Role of Artificial Intelligence (AI) in Globalizing World

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Abstract

The wide increment and integration of Artificial Intelligence (AI) into global pathway has transformed the dynamics of globalization that has offered unparalleled momentum and increased the challenges. This articles explores the multidimensional role of AI in a rapidly globalizing world, highlighting its historical development, technological transformation and significant influence on economic, social and political scenarios. This paper emphasizes how human cognitive has developed over the historical timeframe, especially with Artificial Neural Networks, replicating human logic to execute the challenging tasks. With the advent of AI from initial symbolic reasoning to present machine learning and neural networks, AI has profoundly affected the industries, jobs and overall global relations. AI has restructured the business models, improving the decision-making, boosting efficiency, which has sometimes provoked fears of automation related job displacement, data privacy issues, digital gaps and geopolitical power imbalances. Economically prosperous countries such as U.S. and China are at the frontline of AI adoption and fostering the disproportionate gains, while emerging economies are facing obstacles including limited infrastructure, skills shortages and limited access of technology. However, AI has offered the tools to resolve social dilemmas and achieve inclusive growth. This articles highlights the international collaboration, ethical regulation and sustainable policy structures as it is necessary to mitigate the AI gap. Conclusively, AI is a enhancer of global change, meantime, researches urges responsible innovation to ensure its benefits are equitably shared, fostering more inclusiveness, interconnectedness and sustainable growth in the future.

Keywords: Artificial Intelligence (AI), Globalization, Automation and Workforce Displacement, Ethical and Regulatory Frameworks, International Cooperation

1. Background

Human society along with its civilization has arrived very far from the period of state of nature to the state of rule of law along with its feature of robust democratic government, emergence of concept of sovereignty, which lies in the parliament or sometimes, citizen of the modern state. A key factor in the divergence of Homo sapiens from their ancestors has been our

superior cognitive abilities compared to other homos. Invention beginning from stone age, continuing it through agricultural era, known as for the large production and high yielding of crops for the sustainability of society is still something we rely on. However, after the setup of steam engine for various purposes especially for industrial purpose marked the beginning of modern technology and mass production followed by the invention of electricity, which has ultimately landed us on the present state of highly equipped machinery that are likely to function as human brains and is called Artificial Neural Network (ANN).

ANN is the subset of AI which has been very effective technique for learning from the method of input to output mappings. For example: Transcribing English text and obtaining Nepali translation. In this circumstance, commanding to translate English text is an input and receiving Nepali translation is an output. In discussing New York's real estate, our minds often associate it with exorbitant prices. While this perception is rooted in human cognition, the underlying mechanisms that shape our understanding are quite distinct and bear little resemblance to the workings of a biological brain.

In the globalizing world, technology along with the AI has emerged as the game-changing factor in all facets of life and society. Artificial means the human creation with the material substances while intelligence is an ability to learn and develop the skill based on the study and information provided. Combining the terms, AI means an intelligence of a machine that tends to perform upon the command of the natural person. At Dartmouth Conference hosted by Massachusetts Institute of Technology, John McCarthy, American computer scientist coined the term 'Artificial Intelligence' in 1956[78]. The concept of AI is defined as the science and engineer of creating intelligent machines, particularly intelligent computers programs. It is related to the similar task of using computers to understand human intelligence. Marvin Minsky who is regarded as 'Father of AI' who envisioned AI as it is today, states that AI is the science of making machines do things that would require intelligence if done by men[79].

Furthermore, the origins of of AI are relatively new compared to other existing technologies. Alan Turing is the pioneer, who proposed the idea of machines that could simulate any intellectual task whose origin can be tracked in mid-20th century. In its early days, AI research focused on symbolic reasoning and logic, leading to development of expert systems in the 1970s. However, due to computational limitations, progress slowed, resulting in periods of reduced interested known as 'AI winters'. After the breakthroughs like IBM's, Deep Blue defeating a world chess champion in 1997 and Google's AlphaGo conquering Go in 2016 highlighted the rapid emergence of AI's potential.

