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The Impact of Artificial Intelligence on Unemployment and Future Work

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Abstract : ***The rapid development of artificial intelligence should also affect the world market. Unemployment is ex- pected to increase as artificial intelligence can perform tasks performed by humans in many different sectors. The eight- year study (2010-2017) investigates the impact of artificial intelligence (AI) on unemployment in 26 developed and devel- oping countries. More precisely, this study uses data analysis techniques to investigate how the use of artificial intelligence technology affects unemployment in 26 different sectors. The results of a data study compiling World Bank and OECD data show a positive relationship between advances in artificial intelligence and unemployment. The advancement of artificial intelligence is determined by patent information. Due to the differences in artificial intelligence development between the countries studied, artificial intelligence development has been shown to have a positive impact on the unemployment rate in the studied countries. Additionally, compared to younger workers, older workers with higher education may have less impact on employment due to improved skills. Finally, re- search and development (R&D) spending varies widely across countries, making it difficult to aggregate. Therefore, this study does not show the relationship between the share of R&D expenditures in GDP and how artificial intelligence affects unemployment. One of the most talked about topics in the public today is intelligence. Many people associate this with changes in the economy, especially changes in the economy that are generally expected to cause high unemployment. As artificial intelligence becomes more widespread, the public tends to predict which professions will become obsolete and eventually disappear. The healthcare sector is one of the most challenged sectors outside of production due to various medi- cal treatment studies. There are other scientists who disagree with this bad proposition. They argue that the emergence of artificial intelligence will create new jobs, just like all previous economic revolutions.***

Keywords-- **Artificial Intelligence, Unemployment, Future Work, Impact, Automation, Job Displacement, Skills Gap, Job Creation, Manufacturing, Retail, Healthcare, Reskilling, Upskilling, Policy, Regulation, Mitigation Strategies, Labor Market, Education, Training, and Economic Impact.**

1 Introduction

The connection between artificial intelligence (AI) and un- employment of individuals with disabilities is a new, complex and diverse issue (Mutascu, 2021; Nazareno and Schiff, 2021; Shiohira, 2021). The relationship between artificial intelli- gence (AI) and unemployment among people with disabilities is complex and varies across regions, contexts, and actors (Schall et al., 2021 ; Paul and Hollederer, 2023). Depending on the situation, the creation, implementation and use of artificial intelligence (AI) can have a positive or negative impact on the employment of people with disabilities (Rodrigues,2020). On the one hand, assistive technologies such as speech recognition, text-to-speech, visual character recognition, or language prediction are just a few examples of the creative ways artificial intelligence (AI) can improve accessibility, freedom, and social inclusion. People with disabilities (Schur et al., 2021). Artificial intelligence may also lead to new interventions or needs. Research on how intelligence affects unemployment in individuals with disabilities in developed and developing countries is expanding,

although it is still in its infancy (Ravali et al., 2022; Yang et al., 2022; Baldo et al., 2023).); Chakraborty et al., 2023). The impact of AI on business is complex and far-reaching, including AI design, government aid and policy, commercial enterprise, entrepreneurship and the creation and transformation of new jobs, training and skills, including remote working. Mondolo (2022) believes that automation and artificial intelligence (AI) technology can replace some regular and routine tasks that may have drawbacks.

reductions in employment in certain industries. AI may lead to the displacement of some occupations, but it may also change the nature of work, opening up new career paths and necessitating the development of new skill sets. According to Brown and Souto-Otero (2020), implementing AI calls for a focused effort to improve and retrain the workforce to meet the shifting demands of the labor market. Stated differently, educational establishments need to modify their course offer- ings to include AI-related competencies and guarantee that their alumni are prepared for the evolving labor market. In order to achieve inclusive design of AI systems, Braganza et al. (2021) contended that biases must be mitigated in order to avoid biased outcomes in hiring, promotions, and other employment-related operations.

In order to ensure that AI technologies do not create barriers for people with impairments, inclusive design takes accessibility into account. Furthermore, Mutascu and Hegerty (2023) pointed out that governments are essential in putting in place legal frameworks that deal with issues of fairness, data privacy, and ethics in AI applications. Governments may put in place efforts for worker training, financial incentives for AI use, and laws encouraging ethical AI usage.

According to Guliyev (2023), artificial intelligence (AI) has a role in generating new job prospects, especially in fields like data science, AI development, and AI-related services. The dynamics of the labor market are changing, in fact, as companies look for workers who possess both technical and soft abilities related to AI, which encourage flexibility and innovation. According to Magdeline (2023), artificial intelligence (AI) offers chances for entrepreneurship, enabling people to develop cutting-edge goods and services by utilizing AI technologies. As a result, AI-related business endeavors support employment creation, economic expansion, and the opening up of new markets. According to Aleem et al. (2023), AI technologies make it possible to adopt remote work arrangements that give workers flexibility and accessibility. By using AI in remote work, businesses may now access a wide spectrum of talent from around the world.

