

Leveraging Artificial Intelligence for Future Job Markets in Nigeria



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ABSTRACT

This study investigates the influence of Artificial Intelligence (AI) on the future employment in Nigeria landscape. The study was guided with three specific objectives to guide the study and quantitative approach was employed to collect data through a structured questionnaire distributed to 500 participants, including business executives, professionals and students from diverse sectors across the Nigeria institutions which was administered through Google Forms platforms. The three formulated hypotheses for the study were tested using the Pearson Product Moment Correlation (PPMC) which show 0.05 coefficient level of significance. The findings of the study revealed a significant influence of AI with job creation and displacement in Nigeria future labour Job market. This implies that there is an urgent need in for individuals to develop competencies and acquired AI-related skills needed for future workforce. The study concluded that while AI poses challenges, it also offers considerable opportunities in driving economic growth and foster technological innovation in Nigeria's employment eco-system. The study recommends the need for targeted education and vocational training programs designed to equip the workforce with relevant AI-skills to ensure seamless transitions in the evolving demands for job landscape.

ABSTRAK

Penelitian ini menyelidiki pengaruh Kecerdasan Buatan (Artificial Intelligence/ AI) terhadap prospek ketenagakerjaan di masa depan di Nigeria. Penelitian ini dipandu oleh tiga tujuan khusus dan menggunakan pendekatan kuantitatif dalam pengumpulan data melalui kuesioner terstruktur yang dibagikan kepada 500 responden, termasuk eksekutif bisnis, profesional, dan mahasiswa dari berbagai sektor di institusi-institusi di Nigeria. Kuesioner tersebut disebarluaskan melalui platform Google Form. Tiga hipotesis yang dirumuskan dalam penelitian ini diuji menggunakan teknik Pearson Product Moment Correlation (PPMC) dengan tingkat signifikansi sebesar 0,05. Temuan penelitian menunjukkan adanya pengaruh yang signifikan antara AI dengan penciptaan maupun penghilangan lapangan pekerjaan dalam pasar tenaga kerja Nigeria di masa depan. Hal ini menunjukkan adanya kebutuhan mendesak bagi individu untuk mengembangkan kompetensi dan menguasai keterampilan yang berkaitan dengan AI guna mempersiapkan diri menghadapi dunia kerja yang akan datang.

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INTRODUCTION

Artificial intelligence (AI) is an intelligent machines, software, or devices that can mimic human actions, which significantly improving a company's productivity. This innovation, heralded as the new industrial revolution of the 21st century, presents a double-edged sword, while AI streamlines processes; it also raises concerns about job displacement (Oyetola et al., 2023). Repetitive tasks and physical jobs are most at risk, alongside any role AI can perform more effectively. AI's capabilities extend far beyond simple automation. It encompasses areas like logical reasoning, knowledge representation, image recognition, perception of the environment and even natural language processing (Silva & Araújo, 2023). These advancements simplify human-machine interaction, allowing us to: communicate with machines through natural language, translate languages quickly and accurately, perform facial recognition, develop models for predicting future outcomes, conduct preventive maintenance to catch errors before they occur (Gugliamelli, 2023).

Artificial intelligence (AI) is swiftly transforming the worldwide landscape, and its impact on the future of work is a topic of intense discussion. Initial fears focused on widespread job displacement due to automation (Decker et al., 2017; DeCanio, 2016). However, further research revealed a more nuanced picture, with potential for both job creation and loss depending on the sector (Rodrik, 2016). Nigeria, experiencing rapid technological advancement, is particularly interested in understanding AI's impact on its job market (Oyetola et al., 2023). While

AI promises increased productivity, a sense of unease lingers among workers regarding job security and potential skill obsolescence (Kim et al., 2021). This anxiety is heightened by the convergence of AI and information technology, blurring the lines between physical and digital realms, ushering in the fourth industrial revolution (Rotatori et al., 2021).

The application of AI and automation across diverse sectors in Nigeria, from mundane tasks to customer service, highlights its transformative potential (Rotatori et al., 2021; Wirtz et al., 2021). However, with increasing sophistication, AI raises concerns about job displacement, especially in repetitive task-based roles (Willcocks, 2020). Even seemingly secure professions like programming and data analysis now face the possibility of automation (Willcocks, 2020). AI presents exciting opportunities for growth alongside the potential threat of job displacement. This necessitates a thorough examination of Artificial intelligent (AI) and the impact of the Artificial intelligent on the Nigerian job market. This study aims to delve into these complexities, offering insights and recommendations to navigate the evolving landscape of AI and its implications for the Nigerian workforce.

