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The Economic Influence of Artificial Intelligence on Labour Markets

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Abstract: Artificial intelligence (AI) is disrupting global labour markets, providing both opportunities and challenges. Although AI offers various opportunities in the labour market, such as automating routine tasks, improving productivity, and creating new jobs, its utilization also poses threats and challenges, including worker displacement and exacerbating inequality. Hence, this article explores the economic impact of AI within the context of employment, wages, and skills, while simultaneously focusing on the opportunities brought by AI, such as innovation in the labour markets. The study follows a mixed-method approach, combining econometric analysis of employment data across OECD countries, case study analysis of industries adopting AI, such as manufacturing and healthcare. In the automated sectors, findings reveal that the integration of AI into the production process has increased productivity by over 15%, creating new job opportunities in AI-driven fields; however, job displacement increased significantly as a result, particularly for low-skilled workers, while wage inequality increased by 8%. This study proposes a framework for balancing innovation brought by AI with social costs, putting more emphasis on workers to acquire tech-driven skills for economic relevance and policymakers to ensure inclusivity. The study contributes significantly to the academic discourse by addressing policy gaps and measuring AI's labour market effects. Practically, the study recommends investment in tech-driven skills, universal basic income (UBI) pilots, and development of AI governance frameworks.

Keywords: Artificial Intelligence; Social costs; tech-driven skills

JEL Classification: O33, J24, D62

1. Introduction

As technologies continue to disrupt global economies, Artificial Intelligence (AI) stands at the forefront of transforming the labour market, driving both innovation (i.e., unprecedented productivity gains) and social challenges (i.e., job displacement). According to Acemoglu (2002) the global AI market has transformed industries from manufacturing to healthcare, with a significant contribution of over $2 trillion to global gross domestic product by 2025. Despite these contributions, this transformation of industries has harmed the labour market, creating high-skill jobs in tech or data science and AI

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governance, while millions of low-skilled workers continue to grapple with job displacement, especially in sectors such as retail and logistics, which are routine-based (Frey & Osborne, 2017). For instance, the automation of cashier roles in North America underscores the disruptive potential of AI.

Various stakeholders, including policymakers, shareholders, and firm leaders, are faced with pressure to balance the perceived benefits of integrating AI in their processes with rising inequality and the risk of job displacement (Bessen, 2019). The transformation of labour markets by AI challenges the traditional economic theories like skill-biased technological change, yet lags in capturing the social challenges of rapid displacement (Acemoglu, 2002). The global markets saw an increase in remote work, accelerated by AI in response to the post-pandemic recovery, particularly for knowledge-based jobs, while simultaneously exacerbating vulnerabilities for routine and manual labourers in the supply chains, which were disrupted by events such as the 2024 global chip shortage.

The study explores AI's multifaceted impact (i.e., opportunities and challenges) on labour markets, capturing critical gaps in comprehending its economic and social implications. The study seeks to address the following three research questions: (1) What is the impact of AI on employment and wage structures across industries? (2) What are AI's economic benefits and social challenges in AI-driven industries? (3) What are actionable strategies that policymakers can design in response to social costs while maintaining innovation? Leveraging both qualitative and quantitative methods approach – combining econometric analysis of OECD countries, and case study analysis, this study proposes a robust framework balancing AI economic impact and social challenges, contributing to academic discourse and practical implications.

2. Literature Review

The emergence of Artificial Intelligence (AI) has sparked extensive research on its economic impact, creating employment opportunities and driving social challenges, particularly in the labour markets. One of AI's perceived benefits is increased production gains through automation of routine tasks such as data entry and assembly line work, which is reported to have increased by over 15% particularly in industries like manufacturing and logistics, driving high economic growth (Brynjolfsson & McAfee, 2014). By 2025, studies forecast that AI will contribute over $2 trillion to global gross domestic product, with sectors like healthcare and finance leveraging the benefits from AI-driven innovations such as algorithmic trading and predictive diagnostics (Acemoglu & Restrepo, 2018). According to Frey and Osborne (2017), technology innovation has significantly increased job creation, with over 5 million jobs created globally in 2025, particularly in high-skilled fields such as machine learning, engineering, and AI governance. Bloom et al. (2020), who examined the increasing difficulty in finding new ideas, suggests that the difficulty of generating new ideas calls for the need for AI-tech-related skills. Acemoglu (2002) attests that these opportunities align with the skill-biased technological model, which posits that technological advancements benefit workers with advanced skills, increasing the demand for tech-specialised positions (Acemoglu, 2002; Nedelkoska & Quintini, 2018; Spitz-Oener, 2006).