It is clear that AI technology is being widely recognized across a wide range of industries, including education. In fact, artificial intelligence (AI) has emerged recently in education, bringing with it a variety of tools that teachers and students can use to improve the efficacy and quality of the educational experience (Alfaro et al., 2020; Krishnan, 2022; Sanusi et al., 2022; Adams et al., 2023; McGrath et al., 2023; Rice and Dunn).

As a result, the analysis takes into account the unemployment of both educated men and women with disabilities. Lastly, this work offers a thorough empirical analysis utilizing an expanded dataset that comprises the majority of techno- logically advanced nations globally, in contrast to the bulk of previous research works.This is how the remainder of the paper is structured. The data and methods utilized in this investigation are described in the section that follows. The section titled "Empirical Results and Discussion" discusses the findings. The research is concluded with recommendations and policy implications in the Conclusion and Policy Implications section.

2 Literature Review

Artificial intelligence (AI) is changing the way business is done, leading to increased productivity, unemployment and income inequality. This study aims to provide a clear understanding of the complex dynamics and broad application of topic #2 through the process of synthesising and interpreting research conducted in foreign contexts. The use of artificial intelligence requires widening the skills gap between skilled and unskilled workers because routine tasks are more likely to be used and have little impact on higher-

level tasks that re- quire creativity. and solve small problems. The middle-skilled workforce is decreasing due to market polarization (Webb, 2018). The expansion of the economy has been associated with the use of artificial intelligence, which benefits intellectuals of unskilled workers and leads to inadequate wages (Webb, 2018; Ernst et al., 2019; Stevenson, 2021). The impact of artificial intelligence on unemployment and income inequality in regions and specific economies. Manufacturing and sales are two sectors that are vulnerable to job losses due to AI automation (Acemog˘lu and Restrepo, 2019). According to Georgiev et al. (2020), a gap exists between rich and poor in countries with high skill requirements and low levels of social investment. However, jobs requiring AI experts often offer higher salaries and more jobs, especially in high-tech fields (Acemog˘lu et al., 2018). Key concerns also include the impact of competition and the consolidation of power. Artificial intelligence has the ability to consolidate power in the hands of a small number of individuals or organizations that have access to large amounts of information (Acemog˘lu, 2019; Varian, 2020). While artificial intelligence (AI) has the potential to increase efficiency, decision-making, and competitiveness, it can also lead to disruptions in business collaboration and access (Varian, 2020). Using artificial intelligence will have many benefits in terms of productivity and career development. While automation causes job losses in some sectors, it can also increase efficiency and open new jobs in other sectors (Bessen, 2017; Graetz and Michaels, 2018). The impact of AI on job growth varies across countries depending on human capital and the extent to which AI is used (Georgieff et al., 2020). The impact of work depends on the skills required for many jobs; While medium-skilled jobs are increasing, there is more demand for high-skilled workers (Acemog˘lu et al., 2018; Bessen, 2017). The impact of intellectual skills on pay, responsibilities and skill requirements is uncertain and will vary from job to job. Artificial intelligence can save businesses money and increase efficiency, but it can also lead to reduced demand for certain types of jobs (Webb, 2018). AI workers are receiving higher wages and benefits due to a shortage of trained workers and increased demand for AI skills (Green & Lamby, 2021). To reduce social impact, gender and discrimination in artificial intelligence must be addressed and open governance and self-protection must be ensured (Webb, 2018; Acemog˘lu, 2019; Varian, 2020). Most of the studies reviewed in this literature use cross-sectional or time series analysis to determine whether intellectual property ownership in a country is associated with financial loss. In contrast, the current study examined the impact of AI adoption in 26 coun- tries, including Australia, Austria, Belgium, Canada, Switzer- land, Czech Republic, Germany, Denmark, Spain, France, the United Kingdom, Greece, Hungary, Ireland and Israel. Italy, Italy, Luxembourg. It was previously explained. The study concluded by showing the relationship between skills and knowledge, labor productivity, economic inequality and unemployment. Information and changes The information and materials used in this study are presented here. The purpose of this section is to explain the development of how Intelligence affects unemployment in a sample of 26 countries. This study uses four different explanations to understand the various factors that influence intellectual ability. The first variable measures the amount of money invested in AI-related activities by looking at the percentage of GDP devoted to R&D. Since this feature is measured in hundreds of percent, comparisons can be made between countries. The x2 difference takes into account the number of AI patent applications filed in each country over a seven-year period. Patent applications are a good way to measure technological progress and show how far each country has progressed in terms of knowledge. This study measures the weight of AI-related technologies by analyzing the number of AI patent applications. The educational status of two different age groups of the population is the subject of the third and fourth variables. The third variable measures the percentage of people aged 25 to 34 with a college education. This gap represents both the preparation of the workforce that can use AI technology and the availability of skilled workers. The fourth variable measures the percentage of people

