THE DEVELOPMENT OF ROBOTECHNOLOGY IN BUSINESS AND ITS IMPACT ON UNEMPLOYMENT IN THE UNITED STATES SOCIETY

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ABSTRACT

The fast development of robot technology within business has changed many types of industries all over the world, improving the level of efficiency and productivity within various industries. However, as Markvan Rijmenam (2023) mentioned this technological advancement has also raised significant concerns regarding its impact on employment within society. The purpose of the article to examine the unemployment rate, sectors likely to be most affected by robotic automation, and the social and economic factors contributing to this phenomenon, using the United States as a case study.

These results clearly show that unemployment due to automation has to be reduced through strategic measures (IFR, 2017). This research represents a very important step toward an understanding of how complex technology growth, job changes in the modern world.

Keywords: Robot technology, unemployment, United States, automation, job changes.

1. INTRODUCTION

Significant changes in the 21st century have impacted business processes, especially through the integration of robots and automation. Many companies use automation to enhance performance, efficiency, and productivity. Robots and AI systems are now prevalent in industries like healthcare, retail, manufacturing, and transportation. These advancements offer substantial benefits, including financial gains and higher accuracy (Brown and Loprest, 2018). However, they also raise critical concerns about their impact on employment and society at large. This paper explores how robots are replacing human labor in various fields, resulting in job losses and economic instability.

This is from where the current research paper will take the United States for example to analyze the relationship between the development of robot technology and

the increase in unemployment rate. With the enhancement of technology over the past couple of years, the job market in the U.S. has changed big time. Several jobs in the retail, industry, and transportation sectors have vanished because of technology. Low-skilled employees have more significant losses of jobs. The reasons for such a trend were given by the story: efforts for cost-cutting, desire for efficiency, and high-quality output (Hötte, Somers and Theodorakopoulos, 2023). It also tends to explain what those losses, in particular, mean to Solidarity for society as a general increase in social unrest unfolds with more and more people being unable to find solid employment and the gap between rich and poor is increasing.

The repercussions on the job market gradually come into view as more firms are using robotic systems. Loss of jobs, particularly where the resources are low-skilled, is one of the most visible onsets (Brown and Loprest, 2018). For example, in the US, technological development has also brought about a lot of loses to the traditional fields. The implication is that looming discussions are there over the future of work and the need to reskill the workforce. This has underscored the need for workforce reskilling, as a significant portion of workers are unprepared for a technology-focused job market. These shifts have not only increased unemployment but also threatened the financial stability of many families, deepening income inequality and social divides (Hötte, Somers and Theodorakopoulos, 2023).

Finally, this article would like to contribute to the broader debate concerning the benefits and adverse impacts of using robots within the framework of a business context. This case study confines to jobless trends in the United States. It highlights that policy solutions should be made considering the economic impacts of computer advances.

2. LITERATURE REVIEW

Many works have gone through huge changes since the introduction of robots into their working process. From a business perspective, though, while the big benefits are coming out of the fast pace of automation, much is to be concerned about in terms of job loss, perhaps most specifically in places such as the US, where the exposure among certain worker groups might be particularly great.

2.1. Technological Advancements and Labor Market Transformation

A study by Frey and Osborne (2017) estimates that close to 47% of all jobs within the U.S. economy are susceptible to automation. The tasks that require relatively lower skills have greater risks of being automated, for it can be easy to perform the task with repetitions via machines. Robot allocations have been made by various companies, such as Amazon, within their warehouses for faster performance of tasks and to make these sectors less dependent on human workers.

It just keeps on piling up, meaning the gap between the workers who have the capability to learn new technologies versus those who cannot leads to very high unemployment and a very unfair economy for all. For example, a Deloitte study (2021) states that while highly skilled engineering and technology jobs are increasing, low-skilled and repetitive jobs decrease rather rapidly.