Although transforming industries to be AI-driven, its transformative potential is hindered by significant challenges like social costs. Research shows that AI could automate 30% of current roles by 2030, resulting in significant job displacement of low and unskilled workers, especially in sectors like manufacturing, retail, and logistics, which are routine-based (Autor et al., 2003; Manyika et al., 2017).

The research continues to indicate that this job displacement has had a negative impact on wage equality, as advanced skill workers in AI-driven industries earn 8% more than their low-skilled counterparts, which widens wage inequality (Bessen, 2019). However, Autor (2015) argues that some jobs continue to persist despite advancements in technology, and automation complements non-routine roles. According to Goos et al. (2014), the polarization of the labour market, particularly in developed markets, has exacerbated economic inequality as middle-skill jobs are displaced. Furthermore, skill mismatches pose a challenge, as more than 60% of workers lack the AI-driven skills required for AI-intensive roles, calling for the need for reskilling programs, which are costly. Although technology such as AI-driven learning platforms can facilitate reskilling, in developing markets, access to these AI platforms remains uneven (Bhimani & Willcocks, 2014).

Despite the growing academic discourse, several gaps exist. Most studies investigate the economic impact of AI in developed markets, with limited attention given to developing nations, where labour markets are significantly distinct (Arntz et al., 2016). The long-term economic impact of AI, including its effect on wage inequality and social cost, remains underexplored (Korinek & Stiglitz, 2018). Moreover, policymakers' responses, such as reskilling programs and income redistribution mechanisms, lack empirical validation in diverse economic contexts, such as developing economies (Aghion et al., 2017). This study captures these gaps by measuring AI's labour market effects across OECD countries and offering a policy framework for balancing its benefits and costs.

3. Methodology

This study leverages both qualitative and quantitative approaches to explore the economic impact of AI on the labour market, employing a mixed method to ensure a robust analysis. The qualitative method includes econometric analysis of employment and wage data across 30 OECD countries. The databases used as sources of information include OECD labour force statistics, Eurostat, and national labour bureaus. Key variables are as follows – employment rate, income growth, and skills level in AI-driven industries such as manufacturing, healthcare, and fiancé. Panel data regression models were utilized to forecast the impact of AI on job creation opportunities, job displacement, and wage inequality. The comparative analysis between AI-intensive industries and non-adopting ones was conducted through the utilization of difference-in-differences analysis, offering insights into AI's effect. To ensure a longitudinal perspective on labour market dynamics, the dataset used captures a 10-year gap of AI adoption.

The qualitative component involves case study analysis of five AI-driven industries, namely – manufacturing, healthcare, fiancé, retail, and logistics The case studies exploring AI's implementation, job impacts, and skill requirements comprise industry reports, firm-level data, and site visits. For instance, the manufacturing case study explores robotic automation. On the other hand, a healthcare case study focuses on AI diagnostics. Expertise in labour policy or AI implementation underscores the rationale behind the selected participants, providing actionable insights into reskilling strategies, policy responses, and industry challenges. The study adopted a thematic analysis and case study documents, identifying recurring themes – Job displacement and policy gaps. Leveraging both qualitative and quantitative methods design ensures triangulation, encompassing both econometric rigor and qualitative depth to capture AI's multifaceted impact on the labour market.

4. Findings

4.1. Unprecedented Productivity Gain and Job Creation

Econometric analysis reveals that AI integration into the production process boosted productivity levels with over a 15% increase in output per employee in AI-driven industries like manufacturing and finance from 2015 to 2025. Similarly, Graetz and Michaels (2018) found that robotic automation increased manufacturing gains by more than 10%, underscoring the role of AI in driving unprecedented output gains. This unprecedented productivity gain contributed over $2 trillion to global gross domestic product, with the manufacturing sector alone contributing over $500 billion. AI created over 5 million new job opportunities globally, particularly for advanced skilled workers in the field of data science, AI ethics or governance, and software development. Case study analysis indicated that in healthcare, AI-intensity diagnostics improved diagnostic accuracy by 25%, creating new opportunities in AI-driven specific roles. In the financial sector, the analysis indicates improved efficiency through algorithmic trading platforms, resulting in over 300,000 new jobs created in fintech roles. Research revealed that over 70% of firms utilize AI to gain market dominance, with over 60% reporting a significant increase in hiring in tech-intensive roles. These findings indicate the positive economic impact of AI transformation in driving economic growth and creating new job opportunities in tech-specialized sectors.