ages 55-64 who have completed a college degree, providing insight into older adults' intelligence and their ability to adapt and acquire new skills in the face of a changing marketplace. To provide an overview of the variables used in the study, Table 1 includes a complete list of these variables and the definition and location of each variable. The use of these variables allows for a clear analysis of the relationship between AI development and unemployment and provides in-depth information on how AI affects employment in the 26 countries included in this study.

3. Evolution of Artificial Intelligence

2.1 Definition of artificial intelligence: Artificial Intelligence (AI) includes various technologies and methods such as robotics, machine learning, and natural language processing. These technologies enable robots to perform tasks such as pattern recognition, decision making and problem solving that normally require human expertise. This important fact is sometimes overlooked in intellectual discussions. The public is talking about automation rather than artificial intelligence. Automating repetitive tasks that do not require expertise is called automation. Therefore, the initial negative assessment of the impact of AI on unemployment was wrong. It is ex- pected that automation, not artificial intelligence, will replace employees in some jobs.

2.2. Rapid Advancements in AI:Artificial intelligence has advanced at an exponential rate in recent years due to the availability of large datasets, enhanced processing power, and better algorithms. These days, AI can do sophisticated tasks like driving autonomously and diagnosing illnesses. They involve both predictable and dangerous jobs using intelligence and intelligence-related repetitious and well-defined tasks that don't require higher cognitive processing. It is rare, therefore, to find automation and intelligence together. It is simple to distinguish between automation and AI in numerous addi- tional instances. AI is demonstrated, for example, by chess algorithms that are able to defeat human masters; on the other hand, automation is seen in search engines and factory manufacturing systems.

4. Impact on Unemployment

Job Displacement: Some vocations may become obsolete as a result of AI's ability to automate repetitive and regular tasks. Because to the use of AI, industries including manufacturing, retail, and customer service have already seen substantial changes in their workforce. AI for industry would be used humanely in places like shipbuilding and mining, where workplace fatalities are frequent. Actually, what are commonly referred to as workplace accidents alternatively referred to as "workplace murders" by labor activists are intrinsic to capitalism. There is no widely acknowledged norm for worker safety. However, comparing the dangers of working as a waitress to a miner would show that some jobs are indeed more dangerous than others.

4.1 Shifting skills: As AI takes over day-to-day tasks, workers of the future will need more specialized and creative skills. There may be greater demand for jobs that require critical thinking skills, problem solving, and critical thinking. The truth is, marketing is not rocket science. It is opinion rather than science that confuses facts and ideas and sometimes distorts historical facts. For example, neoliberal intellectuals often ignore the economic success of "neoliberal" fascist dictatorships such as Pinochet's Chile and non-Western coun- tries such as China. Instead, they seek to conflate economic development with so-called "freedom," which is not freedom in the strict sense of the word.

4.2. Job creation: Besides the ability to replace some existing jobs, AI also has the ability to create new jobs and opportunities. Data analysis, AI- assisted decision-making, and the design and maintenance of AI systems are emerging industries in need of skilled workers.

4.3. Artificial Intelligence Methodology: In this section, an econometric method is chosen to examine the relationshipbetween unemployment and intelligence. The number of un- employed people in a given period (such as a month, three months, or a year) is measured as the unemployment rate. It represents the number of people who are actively looking for work but cannot find a job at any given time and are employed by current measures of the labor market. Dynamic lag effects are important for understanding unemployment because it

can take time for policies and the economy to impact the labor market. For example, using government stimulus packages may take months to create jobs or save money. Similarly, it will take some time for the economy to impact unemployment because companies will first try to prevent unemployment by reducing wages or working hours. Additionally, even if the economy emerges from recession, it will take some time for the labor market to fully recover and the unemployment rate to return to the level it was before the problem. This is because some workers take a long time to re-enter the labor market after leaving a job or are reluctant to look for work during the crisis. Considering the benefits together while examining the changes in the labor market can provide a more accurate understanding of the changes in unemployment and their effects. Therefore, in this study, we use the dynamic panel data (DPD) model to focus on the negative effects of unemployment. The unemployment rate measures the percentage of unemployed workers looking for work and varies as a percentage of the total workforce. The number of Google Trends indexes related to data science, artificial intelligence and machine learning have been met with interest. Although there is little research on the subject, GTI can be considered as an alternative to the use of artificial intelligence. We looked at the three most searched terms for AI: data science, machine learning, and artificial intelligence. Due to the diversity of these research topics, we estimate the model in three different scenarios: the first scenario concerns skills and unemployment; The second and third events are about machine learning and unemployment, data science and unemployment.

