

# About the Potential Impact and Future Trends of Artificial Intelligence on Global Economic Development

Zihao Chen

The Village school, Houston, 77077, USA

## Abstract:

This article analyses the complex interrelationships between artificial intelligence (AI) and worldwide economic growth. It treats AI's role, ranging from accelerating scientific progress to being part of conventional industries. By highlighting the importance of the government's role in the innovation process, the study suggests implementing focused programs and policies to benefit from AI in economic growth fully. Furthermore, the article addresses the issue of dealing with social problems, like the digital divide, to achieve equitable distribution of AI benefits and promote inclusive growth. By looking at the opportunities and risks of AI implementation, this paper gives an overall picture of its consequences for the future of the world's economies. Finally, all stakeholders should be concerted in their efforts to exploit the possibility of AI while dealing with its eventual pitfalls that will culminate in sustainable and inclusive economic progress.

**Keywords:** Artificial intelligence (AI); Global economic development; Digital economy; Innovation-driven growth

## 1. Introduction

Artificial intelligence (AI) encompasses any computer system that can perform tasks generally perceived as distinctively to humans, e.g., visual perception, speech recognition, and decision-making (Dwivedi, et al 2021). AI is experiencing enormous success in accomplishing its terms times, machine learning algorithms, access to such data, and higher computational resources. Consequently, tracking AI's future impacts is becoming crucial now.

AI advancements are tightly associated with the rise of the digital economy and the adoption of innovation-driven growth models. AI promotes and benefits from digitaliza-

tion across economic and human activities. Digitalizing information, products, services, statistics, communications, and business operations has generated massive datasets that are the core input for training AI systems. AI capabilities in analyzing data, detecting patterns, and making predictions drive the digital economy forward. AI is applied in cognitive infrastructure, platforms, and applications across finance, transportation, healthcare, manufacturing, and other sectors (Dwivedi et al. 2021). There will be a transition from traditional growth models towards innovation-driven economies facilitated by AI insights for developing innovative products, services, and business models.

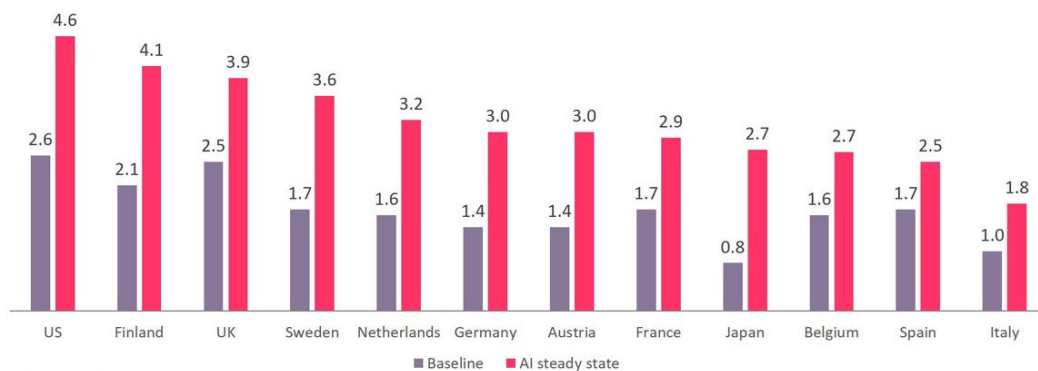
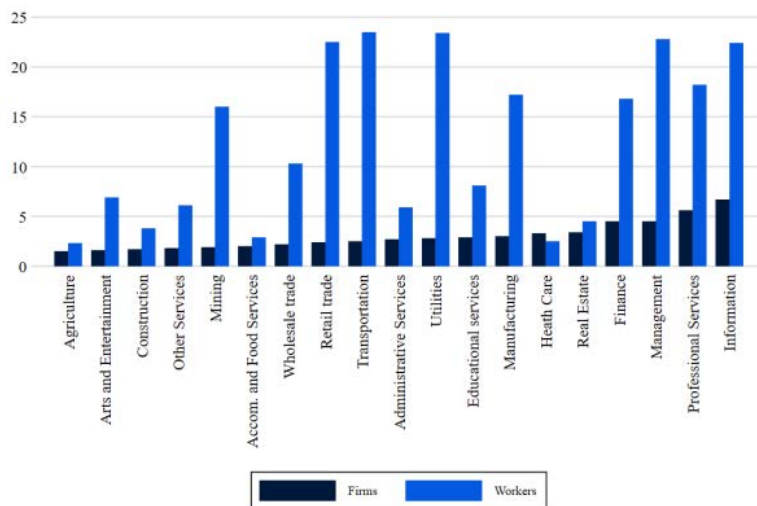