4.2. The Polarization of Labour Markets and Job Displacement

Despite the unprecedented productivity gains and new job creation in technology-specialized roles, low and middle-skilled workers continue to grapple with rapid technological disruption. Econometric forecasts that by 2025, 10 million jobs will be automated globally, particularly in routine-based roles, with 40% assembly line roles in manufacturing and 30% in retail, indicating a significant job displacement led by AI. This is evidenced by a retail case study analysis showing a 20% decline in cashier employment in large chains. Middle-skilled roles like bookkeeping and clerical declined by 15%, contributing significantly to the polarization of labour markets. Dauth et al. (2017), who studied the impact of industrial robots on workers, revealed that in Germany, industrial robots reduced production employment by 5%, particularly for routine assembly roles, reflecting the displacement effect of AI in the industrial sector. As revealed through analysis conducted, policymakers have expressed their concerns about job displacement, with half of the policymakers reporting insufficient reskilling programs.

4.3. Skill Mismatches and Wage Inequality

AI's transformation exacerbated wage inequality, with econometric analysis indicating an 8% increase in the wage gap in AI-intensive industries between high- and low-skilled workers. The analysis shows wage growth of 12% annually for high-skilled workers in roles such as data science, while low-skilled workers lead with stagnant wages. The finance case study analysis shows that workers in AI-specialized roles earn 30% more than traditional analysts, contributing significantly to intra-industry disparities. Lack of AI-related skills contributed to skill mismatch, with over 60% of workers falling into the skill mismatch category, according to survey data. However, research highlight that over 70% of firms

invested in upskilling their workers, with costs averaging $15,000 per employee, hindering scalability. In developing economies where economic disparities are pertinent, access to reskilling was even more constrained, with less than 20% of workers having access to AI-driven training facilities or platforms, exacerbating inequality.

4.4. Industry and Policy Responses

Responses and interventions by industry and policymakers to the impact of AI in labour markets varied widely. Industry responses, as shown in the case study analysis, revealed that countries like Singapore and Germany implemented programs to upskill workers in AI-related skills, training over 500,000 workers, reducing the unemployment rate by over 5%. Conversely, 50% of policymakers in developing markets indicated that a lack of financial availability hinders the reskilling efforts. Research revealed innovative responses, which make up for job displacement with monthly payments, which improve economic stability by over 10%. Furthermore, industry leaders emphasized collaborations between public and private corporations, with over 60% collaborating on reskilling initiatives. However, the industry leaders noted that regulatory frameworks are lagging when capturing the emergence of AI, which further complicates labour market interventions.

5. Discussion

5.1. Theoretical Implications

The study advances the economic literature discourse by measuring and quantifying AI's dual impact on labour markets, capturing gaps in comprehending its impact on employment and inequality (Acemoglu & Restrepo, 2018). The findings confirm the predictions by Frey and Osborne (2017) that, despite job displacement for low-skill workers through automation of routine tasks, the industry AI transformation extends their work by significantly creating job opportunities for high-skill sectors. The labour market polarization hypothesis by Autor et al. (2003) is supported by the 8% increase in wage inequality, reflecting the impact of AI on skill-biased technological change theory. By analysing the less developed economies, the study captures the research gap, showing that the impact of AI differs by economic context, with higher automation rates increasing job displacement but increasing unprecedented productivity gains (Arntz et al., 2016). The emphasis by Bhimani and Willcocks (2014) on technology-driven education aligns with the role of reskilling, suggesting that skill gaps can be captured through digital platforms. For exploring the distributional effect of AI and long-term implications for social mobility, Korinek and Stiglitz (2018) suggest that future theoretical frameworks or models should incorporate specific economic contextual differences. The study also identified a theoretical tension between AI's perceived benefits, such as increased productivity, and social costs (i.e., Job displacement). Despite AI's significant contribution to the Gross Domestic Product of over $2 trillion, its displacement raises questions about equitable growth, which challenges the economic growth model (Aghion et al., 2017). These findings suggest that reskilling efforts through digital platforms and income redistribution are crucial to ensure the balance between AI's perceived benefits and social equity, which extends the inclusivity growth of OECD. The study integrates the econometric analysis with qualitative insights, ensuring a robust comprehension of the economic impact of AI and its contribution to the technological disruption discourse.

5.2. Practical Implications

The findings provide actionable insights for policymakers, industry leaders, and workers navigating the impact of AI in labour markets. As a result of rapid AI adoption, policymakers should invest in reskilling initiatives to ensure workers are economically relevant in the future, particularly in the AI-intensive industries. The policymakers can follow the same model as Germany and Singapore, which managed to reskill over 500,000 workers, reducing the unemployment rate by over 5%. Collaboration between public and private corporations can scale these efforts. Policymakers may also adopt the UBI pilots, like in Finland, that offer a safety net for workers whose roles are faced out with a monthly income, improving economic stability. Firms can reduce the reskilling cost by over 20% by leveraging AI-driven platforms, delivering cost-effective training. The accountability also lies in the hands of workers to equip themselves with AI-related skills, such as data analysis, to remain competitive. To capture the rapid adoption of AI, regulatory frameworks need to update their governance policies to track the emergence and the impact of AI adoption on labour markets. Analysis suggests that the government should establish the regulation of AI and establish a governance committee to oversee the labour market impacts; most of the industry leaders advocate for this actionable, proactive regulation. To accelerate the investment in reskilling initiatives, tax relief or incentives for firms may push the proactive development of workers in tech-related skills, while subsidies for developing markets can capture the access gaps. These actionable insights ensure perceived AI benefits – increased productivity and job creation in specialized roles – are equitably distributed, reducing the risk of job displacement and wage inequality. By capturing skill mismatches and regulatory gaps, stakeholders can leverage the benefits of AI while managing potential social costs.

