and customer support occupations are among the administrative positions that are being adversely affected by AI-powered automation at an alarming rate.

In a similar vein, the automation of production processes by AI-programmed machines has resulted in a large loss of jobs in the manufacturing sector. AI-powered machines can now carry out a number of jobs, including painting, welding, and transportation, among others, thanks to improvements in robotics.

The effective production of news, films, music, and other creative works made possible by AI-powered computers has resulted in employment displacement in the media and creative industries as well. Without much assistance from humans, these machines can create creative music or even videos. Since machines can now conduct construction and repair duties, AI-powered automation has also had an impact on jobs in maintenance.

Research Methodologies/ Recommendations:

To identify the important aspects connected to AI and job displacement, a thorough examination of academic and industry studies can be done. This would make it easier for researchers to comprehend the body of existing information and pinpoint knowledge gaps.

Case studies: To comprehend how AI is affecting particular sectors of the economy and job responsibilities, researchers can perform qualitative case studies. This strategy would involve examining the organisational and societal variables that contribute to job displacement as well as the experiences of individuals who have been impacted by AI.

Surveys/studies: To collect information from the affected industries and employment roles, researchers can conduct quantitative surveys. To find trends and correlations between AI and job displacement, the data can be analysed. Industry, job positions, age, gender, education level, job insecurity, as well as social and economic issues, might all be covered in the surveys.

Predictive analysis: To predict how AI will affect different industries and job categories in the future, researchers might use predictive models. According to this strategy, existing trends would be examined, and potential scenarios based on upcoming developments in technology, market trends, and economic considerations would be identified.

Ethnographic study: Ethnographic research can be used to examine how people and communities respond to and manage the loss of jobs due to AI. This strategy would entail monitoring and speaking with people in impacted communities to better understand their perceptions about AI and job loss as well as their feelings and views.

Positive Impact

1. An increase in production and efficiency is possible thanks to AI and machine learning, which can automate a variety of processes and make businesses more effective and productive. This may open up new career paths in fields like the creation and development of artificial intelligence (AI) and in positions supporting and overseeing automation systems.
2. Customer experiences can be improved by using machine learning to provide clients customised services based on their interests and preferences. Customer service specialists who can give consumers individualised assistance may find jobs as a result of this.
3. New industries: Artificial intelligence (AI) and machine learning have the power to launch brand-new sectors of the economy, such robotics and automated transportation.
   New employment opportunities in engineering, design, and manufacturing may result from these businesses.

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Negative Impact:

1. Job replacement: AI and automation may replace some jobs, especially those that need routine and repetitive tasks. For instance, self-driving automobiles may eliminate the need for drivers. Job losses may result from this in sectors like manufacturing, transportation, and logistics.
2. Skills Gaps: The workforce may experience a skills gap as a result of the advent of new technologies, particularly for people who lack the technical expertise required to work with AI and machine learning systems. This could make it difficult to get a job or advance in it.
3. Economic disparities: The use of AI and machine learning may worsen already-existing economic disparities, with people in low-skill or low-paying jobs being disproportionately impacted by automation.
   Government involvement might be necessary to prevent social unrest and political ramifications that could result from this.

The implications of artificial intelligence and machine learning on work opportunities and job displacement are significantly influenced by education and skill level. The workforce may be impacted by these factors in the following ways:

- High-skilled positions are less susceptible to displacement: Jobs that require specialized knowledge and experience, such as doctors, lawyers, and scientists, are less likely to be affected by AI and machine learning. These positions demand a high degree of human judgement, creativity, and critical thinking, which machines are still unable to perform.
- Low-skilled positions are more susceptible to displacement: Cashiers, drivers, and employees on assembly lines are examples of occupations that are more vulnerable to automation than others. These jobs can be completed faster, more correctly, and with less supervision by AI and machine learning algorithms, which will result in employent displacement.
- The disadvantages of job relocation can be lessened by education and training: Higher educated and more specialised workers are better able to adjust to workplace technology advances. They are better able to pick up new technology, apply their knowledge to different fields, and create new jobs and responsibilities for themselves.
- Upskilling and retraining are essential: Workers will need to constantly learn new skills to stay relevant in the workforce as AI and machine learning grow. Programmes for education and training that offer possibilities for upskilling and reskilling will be crucial in assisting workers in adapting to the changing employment market.

Overall, the impact of AI and machine learning on the workforce will depend heavily on education and skill level. Although certain industries may lose jobs as a result of new technologies, people with advanced degrees and specialised training will be better able to adapt and succeed in the changing employment environment.

III. CONCLUSION

By taking over many human tasks, artificial intelligence has the potential to have a huge impact on the workforce. Concerns regarding the effects of job relocation are being raised by the frightening speed at which this is occurring. But in order to minimise the drawbacks of AI-powered automation and maximise its potential advantages, authorities must make the necessary preparations. Since AI-powered automation is here to stay, it is essential to create an ecosystem that enables human workers to coexist and collaborate with these robots.To assist workers who have lost their jobs, the government can introduce policies like retraining programmes, tax breaks, and other measures.

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