Figure 1.1: Projected Impact of AI on GDP Growth Rates: Baseline vs AI Steady State (source [newsroom.accenture.com](https://www.accenture.com/newsroom))

The chart depicts how AI adoption could significantly boost GDP growth rates, especially in the US, Finland, and the UK, highlighting AI's potential to drive productivity gains and economic competitiveness across nations through industrial transformations and innovation. AI is expected to have significant impacts across economic sectors. AI can improve productivity through precision farming using sensor data and automation in agriculture

and primary industries. AI will drive industrial transformation for manufacturing and secondary industries by optimizing processes, enabling flexible automation and customized production. The impacts will extend across industrial value chains with increased demand for AI services. AI applications like robotic process automation will also reshape the services and tertiary industries.



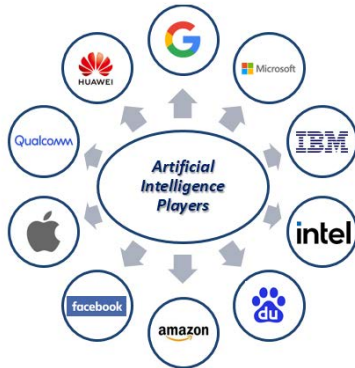
**Figure 1. 2: Percentage of firms and workers with some AI Adoption (Percent (%)) source [www.whitehouse.gov](http://www.whitehouse.gov)**

The chart shows the percentage of firms and workers that have adopted some form of artificial intelligence across various industries. The data reveals that industries like computer/electronics, professional services, and transportation have higher AI adoption rates among both firms and workers compared to sectors like agriculture, mining, and utilities. The information provides insights into the varying levels of AI integration across different economic sectors.

The world economy is undergoing profound changes stemming from technological disruptions, competitive realignments, and geopolitical shifts. Advances in digital technologies and AI are integral drivers reshaping global economic structures and dynamics. A key trend is the reorganization of global value chains and manufacturing activity. AI, robotics, and 3D printing enable more automated, localized, and flexible production systems. Rather than concentrating production in specific low-cost locations, firms can automate factories and customize output closer to end-users. COVID-19 supply chain shocks have also spurred rethinking of global production networks. The financial sector will be redesigned based on the crystallization of digital technologies and AI into new concep-

tualizations, such as digital currency. AI is accelerating business cycles by automating banking and financial services sector operations. AI's ability to apply statistics to large data sets and model risks is particularly effective in areas such as lending and credit provision where uncertainty abounds. The primary role of AI is to increase financial innovation while eliminating operational expenditures and risks. In international trading, AI uses natural language processing to translate, scientific imaging for scanning, and predictive analytics in supply chain logistics; there are ways that AI is helping trade facilitation that is already being utilized in the sector. Besides being tightly integrated at exporters or customs agency levels, AI can improve trade processes and remove friction at borders. Even though AI could be a disrupter for labor-intensive industries in the export of developing countries on a short-term basis, there is likely to be a transformation triggered by the untapped potential this technology offers. The rise of AI is causing more companies to work in the field of innovation and increasing the rate of innovations in various areas, including computer vision, natural language processing, robotics, and microelectronics. AI, being a creative invention machine, stands behind the en-

hancements of research productivity and output, contributing to generating new ideas.



