



Artificial Intelligence: An Emerging Productive Force and the Challenges of Unemployment in Nigeria

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Abstract

This paper aims to examine AI as an emerging productive force and its implications on unemployment in Nigeria. We are fast transiting into the Fourth Industrial Revolution driven by Information and Communications Technology (ICT) within the capitalist mode of production. The Fourth Industrial Revolution is machine or ICT intensive instead of labour intensive. Machines will have to do most of the works usually done by humans. Modern technology is fast changing the way production is organized. Human labour will either be reduced or human retrained to adapt to the need of the production process. The net implication is that employers will need to retrain their workers or replace them with entirely new ones that are AI compliant. The research method adopted in this work is the desk research method. The globalization theory of development was adopted as a frame work for analysis. In this paper therefore, we examined AI as an emerging productive force in the Fourth Industrial Revolution. We also x-rayed the relationship between AI and unemployment. The finding of the work shows that there is a positive relationship between AI as a productive force and unemployment. The paper therefore concludes that AI and unemployment are inextricable. That with careful planning and collaboration, the adverse effect AI will unleash on unemployment in Nigeria can be mitigated.

Key Words: Artificial Intelligence, Production, Productive Force, Unemployment, Industrial Revolution.

Introduction

Man's basic needs are food, clothing, and shelter. For man to survive, man must eat, cloth himself and shelter himself. Man cannot get these basic needs ready-made from nature. To survive, therefore, he must produce material goods from objects found in nature. Material production has always been and is still the basis of human existence. The objects found in nature are referred to as objects of labour. The productive force of a society therefore expresses the overall productive capabilities of the society which is a combination of the labour power, objects of labour and means of labour (Ake, 1981; Obi, 2005). The way a society reproduces its material existence is referred to as mode of production. The concept was first used by Karl Marx to describe the particular combination of *forces* and *relations* of production which distinguished one form of labour process and its corresponding form of economic exploitation from another (Jessop, 1990). Mode of production can therefore, be defined as a particular combination of forces and relations of production in such a way that it can maintain a unique mode of obtaining surplus labour. Forces of production include not only the means and objects of labour but also labour-power itself. Labour power being the physical, psychological and intellectual capabilities of man the worker (Ake, 1981). Means of labour therefore, is the instrument with which man produces his material existence. Means of labour also varies from one mode of production to another.

In his study of the development of human societies, Karl Marx identified four modes of production: the Asiatic mode of production; slave mode of production; feudal mode of production and capitalist mode of

production. Each mode of production has its specific relations of production. The stages of social history are distinguished by how or by what means the people reproduce their means of subsistence. Humans have always tried to improve their lives. The development of forces of production reflects the constant struggle of human beings to master nature through their labour. In every social order there is a continuous change in the material forces of production.

The Industrial revolution was a turning point in the capitalist mode of production. Since the emergence of capitalist mode of production, there has been a continuous change in the material forces of production. Inevitable changes in technology, demography, ecology in material life have continued to impact the mode of production itself and thereby altering the balance of productive relations. Technology has a long history of immensely reshaping the world of work. From the dawn of the agricultural revolution to the digital age, each wave of innovation has reshaped the structure, nature and dynamics of labour markets. Presently, the world is on the brink of another technological revolution, enabled by artificial intelligence (AI) that has the potential to reshape the world of work yet again (Multiple Experts, 2024). This is what Wolpe, (1982) referred to as technological determinism. Today information and communications technology is driving the way work is done in the society all over the world and Artificial Intelligence (AI) is an emerging productive force that in no distant future is going to reshape the labour process and social relations of production. It is yet to be clear how AI is going to reshape the world of work but sooner than later the unexpected will happen.

As every society is battling with the problem of unemployment, new technologies capable of displacing more people from work are emerging. AI is not just a means of labour but an object of labour, means of labour and means of production combined – productive force. When the AI is fully adopted, how the society will grapple with the pervasive unemployment that will greet the world particularly technologically backward countries like Nigeria whose current unemployment rate is 4.3 as at second quarter Of 2024 can be unimaginable (Proshare News, 2024;). It is against this background that this paper takes a look at Artificial Intelligence as an Emerging Productive Force and the Challenges of Unemployment in Nigeria.