2.2. Impact of Robot Technology to sectors

Robotics technology is affecting different sectors very differently. Even the number of lost jobs is not the same. The industrial sector probably has been the most affected by robotics because robots can perform hard and routine jobs with efficiency and at a fast speed. As an example, in Tesla's plant in Fremont, California, there is use of more than 160 specialized robots doing important jobs that would normally be handled by a person. This leads to increased efficiency yet reduced assembly line opportunities (Cooke, 2020).

As a result of technology, the retail business is also changing. In the U.S., Walmart has tried to employ robots that clean, restock the stores, and keep track of goods. These kinds of robots, while reducing prices by increasing efficiency, have made these places less in need of human labor. For example, as McKinsey (2022) estimated that by 2030, machines could replace as much as 30% of retail chores-a development likely to eradicate thousands of low-wage jobs in the sector. For instance, Amazon Go shops are dependent on automated checkout technology, which replaces cashiers with sensors and AI-powered systems. Because of that, such shops would not need to hire regular salespeople; cashiers could therefore also be superfluous.

These are propositions by transportation companies like Uber and Tesla. For instance, Uber once tried self-driving cars in some places with the long-term intention of doing away with human drivers. Tesla has been working on "Full Self-Driving" software over the years. The pervasive employment of autonomous driving technology will replace millions of drivers, from ride-share and cab drivers to delivery people of all kinds. The labor displacement here informs very strongly on the vulnerability of industries dependent upon steady, routine labor, which is where working-class employment is most often vulnerable to automation (McKinsey , 2022).

2.3. Robot technology and workplace reskilling

The major issue brought forth by robot technology: is the need for reskilling of the workforce. In any change or introduction in technology, there are workers in those types of employment, who get in demand for newly acquired skills and have to adapt themselves to the demands of a modern technology-driven job market. According to World Economic Forum (2020), about 40% of workers around the world require learning new skills to keep pace with robots. It means that here, indeed, new jobs will emerge, while the problem consists in the fact that those require other different skills.

Indeed, there is an increased usefulness of code, data analysis, and machine learning-related skills, not exactly the usual kinds of physical work.

To try and manage this problem, many companies and some governments have started funding courses that would re-equip workers with new skills. Amazon started Upskilling 2025 in the US and promised to spend more than $700 million to prepare its workers for skilled jobs at the company and elsewhere (McKinsey , 2022). Companies do a great job but hardly cover the greater share of workers who suffer due to such technological changes. This is why government efforts become necessary for such vast reskilling programs to reach the masses of people from every walk of life and industry.

2.4. The U.S. Job Market and the Future of Work

An example of the change that robot technology has brought to jobs can be viewed in the United States. In the U.S., industrial jobs have reduced drastically over the last ten years, and this problem is made worse by the rise of robots. In fact, from the year 2000 to 2019, it was found by the Economic Policy Institute that the U.S. lost over 5 million industrial jobs. Many of these lost their jobs to technology rather than outsourcing overseas. Others have suffered more at the hands of these job losses than still others. For example, older workers and those who do not have college degrees find it difficult to get a job within a technology-based economy (Economic Policy Institute, 2019).

To this effect, many states have rolled out initiatives that would aid such workers in finding new employment opportunities. Michigan, for instance, one of the industrialized states, introduced "Futures for Frontliners," a program where college tuition fees would be free for all frontal workers who lost their jobs due to automation economy (Economic Policy Institute, 2019). These are great programs, but perhaps also a bit inadequate to check this incredible number of people who will move in the coming few years.

3. PROBLEM STATEMENT

Most aspects of the business have been dislocated by rapidly evolving robot technology as efficiency and huge boosts in productivity are found. At the very same time, this technological shift has also dislocated various anxieties about jobs, primarily about the low-skilled, who are found extremely prone to dislocation by machines. The jobs that are most likely to get dovetailed with robotic technology are industry, retail, and transportation, especially in the United States. This will cost so many people's jobs and will also make the economy very unfair (Economic Policy Institute, 2019). The above situation depicts that the need of the hour is handling the social and economic effects of robots on the job markets very rightly.

