The Impact of AI on Future Trends of Employment Availability

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ABSTRACT

This present era can also be said as the era of Artificial Intelligence development. Almost every field is more or less getting benefits using AI tools. These AI tools are now in reach of general public with their personal electronic devices like smart phones, tablets, etc. The public is being benefited from such an advanced technology in day-to-day life. Also, there is a high chance exist some threat of its misuse. This misuse of such a powerful technology may lead harm for the whole mankind. Now it is the responsibility of the developers and researcher group how to protect it from misuse. For a responsible AI development, it needs to follow some ethical principles and maintain guidelines to get the maximum benefit for the whole mankind. The basic principles which are now being use in sustainable AI development are: safety and reliability, security preserving privacy, transparency, accountability, fairness and inclusiveness. Along with these principles it also must satisfy data protection rules, informed consent, ownership of the information, objectivity and inequity of the information for the user. It is extremely important to maintain ethics in AI tool development. If it is properly used this is like a blessing for mankind, if it is misused it may become censure.

Keywords

Artificial Intelligence, AI tools, sustainable AI development

1. INTRODUCTION

Artificial Intelligence (AI) has seamlessly integrated itself into daily lives, showcasing its potential to revolutionize various sectors, reinforcing efficiency, productivity, and overall safety. Nevertheless, the relentless advancement of AI technology has raised concerns about its potential impact on various fronts, most notably in areas such as employment, privacy, and security. One of the primary concerns revolves around the approaching impact of AI on employment. The rapid automation of tasks raises the threat of job displacement by mechanized counterparts, leading to a reduction in the workforce and exacerbating income inequality. This could excessively affect those who may struggle to adapt to the intricacies of this emerging automated economy.

Another significant worry is on AI's encroachment on personal privacy. As AI systems become increasingly sophisticated, their ability to accumulate and analyze vast amounts of personal data raises significant worries about preserving privacy. If these AI systems are not adequately secured, the risk of unauthorized intrusion by malicious entities looms large, potentially leading to identity theft, financial fraud, and various cybercrimes. Furthermore, the deployment of AI for surveillance purposes raises concerns about potential government overreach and the gradual erosion of civil liberties. Adding to these concerns is the issue of security. As AI systems advance, their susceptibility to cyber-attacks grows in parallel.

Adversarial elements exploit AI's capabilities to craft intricate attacks that can bypass established security protocols posing a significant threat to critical infrastructure and national security.
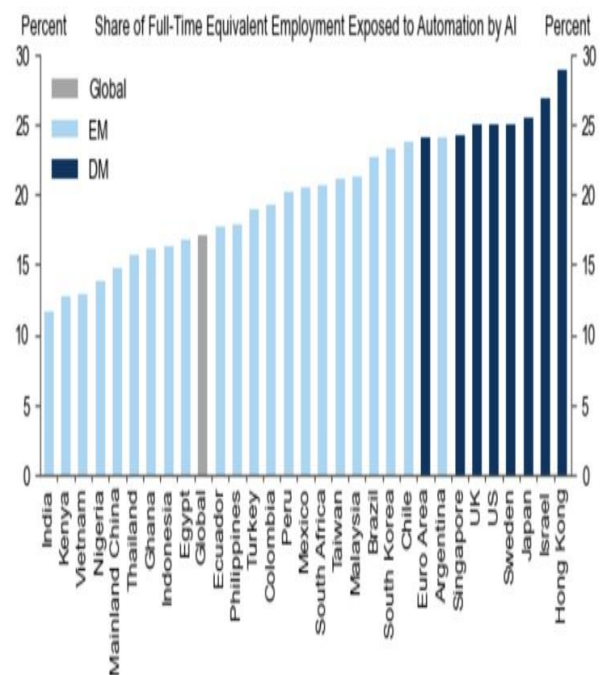
Fig. 1 Trend of AI Impact on Employment

Nevertheless, these concerns are not impossible. There are proactive steps that can be taken to mitigate the adverse effects of AI on the trajectory. Governments have the capacity to allocate resources to education and retraining programs, facilitating the smooth transition of workers into professions that require inherently human attributes. Additionally, enterprises can play a significant role by prioritizing the security of their AI systems, bolstering their defenses against cyber-attacks. Concurrently, policymakers bear the responsibility of crafting ethical and responsible guidelines, regulating the boundaries of AI and alleviating concerns related to privacy and security.

The era of AI's dominance has yielded remarkable progress across various domains. However, legitimate concerns regarding its impact on the future, including employment, privacy, and security, persists. Effectively navigating this juncture requires a concerted effort to harness the potential benefits of AI while preventing its potential for harm, thereby

ensuring its role as a tool for advancement rather than adversity.