**Figure 1.3: Major AI competitors and technical advances**

Source: <https://nitesh156.medium.com/task-11-11ce-78f9a40b>

AI stands at the junction of primitive human engagement, artificial cognition and creativity, and powerful computational resources. Therefore, augmenting AI with these features and resources creates a virtuous cycle of innovations coming upon the innovations. Another critical point is how new AI innovations bring up the economic worth of mad efforts toward AI research and development. Regarding computer ethics, the IPR issue is a bit complicated.

This paper aims to contribute to understanding how ongoing advances in AI could influence future global economic development. Assessing future opportunities and inherent risks with emerging technologies is vital to developing policies that contribute to inclusive growth. The financial effects of new general-purpose technologies such as AI are often confused at the emerging stage. The analysis must be expanded to establish how AI will influence productivity, employment patterns, income distribution, business patterns, and the competitiveness of different economies. Taking measures that will set the economy for AI development is very important.

This paper provides a multi-dimensional analysis of how AI can impact economic structures like productivity, labor markets, inequality, competitiveness, and growth. It establishes links between AI, the digital economy, and innovation-driven growth while projecting broader macro-level effects. Specific areas explored include AI's role in enhancing efficiency, decision-making, innovation, job automation, corporate control, and value chain shifts. The paper comprehensively summarizes AI's economic consequences by outlining its benefits and drawbacks. It aims for a penetrating analysis across micro and macro levels, spanning developed and developing countries, businesses, and workers. It moves beyond simplistic narratives of AI

as either a job destroyer or a prosperity driver.

## 2. Impacts of AI on Global Economic Changes

It is anticipated that the emergence of the concept of artificial intelligence (AI) will trigger a significant change in the global employment structures in the industrial sectors of the world. What AI provides in automatic and optimization sectors is likely to impose the primary, secondary, and tertiary sectors in different ways.

Automation techniques such as smart agriculture, precision agriculture, and agricultural robots will result in heightening outputs and efficiency in the agriculture sector. While it is true that productivity will increase due to automation, traditional jobs of farm workers may be threatened as the tasks get more automated (Agrawal et al., 2018). On the other hand, positions related to such development will be created, such as data analysis, system maintenance, and precision farming management.

In the manufacturing and construction industries, AI will have a large influence. Automation, production lines, quality control systems, and design and planning of AI processes might result in better efficiency and reduced costs. Nevertheless, the phenomenon may also lead to job cuts for low-skilled people who are doing routine jobs. On a positive note, various jobs can be created in sectors like AI system creation, sustenance, and total integration.

Industries like finance and services would undergo fundamental changes due to significant AI advancements. Artificial Intelligence (AI)-fueled virtual assistants, chatbots, and automated customer service tools may redefine customer services. In the financial sector, AI-driven algorithms, more prevalent for trading, risk management, and fraud detection, have become a routine occurrence (Agrawal et al., 2018). On the other hand, routine jobs might be automated, but new roles such as AI system developers, data analysts, and special advisors can be created.

AI is ready to become a driving force of immense innovations in the financial sector, opening the way for the adoption of new digital finance models and fundamentally transforming conventional bank and business processes.

Today, AI-enabled technologies are already capable of delivering new financial solutions and propositions. In this regard, Robots driven by AI can make algorithmic trading decisions using individualized recommendations and complex data analysis while executing the trades. AI-powered rating methods can assess trustworthiness more precisely and can result in accelerating financial inclusion. On the other hand, AI-driven fraud detection systems are not only quality fraud detection tools that support the security and

risk management of fintech platforms but also improve the operations of the financial sector as a whole.