4.   PURPOSE OF THE STUDY

The main purpose of this article is to look into the connection between the progress made in computer technology and the rise in jobless rates in the US. The study's goals are to find the industries that are being hit the hardest by technology, figure out what the economic and social effects of these job losses are, and look into possible ways to lower unemployment by retraining workers and changing policies. This study looks at these aspects to add to the present conversation going on regarding balancing technology progress with stable jobs.

5.   RESEARCH METHODS

This study involves both primary and secondary research methodologies to analyze the effect of robotic technology on unemployment in the United States. Primary research will be conducted via an online Google Form survey to ascertain public opinion about the actual effects of robotic technology on job displacement, including a range of viewpoints from people in Uzbek society. The secondary study will examine the relationship between advancements in robotic technology and increasing unemployment rates via the assessment of current studies, governmental data, and industry publications. This mixed methodology facilitates a comprehensive viewpoint, integrating subjective judgments with credible facts from reliable sources.

6.   RESEARCH FINDINGS

According to secondary research, the rise of robotic technology is changing the U.S. workforce, especially in fields where physical labor has long been in high demand. Key results show how automation affects the number of jobs available, wage changes, and workers' ability to learn new skills.

Reduction of Jobs in Manufacturing and Retail

A lot of jobs have been lost because of technology in fields like manufacturing and retail. The Brookings Institution says that between 1990 and 2007, industrial robots caused the loss of between 360,000 and 670,000 jobs in the United States. Most of these jobs were lost in places with a lot of industry, like Michigan and Ohio (Brookings, 2019). Big retail chains like Amazon and Walmart are using robots more and more to do inventory and stocking jobs, which means they need fewer people to work. For example, Walmart's use of robots to scan items on shelves has sped up operations by getting rid of boring human tasks (Reuters Editorial, 2024).

Enhanced Risk for Low-Skilled Employees

People with few skills, especially those who do repetitive, physical work, are most likely to lose their jobs to technology. According to the McKinsey Global Institute (2022), 73 million jobs in the U.S. could be lost to technology by 2030. These jobs would mostly be lost in retail, industry, and food services. As fast-food chains replace

traditional cashiers with self-service booths and robots, this trend is clear (Crawford, 2019).

Building up high-tech and skilled jobs

Automation also creates jobs in expert areas, which helps make up for some of the jobs that are lost. The World Economic Forum (WEF) says that by 2025, automation could take away 85 million jobs around the world. However, it will also create 97 million new jobs in areas like AI, data science, and robot engineering (World Economic Forum, 2020). That's why in the USA companies like Boston Dynamics are constantly hiring for skilled jobs, which shows how much people want to know about advanced robot technology.

Reskilling programs and adapting the workforce

Companies and states are putting a lot of money into reskilling programs to help people who have lost their jobs. Amazon, for example, has set aside $700 million for its Upskilling 2025 program, which aims to give workers the skills they need for professional jobs (Amazon, 2019). At the state level, Michigan's Futures for Frontliners program helps workers who have lost their jobs because of technology get free schooling that helps them move up to higher-skilled jobs (State of Michigan, 2020). These attempts show how important it is for workers to be able to change to a changing job market.

Primary research findings

An online survey was given to people in Uzbekistan to find out what they thought about how robot technology would affect jobs in the country. The main goal of this study was to find out how worried people are about computer technology, what effects they think it will have on different industries, how many jobs people expect to lose, how ready the workforce is, and what solutions people have come up with to make things better.

The survey results showed that people in Uzbekistan had different perspectives about how robots would affect jobs. 32.9% said they were "not concerned," and 23.7% said they were only "slightly concerned." This low amount of worry is probably because Uzbekistan doesn't have a lot of smart robots. Since technology is still being used in smaller fields, many people may not think about the possibility of losing their jobs as a big deal (Figure 1).

40.8% of those who answered chose manufacturing, 28.9% chose transportation, and 18.4% chose healthcare as the most likely industry to be affected by robots (Figure 2). These fits with the idea that industrial and shipping are often the first industries to use technology. Even though Uzbekistan hasn't seen a lot of automation yet, the people who answered may be thinking about changes happening in other countries that could eventually affect their industries.