2. LITERATURE SURVEY

Contemporary scientific research and the ever-expanding landscape of information technologies are increasingly infusing various aspects of the business world. In this context, the outcomes of the scientific and technological revolution and the subsequent innovations emerge as pivotal factors for a country's economic development and its quest for competitiveness on the global stage. The gradual proliferation and utilization of artificial intelligence in the international technology market are witnessing daily growth. This study is providing a detail methodology to explore the impact of artificial intelligence on businesses, drawing from both global experiences and the specific case of Georgia. Consequently, the research delves into the evolutionary stages and principal trends in the development of artificial intelligence. It examines Japan's on-going employment trends and job displacement, influenced by the degree of AI implementation, while also projecting future scenarios. Furthermore, this paper also examines the utilization and escalating significance of artificial

intelligence in the context of the 4.0 industry during the pandemic restrictions, across various sectors of the economy, and evaluates its role in the post-pandemic era. Here, a comprehensive research approach encompassing both qualitative and quantitative methods is employed. The study incorporates content analysis of scientific literature, scrutiny of statistical data, and practical illustrations from diverse countries and international organizations. Additionally, insights from leading analytical institutions are integrated to assess the current landscape and anticipate developmental prospects. [1]

The realm of economic research has long been devoted to analyzing the impact of technological innovation and automation on employment and economic growth. Traditional economic models have typically weighed the negative displacement or substitution effect against the positive complementarity effect on employment. Over the course of economic history, stretching from the industrial revolution to more recent times, substantial evidence has strongly supported the notion that the overall effect on employment and incomes is positive. Yet, concerns persist that with the advent of Artificial Intelligence, it may be facing a unique scenario. Cutting-edge economic models designed to predict the influence of AI on various occupations deliberately emphasize the labour substitution effects inherent to this novel technology. These models create a dynamic where humans and machines vie for the completion of work-related tasks. Empirical testing of such models, particularly with data related to robots, has yielded mixed results. It is worth noting that the economic attributes of rival robots are not directly comparable to the non-rival and scalable AI algorithms, which may serve as a versatile technology with the potential to accelerate innovation. These distinctive characteristics provide some indication that this time around, the impact of AI could indeed be different.

However, it is important to highlight that, to date, there is a paucity of empirical evidence directly linking AI or Machine Learning (ML) to employment and income dynamics. General economic growth models, while informative, can only offer a spectrum of divergent and hypothetical scenarios, ranging from economic stagnation to a hopeful future marked by accelerated growth. Even in extreme scenarios involving significant displacement of human labour by machines, there remains

optimism for an overall wealthier economic future. The existing body of literature is more conclusive in identifying potential negative consequences of automation on income equality. Counteracting these trends through redistributive policies will necessitate a consideration of behavioral responses to such policies. In conclusion, while certain factors suggest that the nature of AI/ML may indeed differ from past technological changes, it is important to underscore that empirical evidence supporting this perspective is currently limited.[2]

Investigations on the intricate interplay between the objectives outlined in the United Nations' Sustainable Development Goal 8 (SDG 8), which seeks to promote productive employment and decent work, and the widespread integration of Artificial Intelligence (AI). The findings draw from a comprehensive analysis of 232 survey responses, in which may meticulously examine the impact of AI adoption on various facets, including workers' psychological contracts, job engagement, and trust. . In [3] investigation reveals a noteworthy relationship between psychological contracts and job engagement, as well as trust, both of which exhibited a substantial and positive correlation. However, the introduction of AI into the workplace brought about a significant decline in the positive influence of psychological contracts. Further exploration of the existing body of literature prompts us to propose the emergence of a novel category of psychological contract, which is termed as "Alienational." In contrast to the foundational principles of SDG 8, which aim to fortify relational contracts between organizations and their employees, the widespread adoption of AI appears to have a contrary effect, eroding the very essence of decent work.

Technological advancement, exemplified by the proliferation of artificial intelligence (AI), exerts a dual impact on the composition of employment. An effort to investigate the influence of AI development on the skill structure of employment, this study leveraged panel data encompassing 30 provinces and cities in China spanning the years 2003 to 2017. This paper has been employed both the mediating effect regression model and the threshold regression model to conduct empirical examinations. This paper is presenting the findings reveal that the evolution of artificial intelligence significantly shapes the landscape of employment skills. Furthermore, it is observed that regional innovation plays a substantial mediating role in this context. Regarding threshold characteristics, there exists a discernible threshold effect associated with regional innovation. As the innovation environment improves, along with advancements in industry and technology, the impact of artificial intelligence on middle- skilled employment progressively diminishes. Concurrently, high-skilled employment demonstrates a U-shaped pattern of change under the influence of the innovation environment and technological progress.[4]