AI is at the forefront of an unprecedented transformation in banking operations that is manifested by automating the workflow, improving customer experience, and optimizing risk management. AI systems such as chatbots and virtual assistants are capable of offering day and night customer service connectivity; similarly, personal loan approvals could be achieved much faster with AI-driven credit scoring and loan processing systems. AI platforms with fraud detection and anti-money laundering capabilities can effectively improve the security of systems used for operational processes. AI in corporations can aid in streamlining supply chains, accurate prediction failure in machines, and better utilization of resources; the outcomes will be increased efficiency and cost reduction.

With AI technology's fast pace of progress, we can see more and more new inventions and also increasing competition between companies and countries with regard to AI advancement.

AI itself, being a highly assisting tool for research and development, has been successfully applied in different sectors, including healthcare, energy, and materials science. AI can study big data and identify the grouping and delivery of original findings that are the foundations for discoveries in these areas. Consequently, governments, universities, and the private sector quickly rush to invest or increase their funding for AI research.

Future economic and strategic outcomes have been seen as the driving force leading to the global struggle for AI dominance between nations and tech companies. Countries are increasingly putting resources into the research of AI, recruiting leads in the field, and investing in the hardware and software that go along with it to gain an advantage. Tech giants companies aggressively pursue developing top-notch AI groups and systems, capturing AI startups, and recruiting AI talent.

As AI applications are adopted, there will be a good number of new products and services that individual industries will be able to offer. The applications of AI are evolving from replacing human labor to devices with AI capabilities, such as AI-powered personal assistants and smart home devices. We can also use AI for more advanced purposes like autonomous vehicles and AI-driven healthcare diagnostics. This allows businesses to tap into innovation and excel their competitors.

### **3. Potential Risks of Artificial Intelligence on Global Economic Changes**

The use of Artificial Intelligence (AI) by different sectors is sweeping the world economy, providing worldwide the

unprecedented potential for accelerated growth, competence, and technological upgrading. On the other hand, this transformation involves a great number of different risks that have a huge impact on economic stability, job markets, and income inequality. The essay highlights the risks brought about by this uneasy process, which gives weight to the need for a smooth strategy and regulation to alleviate adverse effects.

AI's influence on market dynamics and economic stability has changed a lot. The standardization of routine jobs through automation achieves significant productivity gains. However, this causes the market to be disrupted and the jobs of traditional workers to vanish. Frey and Osborne (2017) mentioned that at least 47 percent of the jobs in the US are bound up with the risk of automation. Such a thing would possibly make millions of Americans jobless, and so the whole economy of the state unstable. Additionally, AI technologies, concentrated among a few dominant firms, could lead to monopolistic behaviors that hinder innovation and increase supply chain risks.

One of the most urgent questions about AI is the danger of job displacement. However, even though it brings new work areas in high-tech industries, there is a grave possibility that the overall speed of eliminating jobs will go much beyond creating fresh new jobs. According to Chowdhry (2018), AI is estimated to create 133 million new jobs, 75 million positions will be eliminated by 2022, and there will be a net loss of jobs in some industries. It involves both quantity and quality of jobs as the jobs created by AI often require skills that the displaced workforce does not possess, which in return presents the question of creating a space for equal income. According to Autor et al. (2003), in a process known as job polarization, middle-skill jobs may be eliminated, but in turn, low-skill and high-skill jobs may increase, which widens the gap between low-skill and high-skill workers.

Integration of AI in business and economy gives rise to a number of ethical and privacy issues. AI systems are only as good as the data they are trained on. If the data had any kind of bias in the past, the outcomes may be discriminatory toward hiring or access to services (Roy, 2017). Moreover, AI in surveillance and data analysis by companies and government is a violation of privacy rights, and it may be misused to the extent that it jeopardizes consumer confidence and social stability.

As economies continue to shift focus toward AI-based approaches, risks arising from cyberattacks and system failure become evident. Cyber breaches aimed at an AI system can cause devastating outcomes, ranging from a market crash to the compromise of infrastructural core components (Taddeo & Floridi, 2018).