People in Uzbekistan had different ideas about whether technology would cause a lot of people to lose their jobs. 32.9% said they thought it would, but 26.3% were not sure and 36.9% said they didn't think it would (Figure 3). This split shows that some people think automation will happen eventually but will be doable, while others aren't sure because robots aren't used much yet.

One interesting result was that almost 30% of people thought that Uzbek workers are "unprepared" for jobs that depend on technology (Figure 4). This points out what seems to be a skills gap and shows that training and schooling need to be emphasized to get people ready for work.

Finally, when people were asked what they thought would be the best way to lessen the bad effects of robots on jobs, 44.7% said that programs to improve skills would be best, while 30.3% said that the government should run education programs (Figure 5). Respondents clearly understand how important it is to prepare the workforce, even if the effects of robots seem far away at this point, as shown by their strong support for skill development.

7. DISCUSSION

Using robots in business has caused changes that have never been seen before, especially in the workforce. Automation has made things more efficient and cut costs, but it's worrying how it has affected the job market. Robotic solutions have replaced human workers in many fields, including industry, shopping, and even customer service. This has greatly reduced the need for people to do manual tasks. For example, in the US things like inventory management and assembly line work that used to need human supervision can now be done with little help, which means there are fewer job openings in these areas. People are worried about what the fast growth of robotic technology will mean for job security in the long term, especially for low-skilled workers who might find it hard to move up to roles that require more complex skills.

Also, industries that are highly affected by technological progress, such as transportation and healthcare, are going through changes because of robots. Robotic systems help with treatments and taking care of patients, which means that some support staff is not needed as much. In the same way, self-driving cars in transportation could put truck drivers, delivery people, and others in the logistics chain out of work. These changes may, however, also lead to new job possibilities for US society and other countries.

The primary results showed Uzbek society also worried about how computer technology will affect their chances of getting jobs in the future. They are worried that more technology will make it harder for them to get stable work in the areas they want. Concerns about the growing gap between skills needed and jobs available are shared by these points of view. This showed how important it is to have upskilling and

reskilling programs to make sure that workers can still do their jobs in a world where robots are becoming more common.

8.   CONCLUSION

In conclusion, this article has looked at the complicated link between the rise of robots in business and the rise in unemployment in the US. As technology remolds many companies, big layoffs, particularly in workers with low skills, have also become a major issue. As technology progresses, the results indicate that the areas being affected the most are industry, retail, and transportation. Millions of jobs are at risk in these areas.

This research article found out that, it is important to quickly retrain workers and to adapt rules to the problems technology causes. Job openings right now are in the high-tech area. But many aren't prepared to put up with the demands of the tech work market. Lacking these skills means it's harder to find a job and the gap between rich and poor and between social classes grows wider.

The study performed in Uzbekistan also shows that people do have different conceptions about how robot technology impacts jobs. If you have different countries that are automating different amounts, then we draw a line from where we met to where we are and it's straight. Although at the moment people aren't too concerned with losing their jobs right now, the fact that automation could potentially happen in the future makes it important to stop such a thing from happening in the future by investing in education and training programs. The possibility of advancing technology, which might increase output without endangering jobs or violating social order, should be planned on as people learn to use new technologies.

Appendix
Figure 1

How concerned are you about the impact of robot technology on job opportunities in Uzbekistan?
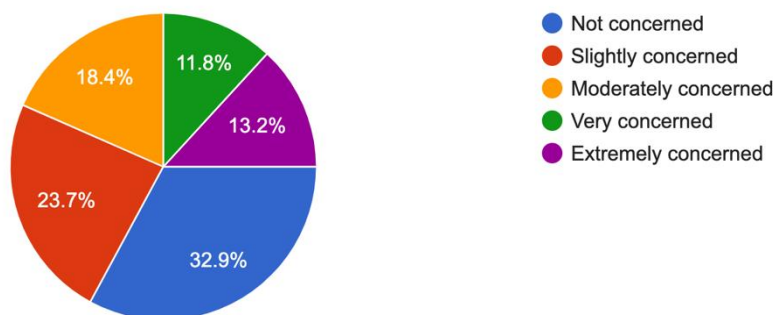76 responses