The paper [5], survey paper contends that the consequences of artificial intelligence (AI) and automation on economic growth and employment are intricately linked to institutional frameworks and policy choices. It is undertaken as a comprehensive two-fold analysis. In the initial section, review the most current literature to demonstrate that AI has the potential to stimulate economic growth by substituting labour with capital, both in the production of goods and services, as well as in the generation of innovative ideas. However, it may assert as the synergy of AI with inadequate competition policies could potentially impede economic growth. In the subsequent section, needs to be examined the impact of robotization on employment in France during the period spanning from 1994 to

2014. Drawing from empirical analysis based on French data, in the research reveals two key findings.

Firstly, it establishes that robotization leads to a reduction in overall employment at the employment zone level. Secondly, the findings indicate that individuals with lower levels of education are more adversely affected by robotization compared to their more educated counterparts. This observation highlights the significance of appropriate labor market and education policies in ensuring that the positive potential of AI and automation on employment is realized.

3. IMPACT ANALSIS

The profound impact of Artificial Intelligence (AI) on employment has become a paramount concern. The relentless progression of AI technology is inevitably automating an increasing array of jobs, leading to significant workforce displacement. Dire projections suggest that by 2030, automation could potentially replace up to 800 million jobs, causing substantial upheaval in economic and societal realms. This pressing issue has triggered a call for innovative policies and initiatives aimed at mitigating the employment consequences of AI.

One of the potential solutions to this dilemma lies in strategic investments in education and training programs, designed to equip workers with skills less susceptible to automation. Certain professions, such as those within healthcare, education, and the arts, display a lower propensity for automation compared to sectors like manufacturing and transportation. By nurturing a workforce skilled in these areas, governments and enterprises can effectively mitigate the adverse effects of automation on employment.

Supplementing this approach is the cultivation of an environment conducive to entrepreneurship and small business development. Governments can support start-ups and small enterprises vigorously, fostering the creation of new employment opportunities, particularly in sectors less susceptible to automation. Another avenue of consideration involves the potential implementation of a Universal Basic Income (UBI). This ground breaking paradigm guarantees income for all citizens, irrespective of their employment status, alleviating economic distress caused by job losses due to automation.

Although AI's penetration into employment presents a formidable challenge, it is essential to acknowledge that not all professions will succumb to mechanization. Many roles require skills that remain resilient to automation, including attributes like creativity, critical thinking, and interpersonal communication. In addition, AI's ascent is poised to catalyze the emergence of new employment opportunities, especially within the domain of AI development and maintenance.

In summary, the spirit of AI's impact on employment looms large, but a range of solutions signals to mitigate its detrimental effects. By fostering educational excellence, nurturing entrepreneurship, and contemplating innovative socio-economic paradigms such as a Universal Basic Income, it can ensure that the benefits of AI are shared equitably across all segments of society

. In parallel with concerns about AI's employment ramifications, there is the perturbing issue of privacy. AI systems, with their insatiable appetite for data, indiscriminately harvest and analyze vast troves of personal information, encompassing health records, financial data, and location specifics. The magnitude of this data-driven enterprise emphasizes the imperative to establish robust data protection laws and regulations, empowering individuals to assert control over their personal information and holding corporate entities accountable for any breaches or misuse. An alternate approach to address this challenge involves the cultivation of AI systems encouraged with privacy-preserving design principles. Technologies like differential privacy, engineered to facilitate data analysis while safeguarding individual privacy, stand as exemplars of this proactive approach. At the same time, fostering agreements for privacy-conscious data sharing can strike a harmonious balance between data utilization and personal confidentiality.

4. CONCLUSION

In addressing the employment challenges brought about by AI, one potential solution emerges in the form of a Universal Basic Income (UBI). Within this background, each citizen is provided with a guaranteed income, irrespective of their employment status. This innovative approach has the capacity to alleviate the economic needs resulting from job losses due to automation. Another possibility for potential resolution involves expansion AI development that collaborates pleasantly with human labour, rather than replacing it entirely. This may involve designing AI systems that work synergistically with human counterparts, enhancing their productivity and efficiency without complete substitution.Shifting the attention to the realm of privacy, practical measures can be employed by companies to establish a robust defense against cyber threats. Implementing strong encryption and data security protocols can safeguard sensitive information from malicious cyber-attacks. Simultaneously, government agencies can utilize their regulatory authority to mandate transparency in data collection and usage practices, while also reinforcing individuals' control over their personal data. Another critical aspect, security, burdens proactive measures. Governments can allocate resources for AI cyber security research, developing innovative safeguards against cyber-attacks. Furthermore, they can strive to create international agreements that prohibit the use of AI in warfare and promote responsible AI development and deployment.

In summary, the complex challenges posed by AI's impact on the society do not lend themselves to naive solutions. However, by navigating the evolution and application of AI with foresight and wisdom, this may connect its potential to uplift society while avoiding unintended harm.

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