To achieve the above stated objectives, this paper is partitioned into four sections including this introduction. The second section x-rays AI as a productive force. The third section focuses on AI and the challenges of unemployment in Nigeria. In the fourth section, we draw the conclusion with recommendation.

Conceptual Clarification

Artificial Intelligence Defined

Artificial intelligence as a concept was first used in 1956 by John McCarthy at a conference in Dartmouth. He defined it as *"the science and engineering of making intelligent machines."*

(Salman, Ismaila & Ajani 2023). Research at the period focused on symbolic reasoning and expert systems (Nalubega & Uwizeyimana, 2024; Haenlein & Kaplan 2019; Meroueh & Chen 2023). Meroueh & Chen (2023) define artificial intelligence as a set of technologies that enable computers perform tasks that would ordinarily require human intelligence to perform such as visual perception, speech recognition, decision-making, language translation and problem solving. It is an emerging technology that enables a machine to exhibit human-like intelligent attitude (Nalubega & Uwizeyimana, 2024). Salman, Ismaila & Ajani (2023) see AI as a method of getting machines to function and behave like humans. NCC Research Paper defines artificial intelligence as the ability of a computer or other machines to perform actions thought to require intelligence. The paper further describes AI as "the science and a set of computational technologies that are inspired by, but typically operate quite differently from, the ways people use their nervous systems and bodies to sense, learn, reason, and take action" (AI Watch, 2025).

Artificial Intelligence is used to refer to computers, software and other ICT technologies designed to perform tasks usually performed by human beings. (Partnership for Public Service, nd.). It can also be defined as the ability of the software system to perform tasks that usually required human intelligence such

as vision, speech, language, knowledge and search (GovTech Global Partnership, n.d.). Russell and Peter (2021), define artificial intelligence as machines or computer systems that think and act like human by executing tasks that generally require human intelligence or that think and act rationally by focusing on logic and carefully considering all options. Madan and Ashok (2022) see it as a cluster of digital technologies that enable machines to learn and solve cognitive problems autonomously without human intervention. AI is a synthesis of computer science and robust datasets, paving the way for innovative problem-solving methodologies (Kulal, Rahiman, Suvarna, Abhishek & Dinesh, 2024).

Productive Force

Means of production are the resources and tools that make it possible for the creation of goods and services. Means of production at the early industrial society, included the machinery and raw materials used in a factory. Ake, (1981) sees means of production as a combination of two of the three elements of the labour process. We are now in the fourth industrial revolution the means of production includes offices, computers, and other technologies used for the creation of material goods (Means of Production, n.d.).

A ‘productive force’ was, at first, nothing else than the real labour-power of working men; the force incorporated in these living human beings by which, with definite material means of production and within a definite form of social cooperation conditioned by those material means of production, they produce through their labour the material means of satisfying the social needs of their existence. Productive force therefore, means the combination of the three elements: labour power, objects of labour and the means of labour (Ake, 1981, p. 11). He further argues that productive forces express the overall productive capabilities of a society. Obi (2005) sees it as the unity of labour and the means of production.

Productive forces refer to the combination of workers and means of production to create a certain productive force in the fourth industrial age. (Marx & Engels 2002a) “Men, as a productive force, not only create material wealth, but together with natural productive forces become a revolutionary force that promotes the development of society.” (Marx & Engels, 2002b; Thi-Pham & Bui-Xuan, 2021). Stalin (1972) used productive forces to mean “*the relations of men to nature*” as opposed to the relations of production which he sees as “*the relations of men to one another in the process of production.*”

In this work, we are going to use productive force to mean the unity of labour and the means of production which enable man to reproduce his material existence.

Method of data Collection

The research method used in gathering data for this work is the desk research method. It is a method of gathering information by analyzing and synthesizing existing data and sources rather than from fieldwork or survey. Published reports, articles, studies, and other publicly available materials are the main sources of information (Gell, 2023). It is a type of research based on existing information in reports and similar documents available in public libraries, websites and data obtained from surveys already carried out by other researchers. (Villegas, n.d.).

It is a research method that involves the use of existing data. (Villegas, n.d.). is a type of research that relies on data that has already been collected and published by others. Its data sources include public libraries, websites, reports, surveys, journals, newspapers, magazines, books, podcasts, videos, and other sources (Owa, 2024).