- Not concerned
- Slightly concerned
- Moderately concerned
- Very concerned
- Extremely concerned

Figure 2

In your opinion, which sector in Uzbekistan is most likely to be impacted by robotic automation?
76 responses

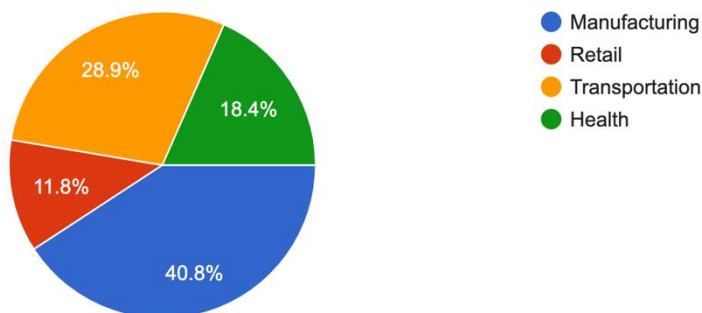- Manufacturing
- Retail
- Transportation
- Health

Figure 3

Do you believe that the introduction of robots and automation in the workplace will result in significant job losses in Uzbekistan?
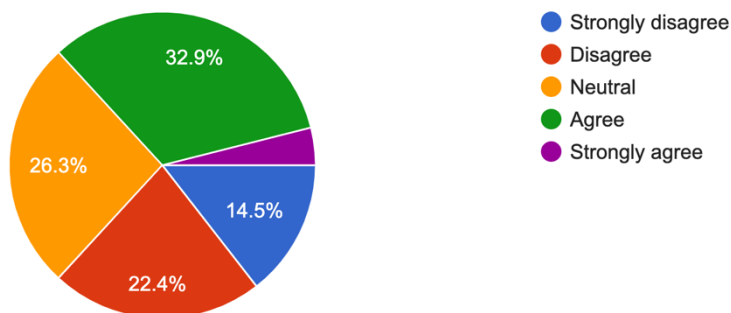76 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Figure 4

To what extent do you think workers in Uzbekistan are prepared to adapt to new technology-driven job roles?
76 responses

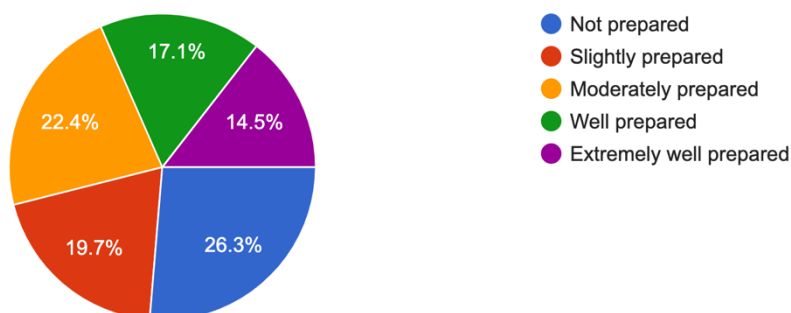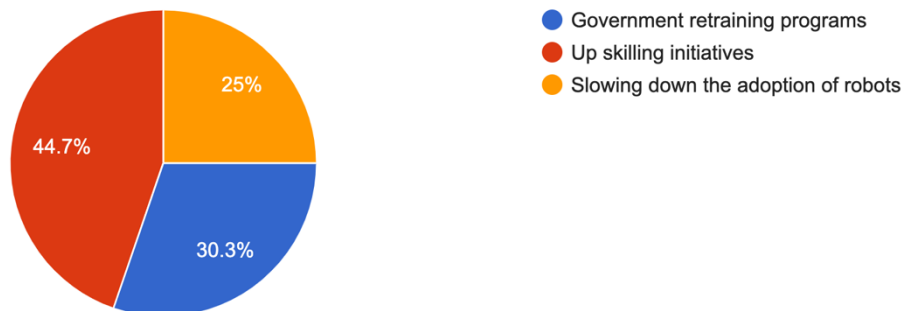- Not prepared
- Slightly prepared
- Moderately prepared
- Well prepared
- Extremely well prepared

Figure 5

What do you think is the best approach to minimize the negative impact of robotic technology on employment?

