



Negative impact on Job Creation due to Emergent Technologies

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ABSTRACT

The rapid advancement of emerging technologies, such as automation, artificial intelligence, and robotics, is significantly impacting job creation and employment. Determining how emerging technology may impact employment prospects in the future is therefore crucial. This specific study looked at new technologies are affecting the workforce. Numerous social benefits that are provided by occupations are also impacted if technology innovation forces society to eliminate jobs. Therefore, in order for the emerging new economy to provide social benefits, it is necessary to validate the social compact. From the standpoint of secondary data, this study attempts to investigate the difficulties brought about by these technical advancements.

Introduction

Emerging technologies like automation, robotics, and artificial intelligence are developing quickly and changing the global labour sector in ways never seen before. While these technological innovations have the potential to enhance productivity, efficiency, and economic growth, they also pose significant challenges for job creation and workforce development. As automation and intelligent systems become increasingly capable of performing a wide range of tasks and occupations, there is a growing concern about the potential displacement of human workers. Widespread employment losses may result from this displacement, especially in fields and industries where regular, predictable, labor-intensive work is crucial. In addition to endangering the lives of laborers, the replacement of human labor by robots and algorithms has profound effects on social stability, wealth disparity, and the general well-being of societies.

This research paper aims to explore the multifaceted challenges associated with job creation in the face of emergent technologies. It will examine the specific technological advancements that are driving these disruptions, the sectors and occupations most vulnerable to job displacement, and the potential economic and societal impacts. Additionally, the paper will discuss potential strategies and policy interventions that can help mitigate the adverse effects and foster sustainable job growth in the evolving technological landscape.

This paper aims to provide insight to policymakers, business leaders, and other stakeholders as they navigate the opportunities and challenges brought about by the digital transformation of the economy by critically analysing the intricate relationship between technological advancement and employment.

Objectives of the study

1. Identify key emerging technologies and analyses their potential impact on job creation and displacement.
2. Assess the skill mismatch between emerging technology demands and existing workforce capabilities, and determine reskilling/upskilling needs.
3. Explore the socioeconomic implications of technological job displacement, including effects on inequality, participation, and stability

Research methodology

This study primarily relied on secondary data sources to investigate the challenges of job creation due to emergent technologies. The use of secondary data allows for a comprehensive review of existing research, reports, magazines, internet and industry publications on this topic, providing a robust foundation for the analysis.

Review of literature

According to World Economic Forum (2020), machines may replace 85 million jobs by 2025, but there may also be 97 million new employment created, requiring large investments in education and training.

Bessen (2019) emphasizes the importance of reskilling and up skilling programs to help workers transition to new roles that leverage advanced technologies.

Acemoglu and Restrepo (2018) provide empirical evidence on the adverse effects of industrial robots on employment and wages in the U.S., indicating that regions with higher robot adoption experienced greater job displacement and wage decline.

Frey and Osborne (2017) highlight the risk of widening income disparities as high-skilled workers benefit from technological complementarities, whereas low-skilled workers face greater job insecurity.

Brynjolfsson and McAfee (2014) Claim that the workforce's inability to adjust to the quick speed of technological innovation is causing a large loss of jobs in industries like manufacturing and retail.

Technology has been all the large lately and is getting easier and easier to use for everyone. Technologies to produce superior results and operate more effectively than human labor.

Theoretical framework

Overview of Emerging Technologies

The term “emerging technologies “ refers to novel or sophisticated technologies that possess the capacity to profoundly influence various sectors and communities.

Technological developments like automation, robots, and artificial intelligence (AI) have had a big impact on the labour sector. Even if these emerging technologies have the potential to boost efficiency and production, they also present serious obstacles to the development of new jobs.

The creation of computers systems that are capable of doing tasks like speech recognition, visual perception, and decision-making tasks that normally require human intelligence is known as artificial intelligence (AI). Businesses like Google, IBM and Amazon are utilizing AI to better supply chain management, create new goods and services, and improve consumer experience. Automation is the process of using technology to automate normal and repetitive operations, like data entry and assembly line labor. For instance, UPS deploys autonomous drones for delivery, while Tesla uses automation to boost productivity and cut costs in its production process. The creation of machines that are capable of carrying out human-typical jobs, such manufacturing and transportation, is referred to as robotics. Leading companies include Intuitive Surgical and Boston Dynamics.

The manner that work is done across industries is changing as a result of these emerging technologies. Automation and artificial intelligence is changing as a result of these emerging technologies. Automation and artificial intelligence, for instance, are being utilized to enhance customer support and optimize supply chain processes. Health care and manufacturing both use robotics to improve productivity and accuracy. Block chain is being utilized in logistics and finance to increase security and transparency. VR is being used to provide immersive experiences in both entertainment and education. These technologies are predicted to have a significant impact on the labor market as they develop and are embraced by more people.