To deal with such risks, a proper framework of licenses

must be adopted that will provide ethics in AI tools, enrich users' privacy and data security, and also promote economic stability. Governmental bodies and international agencies should actively engage in the development of standards and strategies for AI deployment that balance economic inclusion and social equity. This comes down to providing education and training with the intention of imparting workers the skills they will need in an AI-run economy and developing social protection measures for the people whose jobs are going to be replaced by machines.

AI's introduction as a double-edged sword comes with the dilemmas of the global economy's opportunity for growth and efficiency while at the same time posing substantial risks to economic stability, job markets, and social equity. Dealing with these setbacks should be a collective effort of different sectors like strategic regulating investing in human resources and ethics while developing AI. Only by joint actions can the advantages of AI be delivered without economic stability and welfare declining.

#### 4. Analysis of the path of artificial intelligence in promoting global economic development

To begin with, AI is a new transformative force that has seen its potential to change various sectors of the economy in the past few years. The precise application of artificial intelligence in business can ultimately cause a substantial rise in productivity, efficiency, and innovation, leading to economic growth at the national and international levels (Korinek & Stiglitz, 2021). This essay will show how AI forms a crucial foundation for the global economy by

boosting tech research and development, integrating with the real economy, and digitally narrowing the divide to bring about more inclusive development.

#### 4.1 Strengthening Technological Research and Development

The inner force of AI is just its ability to increase scientific and technological competitiveness. This potential can be realized by carrying out focused programs in AI research and development (R&D). This includes the support of the promotion of the Internet basics, digital technology, and AI core technology development and application programs. To strengthen technological research and development, there must be mechanisms to catalyze experimental research, nurture entrepreneurial scientists, and integrate scientific knowledge with innovation targets as shown in Figure 4.1 below. Governmental organizations are the key to policy reinforcement and stimulation of research and development activities related to machine learning (Ahn et al., 2020).

Mimicking innovation means copying what already exists and tailoring it to the unique circumstances of your environment. This method covers the progression of the points made by the leading AI nations in the world and allows countries to create tailored solutions to their own needs. Contrastingly, independent innovation is about relentlessly exploring AI research and pushing the boundaries of knowledge by making unceasing discoveries and innovations. Governments can potentially create a culture of innovation through adequate funding and infrastructure, thus contributing to the local growth of AI and facilitating progress (Odeyemi, 2023).

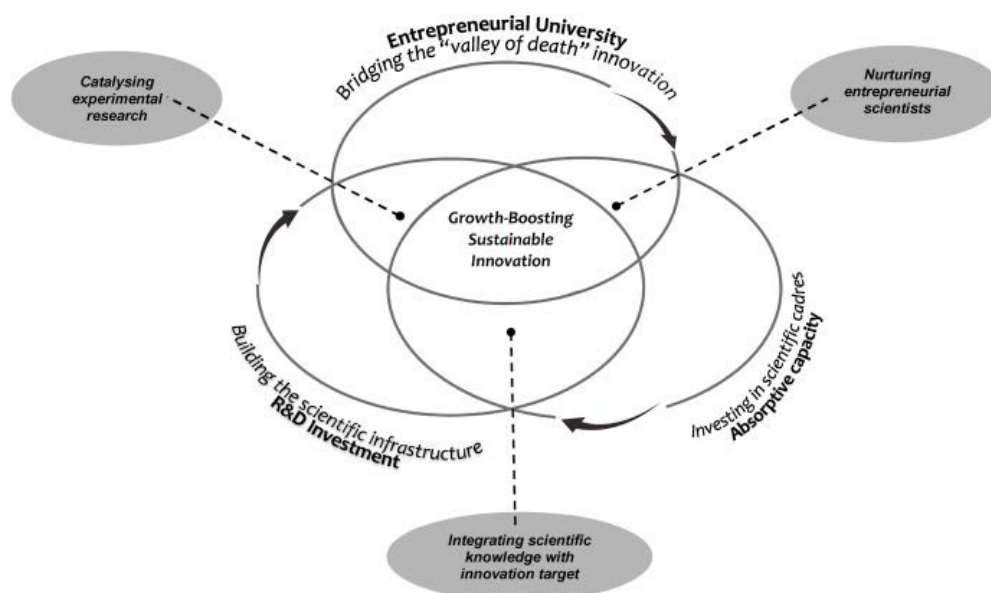


Figure 4.1: Technological research and development model, Source (Sarpong et al., 2023)