Desk research is a cost-effective tool for gaining insights into your research topic. Desk research rely entirely on existing secondary data or other people's research work and focuses on the analysis of the research findings from other studies (Moore, 2018). The author adopted the desk research method because of its cost effectiveness, time efficiency and accessibility to a wide range of information.

Theoretical Framework

The theoretical framework adopted in this work is the globalisation theory of development. Globalization' involves the increasing interconnectedness of different parts of the world, such that physical distance becomes less of a barrier to the movement of people, goods and services and the exchange of ideas (Dicken 2003 as cited by Willis, 2005). Globalisation theory emerged as an outgrowth of modernization and dependency theories.

The theory focuses on communications and international ties. These ties are directed at cultural and economic factors in communication systems. The theory explains inequality by identifying cultural and economic factors in global connection (Shareia, 2015).

Globalisation posits that global mechanism enhances greater integration between or among nations, and promotes economic transactions across national boundaries. The theory argues that international ties and global connectivity play a significant part in addressing the problem of inequalities and imbalances in the global economic system. Given the differences in culture and economic factors, extensive unification and interdependence among nations have become critical (Shareia, 2015). Globalisation assumes that societies are today much more closely connected than ever before and information and communications technology (ICT) is the major driving force (Strikwerda, 2000). Modern globalization makes isolationist politics difficult if not impossible (Gabrielyan, 2014), stressing that interdependence is important in solving the problem of global inequality (Egbo & Ezeaku, 2019).

Globalization has therefore, entered into the development discourse of many governments; either because it is regarded as an opportunity to promote growth and poverty alleviation or because it is viewed as an inevitable reality within which nations must either play the game, or lose out in the search for development (Kelly, 2000).

The author adopted this theory because of the increasing inter-connectedness of the world in the emerging fourth industrial revolution which is driven by ICT. In the emerging fourth industrial revolution, the way the society is reproducing its material existence is fast changing and the productive force of the society is as well changing and labour is taken over by AI.

AI as an Emerging Productive Force

In section one; we attempted a conceptualization of productive force as the unity of labour and the means of production which enable man to reproduce his material existence. We equally pointed out that the productive force of a society expresses the overall productive capabilities of the society which is a combination of the labour power, objects of labour and means of labour (Ake, 1981; Obi, 2005). As the society is improving, productive forces are also improving and developing in the production of material wealth. Today, the revolution in information and communications technology (ICT) is having tremendous impacts on the economy of every country in the world today. The world economy is profoundly and strongly changing in terms of structure, function and direction of operation. Therefore, in their development process, productive forces are also changing (Kien; 2020).

We are fast progressing into the fourth industrial revolution marked by digital instruments (computers) which is opening up the era of artificial intelligence. Instruments of labor are now represented by automation in production. Automation in production implies that workers now use advanced technologies in the production process to transfer a large part or all of the production activities done by human labor to machines and equipment. The automated processes will not need much human intervention, but will use different control systems to help machines operate faster and more accurately while some processes are fully automated and does not need human intervention at all.

Labour power is now replaced with machines, robots, artificial intelligence and the application of information technology to a number of industries and professions that are rapidly penetrating the workplace

in the labor market (Thi-Pham & Bui-Xuan, 2021). In the fourth industrial revolution, the role of humans in production has changed. Humans no longer directly operate the technical systems, but mainly turn to create and adjust the process. Means of labor today includes self-driving vehicles: airplanes, cars, ships, robots etc.

Productive forces today have many new features that far exceed those in the time of Karl Marx

Artificial intelligence as a productive force now becomes the unity of labour, object of labour, means of labour and means of production.

AI and the Challenges of Unemployment in Nigeria

As stated earlier, we are fast moving into the Fourth Industrial Revolution driven by information and communications technology. Instruments of labor are now represented by automation in production. By this machines that are used to be driven by man are now self-driven and required minimal human effort and specialized skills. Scholars are divided on the issue of unemployment as a result of adoption of AI. While some believe that AI will create more jobs, others believe that AI will lead to massive job loss. Guliyev (2023) uses ‘replacement effect’ of jobs by AI, and ‘displacement effect’ of jobs to describe how the adoption of AI will impact on unemployment in high-tech developed countries. According to him, the application of artificial intelligence will negatively impact the labor market, causing unemployment because of being without a job as an outcome of replacement. On the other hand, the displacement effect implies that AI positively impacts the labor market by decreasing the unemployment level because of its job-creating effect.