Artificial intelligence (AI) and machine learning (ML)

Control and systems optimization have been fuelled by advances in machine learning and artificial intelligence. The current era is characterized by a large volume of data, which can be instantly analysed by AI and ML to enhance the precision and effectiveness of data driven decision making procedures. For instance, AI algorithms in control engineering can forecast system behaviour and automatically modify controls to maximize performance for higher dependability and efficiency

As more data is processed, ML models learning capabilities enable them to make better predictions and judgements over time, enabling systems to dynamically adjust to shifting operational conditions and surroundings, This quick adaptation enhances the functionality of current systems and makes it possible to create novel, previously unfeasible solutions like smart grids and driverless cars.

Negative effects of technology on employment growth

Technology continues to have an impact on employment, as it always has. There is a continuous process whereby certain jobs either entirely vanish or are replaced by machines, the detrimental consequences of technology on the labor market are listed below.

Technology contributes to job displacement

Without a question, the primary effect of technology on employment is the replacement of humans due to the automation of repetitive and manual tasks. Self-service checkout counters, which are still common in retail establishments worldwide, are one example. While AI powered robots performing repetitive jobs in factories. Recently, experts have issued warnings that the most recent developments in AI could result in the global replacement of some 300 million full-time employment by machines. Roughly 60% of employment in the U.S and Europe might be automated entirely or in part, with artificial intelligence handling 25% of these tasks.

Mismatch in Skills

Technology is developing so quickly that not everyone can keep up with it. As a result there is a discrepancy between the abilities that individuals have and what is needed in the modern workplace. An increasing percentage of individuals are unable to meet the requirements of specific occupations on the job market because they are unable to adapt to the changes brought about by technological advancement. As a result, the skills gap widens as more jobs become available on the market but there aren't enough people with the right abilities to fill them.

Technology contributes to employee burnout and stress

Many workers struggle with the issue of being inextricably linked to their professions due to the ease with which communication has improved with the advent of various online tools. This blurring of the boundaries between work and personal life can lead to stress and burnout. Moreover, a study that was published in the Journal of Occupational Health Psychology indicated that high workloads and job uncertainty are two more reasons why people in high pressure industries like technology and finance suffer a lot of stress.

Technological advances create job insecurity

Full-time jobs are usually under protection by employment law in virtually every country. However, things are different for freelancers. When an employer needs to lay off some staff so that the company can stay afloat during difficult times, the first to leave are more likely to be freelancers.

An American Psychological Association research from 2022 revealed that workers in the United States and certain Asian countries experienced employment instability brought on by robots. Even more intriguing is the fact that job uncertainty was experienced by workers in industries where robots were not used. Despite being fairly subjective, employees have stated anxieties.

Emerging Technologies' detrimental effects on the labor market

It is impossible to overlook how developing technologies are negatively affecting the labor economy. Human labor has been supplanted by automation and robotics in numerous industries and tasks in recent years, which has resulted in job displacement and unemployment. For instance, Amazon has reduced the number of human workers required by implementing automated warehouses that use robots to carry merchandise and parcels. The employment market for truck drivers and taxi drivers is also anticipated to be significantly impacted by the widespread use of self-driving automobiles and trucks. Robots are also being employed in industry to take the place of human labor on assembly line. As a result, employment in manufacturing has decreased and has instead been replaced by high-tech and specialized jobs.

Furthermore, the development of digital communication technologies has made outsourcing and offshore much simpler and more common place, even if they are not inherently new technology. There are now fewer employment in the home country as a result of numerous businesses choosing to relocate their operations to nations with cheaper labor costs. For instance, a major factor in the loss of jobs in the US and other Western nations is the outsourcing of call centre work to nations like India.

Rapid changes in the labor market are also affecting the skills required for success, and many workers may find it difficult to adjust. The need for workers with technological and digital abilities is growing as more industries become automated, which puts people without these skills at risk of losing their jobs. Because many of these workers are categorized as independent contractors and do not receive the same benefits and protections as traditional employees, the expansion of the gig economy and platform-based labor also poses issues for workers.

Machine learning algorithms have the potential to further disenfranchise these workers through algorithmic bias and discrimination against specific worker groups. Additionally, the adoption of new technologies may rise the risk of cyber-attacks necessitating the hiring of more cyber security specialists while also possibly costing jobs to workers in other industries. Finally, there's a chance that growing automation and robotics will result in a decline in job satisfaction and social isolation.