### 4.2 Promotion of Integration with the Real Economy

AI demonstrates its true worth in determining the outcomes that matter to the economy (Odeyemi, 2023). To sum up, AI must be tightly interwoven with the mainstream industry sectors, such as automotive, aerospace, healthcare, and finance, and promote future AI-centered

economic growth as illustrated in figure 4.2 below. The integration can be obtained through partnerships with leading enterprises, professional associations, and research and development centers. When collaborative efforts are embraced, the diffusion of innovations is expedited, cutting across different sectors and creating room for innovation and economic advancement.

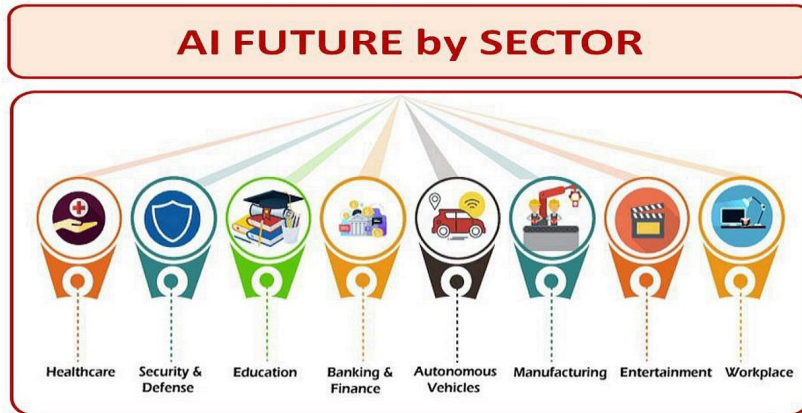


Figure 4.2: Integrating AI with the real economy (Source, Javatpoint.com)

In self-driving vehicles, using artificial intelligence can transform the transportation industry into safer, efficient, and environmentally friendly systems (Bathla et al., 2022). Similarly, in aerospace, AI-powered optimizations can help with aircraft design, precision in predictive maintenance, and improved air traffic management Through AI technologies, businesses can acquire leads and stimulate economic development in their typical industries

### porting the Process of Egalitarian Growth

Although AI offers huge potential to develop the economy, there is a danger of passing on the unequal situation and broadening the digital gap. In order to avoid this result, significant efforts should focus on the fact that the benefits of AI will be shared equitably throughout society because of the highlighted reasons in Figure 4.3 below. Addressing these social and economic factors is a major factor in adopting and using AI.

### 4.3 Narrowing the Digital Divide and Sup-

#### Introduction Understanding the Importance of Digital Inclusion



Figure 4.3: Reasons for promoting digital inclusion, Source (FasterCapital.com)

Primarily, it is necessary to have and increase social security and financial security to cover those most affected by the war, who is the marginalized groups. Among the vital

measures is offering opportunities for education and training corresponding to what is needed to deal with the automation-driven workforce. In the big picture, governments

and corporations must collaborate in developing policies and interventions that put diversity, equity, and inclusion first before considering the AI development stages

## 5. Conclusion

Finally, this research shows AI as a catalyst for global economic transformation. The article highlights that focused research and development programs and involvement in mainstream industries are the ones that governments should prioritize in driving innovation forward. Therefore, while we face the AI world, we must admit the problems that may occur. Future research focuses on advanced policy designs that reconcile economic growth and social justice to ensure that AI benefits society. Besides, there should be a more thorough dig into AI's socio-economic implications, including job displacement and income inequality. The issue of AI is promising, but it's necessary to tackle these problems to ensure inclusive growth and prosperity for future generations. Although such a study's results are informative, it still has certain drawbacks. Besides that, additional research could shed light on the ethical aspects of AI deployment and investigate new avenues to minimize potential risks. Ultimately, by taking advantage of the AI potential and addressing its challenges, we lay a solid foundation for an increase in prosperity and fairness.