The field revived in the late 1990s and early 2000s, driven by advancements in machine learning, neural networks, and increased computational power. Breakthroughs like IBM's Deep

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Blue defeating a world chess champion in 1997 and Google's AlphaGo conquering Go in 2016 underscored AI's growing potential.

2. Globalization and Artificial Intelligence

AI has transformed the world economy and thus had an important impact on business operations, as well as competitiveness, in different sectors since mid-twentieth century.[80] The advent of AI has brought in efficiency and decision-making process a dramatic change as actions are materialized after analyzing facts and data and advanced algorithms by the advent of AI. The view of IMF states that AI may transform up to 60% of jobs in advanced economies and a considerable percentage of jobs in emerging and low-income countries, so it is indicating patterns of employment and economic structure have already been shifted.[81]This, therefore, implies that even though adoption in AI may lead to unemployment due to automation, it also increases competition among industries and markets, contributing to a widening digital divide as well as economic gaps between developed and underdeveloped countries.[82]

Today, every innovation across the industries, ranging from private healthcare to public finance, transportation and communication is in the grip of AI. Organizations are increasingly integrating AI into their strategies, leading to changes in job demand towards roles requiring higher digital and technical skill[83]. Its ability the analyze wide range of data in real-time, substantiate the decision-making and simplify the complex process has made it integral to global business strategies.

Based on current functioning of AI, its impact on globalization is profound and multifaceted, influencing industries, international relations and diplomacy, and society at large. Global adoption of AI followed diverse strategies as it was manifest in each country's peculiar socioeconomic, cultural, and political context that reflects the multifaceted nature of AI as well as its diverse application.[84] The essence of capitalism, which is the prevailing theory around the globe, tends to advocate about the maximization of profit with optimum utilization of resources. In such backdrop, AI-driven automation reduces the need for human labor increasing productivity and efficiency. Corporation including the one in rural is embracing with AI managing from supply chain to customer service, lowering costs a speeding up operations.

Similarly, globalization has fundamentally changed the labor dynamics of the modern society. Skill human resources now transcend borders; individual hailing from underprivileged villages can connect with opportunities thousands of miles away at the click of a button. AI is

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further transforming the global job market by automating routine tasks and increasing demand for skill workers, inter alia, the field of technology, data science and deep machine learning. Technologically advanced countries like U.S. and China, which are leading in AI research and development, are gaining economic and political power, thereby influencing global decision-making. Technological superiority has been equally important as economic and defense security in the first quarter of the 21ˢᵗ century. Developed economies that go to the top in AI adoption seem to reap more significant economic benefits, supported by infrastructure and resources, but most of all, a skilled workforce.

This poses several challenges, starting with limited access to technology, lacking adequate skill sets, and also lack of proper digital infrastructure, all of which can further increase the digital divide and pockets of even greater economic inequalities in developing countries.[85] This disparity is notable not only due to technologies like AI but also because of the exploitation of domestic labor markets. Multinational corporations (MNCs) based in these developed jurisdictions can threaten local sovereignty by leveraging their economic power and technological advancements, often at the expense of the nations in which they operate.

McKinsey Global Institute recently analyzed economic data from the United Nations, the World Bank, and the World Economic Forum, reporting that by 2030, AI could add a whopping 16% or about $13 trillion to the world economy. To be part of and to contribute to wide margin. Developed economies will have to expedite AI innovations that can address all the ethical, privacy, and workforce issues accompanying the adoption of advanced AI.[86] Developing countries have to build infrastructure, skills, and policies to attract investment in AI.[87] International cooperation is important to bridge the AI divide, involving technology transfer partnerships, shared research, and dialogues on AI ethical standards and practices. The efforts will ensure that AI benefits are shared broadly and contribute to inclusive global development rather than exacerbating existing inequalities[88].

Thus, the rapid development of artificial intelligence has been a wonder to the whole world, exciting some and frightening others. Again, more pertinent questions begin to arise regarding the general implications this has for the global economy. The net effect would be impossible to predict as AI would ripple its way through economies in complex ways. What we can be certain about is that we are going to need to envision a portfolio of policies that will safely monetize the immense potential of AI for the betterment of human generations[89].