Based on estimations, 375 million jobs could be at risk by 2030, meaning up to 14% of the global workforce would lose their jobs due to technology improvements

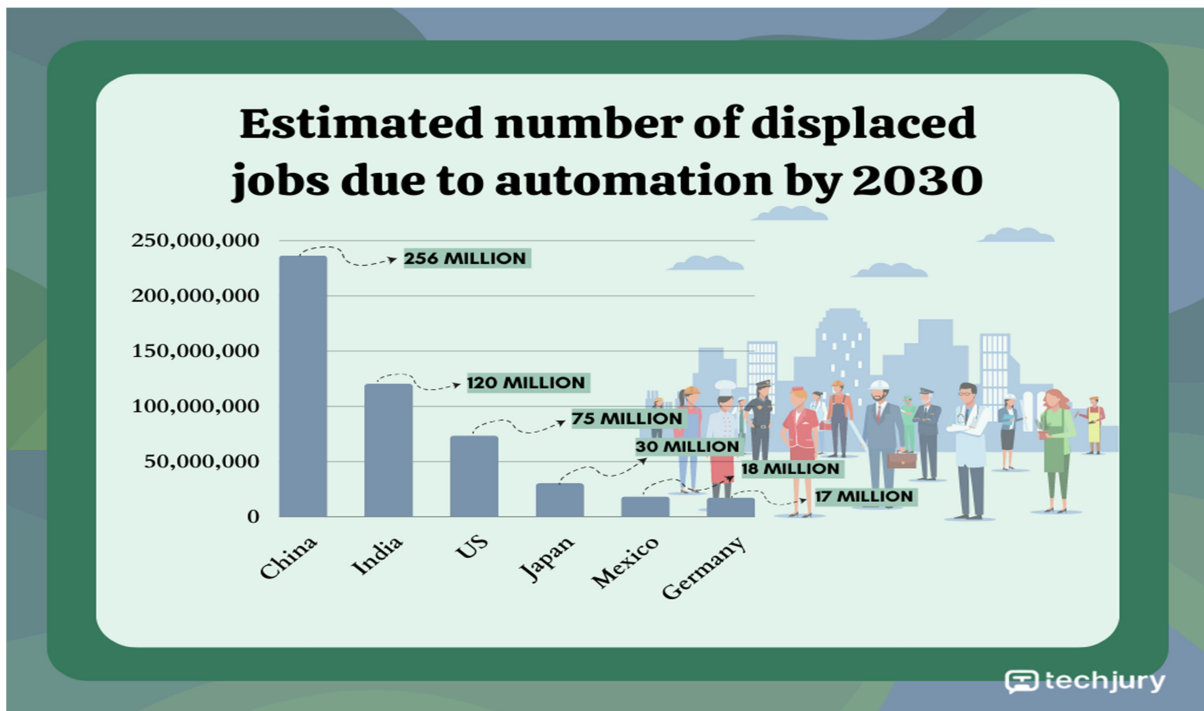
Sl. No	JOB	POTENTIAL FOR JOB AUTOMATION
1	WAITERS	73%
2	SHELF FILLERS	72%
3	BAR STAFF	71%
4	HIGHER EDUCATION TEACHERS	20%
5	MEDICAL PRACTITIONERS	18%

Assuming the lower bound of 75 million, the percentage of people who may be impacted by employment automation by 2030 may vary from 3 to 14%. Experts predict that these professions will be monotonous, repetitive tasks that machines can complete, requiring a small number of supervisors to oversee an entire factory. Automation is probably going to continue to spread throughout the transportation, retail, and healthcare sectors.