## References

Agrawal, A., Gans, J., & Goldfarb, A. (2018). Prediction, judgment, and complexity: a theory of decision-making and artificial intelligence. In *The economics of artificial intelligence: An agenda* (pp. 89-110). University of Chicago Press. <http://www.nber.org/chapters/c14010>

Ahn, J. M., Lee, W., & Mortara, L. (2020). Do government R&D subsidies stimulate collaboration initiatives in private firms? *Technological Forecasting and Social Change*, 151, 119840. <https://doi.org/10.1016/j.techfore.2019.119840>

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.

Bathla, G., Bhadane, K., Singh, R. K., Kumar, R., Aluvalu, R., Krishnamurthi, R., ... & Basheer, S. (2022). Autonomous vehicles and intelligent automation: Applications, challenges, and opportunities. *Mobile Information Systems*, 2022, 1-36. <https://doi.org/10.1155/2022/7632892>

Chowdhry, A. (2018, September 18). Artificial Intelligence To Create 58 Million New Jobs By 2022, Says Report. *Forbes*. <https://www.forbes.com/sites/amitchowdhry/2018/09/18/artificial-intelligence-to-create-58-million-new-jobs-by-2022-says-report/>

lion-new-jobs-by-2022-says-report/  
Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>

Frey, C. B., & Osborne, M. A. (2017). The Future of employment: How Susceptible Are Jobs to computerisation? *Technological Forecasting and Social Change*, 114(1), 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>  
<https://newsroom.accenture.com/news/2016/artificial-intelligence-poised-to-double-annual-economic-growth-rate-in-12-developed-economies-and-boost-labor-productivity-by-up-to-40-percent-by-2035-according-to-new-research-by-accenture>  
<https://www.whitehouse.gov/wp-content/uploads/2022/12/TTC-EC-CEA-AI-Report-12052022>

Jarrahi, M. H., Kenyon, S., Brown, A., Donahue, C., & Wicher, C. (2023). Artificial intelligence: A strategy to harness its power through organizational learning. *Journal of Business Strategy*, 44(3), 126-135. <https://doi.org/10.1108/JBS-11-2021-0182>

Korinek, A., & Stiglitz, J. E. (2021). Artificial intelligence, globalization, and strategies for economic development (No. w28453). National Bureau of Economic Research. <https://www.nber.org/papers/w28453>

Odeyemi, C. A. (2023). Leveraging on Innovation and Technological Entrepreneurship in achieving economic growth in Nigeria. *Covenant Journal of Entrepreneurship*, 51-58. <https://journals.covenantuniversity.edu.ng/index.php/cjoe/article/view/4103>

Roy, Debashish, and R. Srivastava. "The Impact of AI on World Economy." *Artificial Intelligence and Global Society*, February 17, 2021, 25–29. <https://doi.org/10.1201/9781003006602-3>.

Roy, M. (2017). Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. *College & Research Libraries*, 78(3), 403. <https://doi.org/10.5860/crl.78.3.403>

Sarpong, D., Boakye, D., Ofori, G., & Botchie, D. (2023). The three pointers of research and development (R&D) for growth-boosting sustainable innovation system. *Technovation*, 122, 102581. <https://doi.org/10.1016/j.technova.2022.102581>

Taddeo, M., & Floridi, L. (2018). Regulate artificial intelligence to avert cyber arms race. *Nature*, 556(7701), 296–298. <https://doi.org/10.1038/d41586-018-04602-6>  
<https://heinonline.org/HOL/LandingPage?handle=hein.journals/ufir72&div=11&id=&page=7>