5. Most effected sector due to Ai

5.1 Manufacturing: Automation of industrial processes has resulted in a considerable loss of jobs in the manufacturing sector, but industry has become more efficient and econom- ical. Large volumes of data, measured in petabytes or even exabytes, are what define big data. Big data has a lot of potential, but it is useless on its own unless it can be used to produce useful outcomes. Artificial Intelligence steps in at this point. The most popular use of artificial intelligence nowadays is the search for patterns in massive amounts of data. Big Data and AI together enable businesses to enhance and automate intricate descriptive, predictive, and prescriptive

5.2. Retail: AI-powered technologies such as cashless stores and personalized shopping recommendations are changing the retail landscape, impacting the physical products and e-commerce landscape of retail operations. Artificial intelligence (AI) machines look at historical sales data, market trends and other variables to predict demand patterns. This helps the seller improve product quality and reduces the likelihood of the product being out of stock. Good inventory management reduces waste and increases efficiency.

5.3 Healthcare: AI is changing healthcare through robotics, telemedicine, and diagnostic algorithms, which is changing the responsibilities that healthcare workers play in the industry.

6. Mitigation Strategies

6.1. Workforce Reskilling and Upskilling: To equip the workforce for changes brought about by artificial intelligence, investments in lifetime learning and ongoing skill development are crucial. Businesses, governments, and academic institutions should work together to offer training programs that are easily accessible. The relative advantages of each method are obscured by inconsistent validation, despite numerous attempts to assess the exposure of vocations to AI. The problem is further compounded by the absence of disaggregated labor outcome statistics, such as unemployment data. Here, we use fresh occupation-level unemployment data by occupation from the unemployment insurance office of each US state covering 2010 through 2020 to evaluate which models of AI exposure predict job separations and

unemployment risk. Governments and industry have used these AI exposure scores, however our research shows that individual AI exposure models do not predict unemployment rates, unemployment risk, or job separation rates. Nevertheless, a combination of those models shows strong predictive ability, indicating that rival models might capture various facets of AI exposure that together explain the varying impact of AI across occupations.

6.2. Job Transition Assistance:Employee assistance with job changes is crucial. Initiatives that offer financial assistance during transitions, job matching, and career counseling help mitigate the negative effects of AI on employment.

6.3. Policy and Regulation: Governments ought to pass laws that safeguard workers' rights, stimulate innovation, and support the proper use of AI. Regulatory frameworks can guarantee data privacy and ethical use of AI.

7. Conclusion

The impact of intellectual disability on unemployment and future employment is complex and multifaceted. While AI brings many opportunities for efficiency and innovation, it also creates challenges related to business changes and workforce rework and the need for efficiency. Planning for the future of AI requires governments, businesses and individuals to adopt the right approach to reap the benefits while minimizing the impact. By investing in education and training, encouraging innovation and using positive thinking, people can benefit from the skills of the age and create a future of work, benefit and success. But it is also important to consider the lack of education. First, the quality of education varies between countries and institutions, so the assumption that everyone entering higher education has the same quality of education may not be true in practice. Second, due to differences in the sectors studied, the ratio of R&D expenditures to GDP may not reflect investment in R&D. In fact, mathematically, larger economies with higher GDP tend to have lower R&D expenditures. A deeper understanding of the impact of artificial intelligence on business can be gained by examining how the technology is used. Impact on the job and job characteristics. Employers and policymakers need to understand how AI will impact business operations so they can make informed decisions that maximize the benefits while minimizing the risks associated with AI-driven change.

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4.2. Retail: AI-powered technologies such as cashless stores and personalized shopping recommendations are changing the retail landscape, impacting the physical products and e- commerce landscape of retail operations. Artificial intelligence (AI) machines look at historical sales data, market trends and other variables to predict demand patterns. This helps the seller improve product quality and reduces the likelihood of the product being out of stock. Good inventory management reduces waste and increases efficiency.

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Mitigation Strategies

Workforce Reskilling and Upskilling: To equip the workforce for