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3. Global perspective of Artificial Intelligence and Globalization

The intertwining of AI and globalization is reshaping the world, as this connection has led to innovation, productivity, and economic growth. AI technologies are revamping the industries, transforming the global workforce, and ultimately modifying the international trade and economic policies. The global view on AI and globalization scrutinize how countries and regions have been embracing the technologies to figure the challenges raised by ethical concerns, economic inequality and geopolitical competition.

AI is a medium for economic growth in both developing and developed countries. AI is reshaping industries by automation, enabling data-driven decision-making etc. However, the AI's benefit is uneven over the globe, and result of which differ across countries and regions. In developed economies, like US, European countries, Japan etc., AI is leading innovation in financial services, healthcare and high-tech industries. AI research and development is leading in these countries, benefiting from cutting-edge technologies and diverse data resources. However, there are significant concerns about labor market disruption, as the rapid adoption of AI has led to job displacement and uneven income distribution. Automation is replacing tasks previously performed by humans, including roles like gas station attendants, restaurant servers, and drivers of self-driving cars. This shift raises important questions about the future of work and the need for strategies to support affected workers.

In terms of developing economies, AI has posed both opportunities and challenges. When used appropriately manner, AI can serve as a catalyst for growth in sectors such as education, agriculture, industry. However, many developing economies face significant barriers in harnessing the benefits of AI due to high cost and technical challenges. Inadequate infrastructure, shortage of skilled labour and limited access to advanced technology pose significant challenges. Despite these obstacles, AI is actively being employed to address social and economic inequalities. For instance, AI-driven mobile technologies are expanding the financial inclusion and literacy in South Asia and African nations.

AI driven automation has posed a threat to routine jobs in sectors such construction and manufacturing, particularly in production and packaging processes. To address this disruption, governments and MNC's are focusing on reskilling and upskilling initiatives. These efforts aim to equip workers entering the labour market with the necessary skills to adapt to the changing landscape and thrive in an AI driven economy. International Organizations such as ILO, World Economic Forum are concentrating on creating high-skill labourers to ensure that benefits of AI are distributed evenly.

The technological revolution takes a great advantage of innovations from past industrial revolutions. The current wave is highly dependent on the integration of digital technologies, AI, automation, and data-driven processes in all societal structures. This wave has commonly been termed Industry 4.0, highly emphasizing high degrees of digitization and connectivity in industries. The chairman and executive head of the World Economic Forum, Klaus Schwab, has

been actively promoting the understanding and shaping of the Fourth Industrial Revolution. He is the one who approached the concept of the Fourth Industrial Revolution, giving insights into his views on its impact and importance. There is the Fourth Industrial Revolution where different industrial sectors converge and interact with each other, from artificial intelligence to robotics, to the Internet of Things and biotechnologies, as well as other emerging fields in energy, environment, and sustainable development.[90]

4. Conclusion

AI is playing pivotal role in shaping the future of globalization. As an influential machinery for enhancing decision-making based on analytics of data and resources, and fostering the innovation, AI is acting as a catalyst to accelerate global integration by breaking barriers in domestic as well as international trade, communication and technology sharing. AI is not only revolutionizing industries like healthcare, finance, transportation and education but also redefining how different states and economies collaborate for larger good in the global market.

However, the rapid development of AI also brings various challenges, including data privacy concerns, workforce displacement and unequal access to technology. To ensure the advantage of AI are equitably shared, it is essential to address these issues. Moreover, global governance settings must form ethical and regulatory framework which leads to reasonable and responsible implementation of AI in manner that values human rights and promotes economic, social and governance.

In short, AI is an important factor in globalization, offering a wide range of opportunities for economic and social progress. By fostering international cooperation, institutionalizing fair regulatory frameworks, and ensuring that AI benefits humanity as a whole, we can harness its potential to create more inclusive, innovative and interconnected world.

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