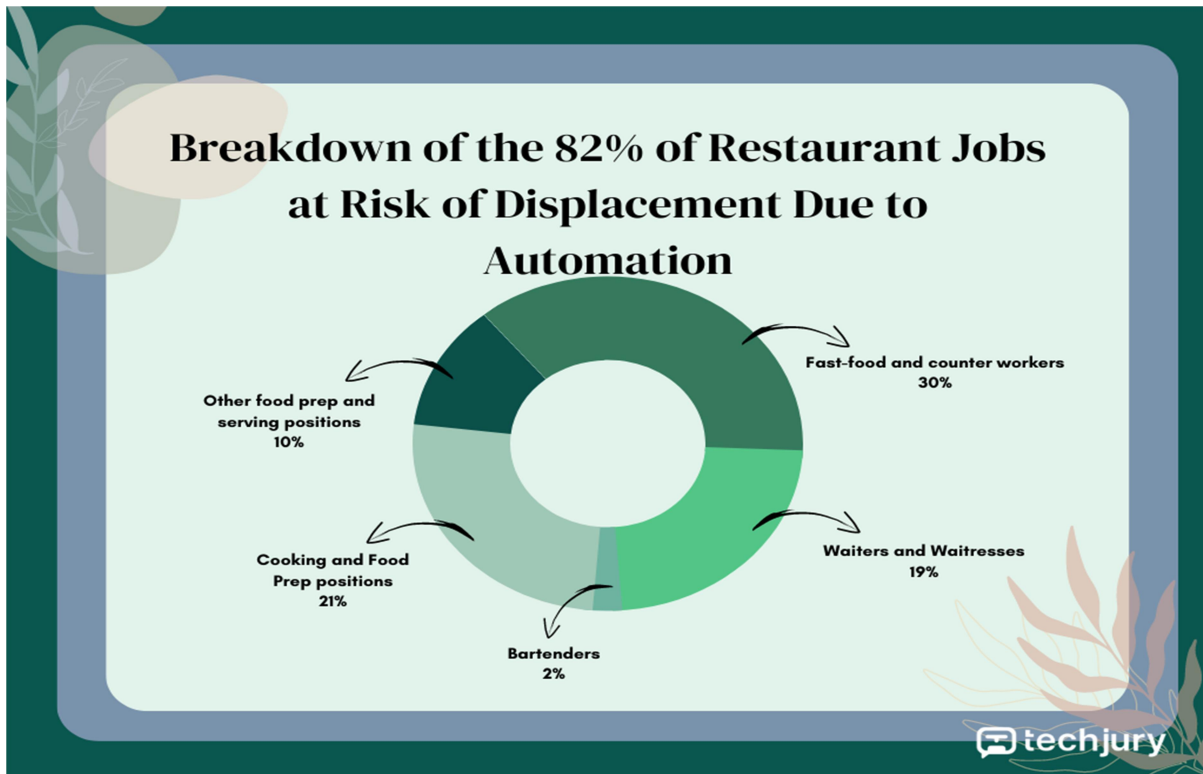
Statistics of replacing of job due to technological advancement

The secondary data indicates that there will be an 83 million-dollar employment loss in the future. This translates to a net loss of 14 million jobs, or 2% of the existing labour force. The development of technology has resulted in the loss of 1.7 million manufacturing jobs. Waiters are the ones most likely to lose their jobs to robots. In the near future, automation will also cost jobs held by bar workers and shelf fillers.

Impact of AI in the world



Many hotels are introducing self-check-in terminals, where the guests do the check-in procedure on their own which are actually taking away the jobs of receptionists.



With the introduction of technology of jobs, many unskilled workers are losing their jobs. Not only the jobs of unskilled or semi-skilled are at stake but also the jobs of highly skilled employees are at risk with the introduction of so-called "Artificial Intelligence".

Suggestions

Possible Remedies to Reduce Adverse Effects

While new technologies are altering the labor market and causing worker displacement in some regions, there might be solutions to mitigate these unfavourable consequences. Businesses and governments are starting to take action to support the workers who will be most affected by these developments. For example, IBM has introduced the P-TECH program, which provides free instruction and training in subjects including data science, cloud computing, and cyber security. In a similar vein, Amazon has announced plans to retrain 100,000 employees for higher-demand positions within the organization with a \$700 million investment. Microsoft has revealed a \$20 million program to teach workers in artificial intelligence (AI) who have lost their jobs to automation.

The European Union has established a fund to assist in the retraining of workers who have lost their jobs as a result of automation on a wider scale. In order to assist workers who have lost their jobs as a result of globalization or developing technology, they have also established a European Globalization Adjustment Fund.

A Universal Basic Income (UBI) is another concept that some governments are looking into as a means of helping workers who have lost their jobs. To test UBI in certain areas, the Finnish government, for instance, has started a pilot program. Additionally, businesses like Microsoft and LinkedIn have teamed to provide free online courses that assist employees in learning new skills and advancing into new occupations.

The work that can be done to lessen the adverse effects of developing technology on the labor market does not end with these endeavours. In order to make sure that workers are not left behind in the quickly evolving labour market, more funding should be allocated to worker retraining, UBI, and reskilling and up skilling initiatives.

Conclusion

There are many benefits to living in the twenty-first century, the majority of them are associated with technology. But occasionally, technology can be dangerous. Although millions of workers disagree, statistics on employment lost to automation suggest that automation can be viewed as a positive development. It might take months or even years for people who have lost their employment to pursue further education, and the majority of them cannot afford to take time off from work for this purpose. The relationship between technical advancement and the creation of jobs is rather complicated, with both positive and negative outcomes.

According to one theory, AI will automate a lot of jobs, which will cause a skills gap to grow and leave a lot of people jobless. From a different angle, though, technology advancement will boost the economy and provide new jobs. But seen from a different perspective, technological growth will strengthen the economy and create jobs.

A diverse strategy is needed to address the difficulties in creating jobs brought about by emerging technology. This strategy should include funding for education and skill development, assistance for employees moving into new positions, and fair sharing of the advantages of technological advancement. Collaboration between employers, policymakers, and academic institutions is necessary to develop a labour market that is more flexible and resilient.

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