A study McKinsey Global Institute Research (2016) reveals that there for 250,000 data scientists will be on demand by 2024. A study on the effects of robot adoption on the German labor market by Dauth et al. (2018) reveals that job distribution across industries has changed but did not decrease the aggregate level of employment. Gries and Naud’e (2018) study shows that artificial intelligence did not directly lead to an increase in unemployment. Acemoglu and Restrepo (2018) investigated the relationship between artificial intelligence, automation, and work. The result of their study shows that AI and automation improve productivity, and in the long run bring additional capital accumulation. With additional capital, current work will be technically advanced using a more skilled worker, which creates new jobs. Webb (2019) in his study found that jobs with high exposure to automation technologies experienced a decline in employment and wages.

Koch et al. (2021) studied a panel of Spanish manufacturing firms. Their study found that robot adoption led to a net increase of 10% in employment, while firms that have not adopted robots suffered job losses over the same period. But on the other hand, they stressed that, automation does not result in net job destruction and creation at the aggregate level.

Research conducted by Shen & Xiuwu Zhang on “The impact of artificial intelligence on employment: the role of virtual agglomeration,” shows that agriculture, forestry, animal husbandry, fishery, mining, manufacturing, and construction industries, which are expected to adopt a high level of intelligence, face a high risk of occupational substitution, and older and less educated workers are faced with a very high risk of substitution (Shen & Xiuwu Zhang, 2024).

As we embrace the Fourth Industrial Revolution driven by AI, the number of jobs created will be adversely affected through the replacement of labor power with machines, robots, artificial intelligence and the application of information technology to a number of industries and professions that are rapidly penetrating the workplace in the labor market. The trend of employment will shift from labor-intensive production to one that requires more knowledge and technology. The fourth industrial revolution also changes the function of humans in production: human gradually ceases to directly operate technical systems, and turn to mainly create and adjust that process. Therefore, the working class includes not only purely manual workers but also intellectual ones. Moreover, in the current period, workers themselves have also changed significantly (Marx & Engels, 2002b; Thi-Pham & Bui-Xuan, 2021).

While it is clear that AI has great potentials for creating new jobs, as new industries are likely to emerge around AI technologies, autonomous vehicles, smart cities, advanced robotics etc, threatens a lot of existing jobs. As new industries emerge around AI technologies, a new range of skills will be required as well.

Conclusion and Recommendation

In Nigeria, AI has not been fully adopted as a means of production. And in a globalised world driven by modern technology, no nation will be isolated. For this reason every nation should be ready to embrace AI as an emerging productive force capable of complicating the unemployment problem of nations. This study has taken a look at AI as an emerging productive force and the challenges of unemployment in Nigeria. The paper began with an introduction. Artificial intelligence and productive force were conceptualized. The desk research method was used to gather data for the paper. Globalization theory was used as a framework for analysis. The finding of the paper shows that artificial intelligence is an emerging productive force in the fourth industrial revolution and is a combination of labour, object of labour, means of labour and means of production.

Scholars are not united on the AI – unemployment debate. While some believe that the adoption of AI will lead to not only improved productivity but also increased productivity which will ultimately lead to employment creation. Others believe that AI will lead to job losses or displacement of some workers. The relationship between AI and unemployment is complex, with both positive and negative implications. The findings of the paper shows that AI has the potential to create new jobs which will require new skills, and at the same time can displace workers who cannot adapt to the new AI require skills. The paper therefore concludes that AI and unemployment are inextricable, and that with careful planning and collaboration, the adverse effects of AI on unemployment can be mitigated.

Based on the findings and conclusion above, the paper makes the following recommendations:

- Government should make provision for adequate regulatory framework for data privacy and protection, and ethical guidelines to take care of the challenges that Nigerian businesses will encounter when adopting AI.
- Government should collaborate with businesses and educational institutions to provide training and retraining programs and continuous education on AI for workers.
- Government should make adequate provision for social security nets to support individuals the will be displaced by AI. This will include: unemployment benefits, healthcare, and income support.
- Government should ensure that AI development adheres to ethical standards as this can help mitigate the negative impact on employment. This involves creating transparent AI systems that augment rather than replace human labor, promoting fair labor practices, and ensuring that the benefits of AI are equitably distributed across society.

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