76 responses

- Government retraining programs
- Up skilling initiatives
- Slowing down the adoption of robots

44.7%
25%
30.3%

REFERENCES

1. Amazon (2019). *Press center | Amazon.com, Inc. - Press Room.* [online] press.aboutamazon.com. Available at: https://press.aboutamazon.com [Accessed 4 Nov. 2024].

2. Brookings (2019). *Brookings - Quality. Independence. Impact.* [online] Brookings. Available at: https://www.brookings.edu/.

3. Brown, S. and Loprest, P.J. (2018). *How is technological advancement changing the labor market?* [online] Urban Institute. Available at: https://www.urban.org/urban-wire/how-technological-advancement-changing-labor-market [Accessed 26 Oct. 2024].

4. Cooke, P. (2020). Gigafactory Logistics in Space and Time: Tesla's Fourth Gigafactory and Its Rivals. *Sustainability*, 12(5), p.2044.

5. Crawford (2019). *Food Dive: Food Industry News and Analysis.* [online] www.fooddive.com. Available at: https://www.fooddive.com [Accessed 4 Nov. 2024].

6. Deloitte (2020). *Deloitte UK | Audit, Consulting, Financial Advisory and Tax services.* [online] Deloitte United Kingdom. Available at: https://www2.deloitte.com [Accessed 27 Oct. 2024].

7. Economic Policy Institute (2019). *Economic Policy Institute.* [online] Economic Policy Institute. Available at: https://www.epi.org [Accessed 27 Oct. 2024].

8. Frey and Osborne (2017). *Oxford Martin School | University of Oxford.* [online] Oxford Martin School. Available at: https://www.oxfordmartin.ox.ac.uk [Accessed 27 Oct. 2024].

9. Hötte, K., Somers, M. and Theodorakopoulos, A. (2023). Technology and jobs: A systematic literature review. *Technological Forecasting and Social Change*, [online] 194, p.122750. doi:https://doi.org/10.1016/j.techfore.2023.122750.

10. IFR (2017). *The impact of robots on productivity, employment and jobs A positioning paper by the international federation of robotics april 2017 A positioning paper by the international federation of robotics INTRODUCTION AND PURPOSE OF THIS PAPER*. [online] Available at: https://ifr.org/img/office/IFR_The_Impact_of_Robots_on_Employment.pdf [Accessed 26 Oct. 2024].

11. Mark van Rijmenam (2023). *The Rise of the Robots and Its Implications for Business*. [online] Dr Mark van Rijmenam, CSP | Strategic Futurist Speaker. Available at: https://www.thedigitalspeaker.com/rise-robots-implications-business/ [Accessed 26 Oct. 2024].

12. McKinsey Global Institute (2022). *McKinsey & Company*. [online] McKinsey & Company. Available at: https://www.mckinsey.com.

13. Reuters Editorial (2024). *Business & Financial News, U.S & International Breaking News / Reuters*. [online] Reuters. Available at: https://www.reuters.com/.

14. State of Michigan (2020). *SOM - State of Michigan*. [online] Michigan.gov. Available at: https://www.michigan.gov.

15. World Economic Forum (2020). *The World Economic Forum*. [online] World Economic Forum. Available at: https://www.weforum.org [Accessed 26 Oct. 2024].

16. Online survey: https://docs.google.com/forms/d/e/1FAIpQLSe0aSWNPJb-7_3P9rL84Sp1VrGbl3VNPf-PpP6XosE51OHVIQ/viewform