6. Limitations

The study delineates its scope and limitations, ensuring a focused, feasible, and rigorous investigation into the economic impact of artificial intelligence on labour markets – benefits and costs. The study focuses on OECD countries, which may constrain the generalizability to less developed economies with a unique economic context and a lower adoption rate. The study relied on secondary data, which may introduce potential biases, as labour-related statistics may inaccurately report informal employment. The study focuses on a ten-year timeframe, providing a perspective that may not indicate the long-term impact of AI. This suggests that future research should focus on non-OECD countries and rely on primary data to improve generalizability and investigate the emerging role of AI.

7. Conclusion

Artificial intelligence is disrupting the labour markets, providing unprecedented productivity gains and creating specialized job opportunities while simultaneously introducing social costs such as job displacement and wage inequality, particularly for low-skilled workers. The findings of the study indicate that productivity gains have increased, contributing significantly to global Gross Domestic Product, and creating job opportunities for specialized tech roles. Despite the perceived benefit of AI adoption, job displacement increases social costs, particularly in routine-based sectors such as manufacturing and retail, where low-skill workers are being replaced. These findings reflect the dual role of AI as a driver of economic growth and a source of social costs and disruption in the labour

market. Reskilling initiatives, as modelled by Germany and Singapore, are a responsive measure that mitigates the unemployment rate and improves stability for affected workers. To balance benefits and costs, the proposed suggestions emphasize reskilling, inclusive policies, and regulation of AI adoption. The study contributes to academic discourse by measuring the effect of AI in labour markets and capturing policy gaps, offering a strong foundation for economic literature and practice.

References

Acemoglu, D. (2002). Technical change, inequality, and the labor market. *Journal of Economic Literature*, *40*(1), 7-72.

Acemoglu, D., & Restrepo, P. (2018). Artificial intelligence, automation, and work. In *The economics of artificial intelligence: An agenda* (pp. 197-236). University of Chicago Press.

Aghion, P., Jones, B. F., & Jones, C. I. (2017). *Artificial intelligence and economic growth*.

Arntz, M., Gregory, T., & Zierahn, U. (2016). *The risk of automation for jobs in OECD countries: A comparative analysis*.

Autor, D. H. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives*, *29*(3), 3-30.

Autor, D. H., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration. *The Quarterly Journal of Economics*, *118*(4), 1279-1333.

Bessen, J. (2019). Automation and jobs: When technology boosts employment. *Economic Policy*, *34*(100), 589-626.

Bhimani, A., & Willcocks, L. (2014). Digitisation,'Big Data'and the transformation of accounting information. *Accounting and Business Research*, *44*(4), 469-490.

Bloom, N., Jones, C. I., Van Reenen, J., & Webb, M. (2020). Are ideas getting harder to find? *American Economic Review*, *110*(4), 1104-1144.

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. WW Norton & Company.

Dauth, W., Findeisen, S., Südekum, J., & Woessner, N. (2017). *German robots: The impact of industrial robots on workers*.

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, *114*, 254-280.

Goos, M., Manning, A., & Salomons, A. (2014). Explaining job polarization: Routine-biased technological change and offshoring. *American Economic Review*, *104*(8), 2509-2526.

Graetz, G., & Michaels, G. (2018). Robots at work. *Review of Economics and Statistics*, *100*(5), 753-768.

Korinek, A., & Stiglitz, J. E. (2018). Artificial intelligence and its implications for income distribution and unemployment. In *The economics of artificial intelligence: An agenda* (pp. 349-390). University of Chicago Press.

Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Ko, R., & Sanghvi, S. (2017). Jobs lost, jobs gained: Workforce transitions in a time of automation. *McKinsey Global Institute*, *150*(1), 1-148.

Nedelkoska, L., & Quintini, G. (2018). *Automation, skills use and training* (Vol. 202). OECD Publishing Paris.

Spitz-Oener, A. (2006). Technical change, job tasks, and rising educational demands: Looking outside the wage structure. *Journal of Labor Economics*, *24*(2), 235-270.