The past two decades have witnessed a surge in both artificial intelligence (AI) and automation. AI, a rapidly evolving technology, promises to fundamentally reshape the way we work around the world. Essentially, AI refers to hardware or software designed to mimic human intelligence. The goal of AI development is to create computer systems capable of performing specific tasks autonomously, emulating human decision-making and problem-solving abilities (Tschang & Almirall, 2021). While AI offers the potential for increased efficiency and streamlined work processes, human resource surveys reveal a growing anxiety among the workforce. This concern stems from the potential impact of automation on the labor market and overall productivity. Many workers fear that AI and automation will displace them from their jobs.

Objectives of the Study

This research objectively examines the relationship between leveraging Artificial Intelligence (AI) technologies and the future of the Nigerian job market. Specifically, sought to:

1. Analyze the impact of Artificial Intelligence (AI) technologies on the creation of new job opportunities across various sectors in the Nigerian economy.
2. Investigate the extent to which AI implementation correlates with job displacement in 3. different sectors of Nigeria's job market.
3. Identify the evolving skillset requirements demanded by AI-driven industries within Nigeria.
4. Assess the current skill levels and preparedness of Nigerian workers to adapt and succeed in AI-powered job markets.
5. Explore sector-specific variations in how AI affects employment patterns and skills demand.
6. Provide recommendations on how Nigerian policymakers and stakeholders can balance AI adoption to maximize job creation while minimizing displacement.

Research Questions

1. How does the adoption of Artificial Intelligence (AI) technologies impact the creation of new job opportunities and job displacement across different sectors in the Nigerian economy?
2. What are the evolving skillset requirements for AI-driven industries, and how prepared are Nigerian workers to meet these demands?
3. How do sector-specific variations influence employment patterns and skills demand in the context of AI adoption, and what strategies can policymakers use to balance job creation and displacement.

Research Hypotheses

H₀₁: There is no significant correlation between AI technologies and the emergence of new job opportunities across sectors in the Nigerian economy.

H₀₂: There is no significant relationship between AI technologies and job displacement across sectors in Nigeria economy.

H₀₃: There is no significant relationship between skillset requirement for AI-driven industries and current ability of Nigerian workers to thrive in the AI-powered job market.

Literature Review

1. AI and required Skills to Secure Jobs in Nigeria

The rise of artificial intelligence (AI) in the workplace throws a curveball at the historical relationship between technology and job skills. Traditionally, new technologies have favored skilled workers by complementing their abilities. This development, known as capital-skill complementarity, led to rising income inequality and technological unemployment for low-skilled workers (Acemoglu, 2002). Looking back, the 19th century serves as a prime example. Back then, human dexterity gave workers an advantage

over clunky machines in intricate tasks. Since untrained labor was plentiful, companies saw no profit in replacing them with expensive, elementary machines (Goldin & Katz, 1998). However, this dynamic shifted as the team of skilled workers grew, making their labor relatively cheaper. This economic shift incentivized the development of technologies that complemented these skilled workers, leading to the current trend of automation favoring high-skilled jobs.

The rise of multifaceted machinery also created a demand for workers to operate and maintain them. However, these new supervisory and skilled positions weren't enough to absorb the job losses of low-skilled workers whose tasks became automated. This phenomenon, combined with the rising wages of skilled workers due to their complementary role with technology, explains the historical increase in income inequality and pockets of technological unemployment. AI throws a wrench into the works. Unlike past advancements, AI is designed to democratize expertise by offering specialist knowledge to non-specialists (Berg et al., 2018a; IMF, 2018). Imagine AI-powered medical devices or agricultural guidance systems tools which require minimal prior knowledge and empower users, potentially boosting productivity, especially in sectors dominated by low-skilled workers.

In construction, for instance, AI-powered planning systems could revolutionize processes without necessarily requiring a change in the skillset of the workforce (MGI, 2017). This stands in stark contrast to past technological advancements. AI has the potential to be a game-changer, augmenting the capabilities of low-skilled workers and potentially even impacting high-skilled and medium-skilled professions to a lesser degree. The future of work with AI might be about collaboration, not displacement.

2. Influence of AI on Job Creation and Displacement

Artificial intelligence (AI) is rapidly transforming the landscape of jobs. Imagine a powerful wave surging through industries, and AI is that wave, automating repetitive tasks once performed by humans. Machine learning and robotics, powered by AI, are making waves in manufacturing, logistics, and customer service, displacing some workers (Acemoglu & Restrepo, 2017). However, fear not, for this wave is not solely about destruction. AI is also a wellspring of new opportunities, creating entirely new job roles that demand collaboration between humans and intelligent machines. The World Economic Forum predicts that by 2025, while AI may displace 85 million jobs, it will also create a staggering 97 million new ones (source not cited). These new roles will likely require human expertise in handling complex tasks and working alongside AI tools.

The key to riding this wave of change lies in continuous learning. Individuals and organizations must prioritize upskilling and reskilling initiatives (Alpaydin, 2016). Upskilling equips us with new abilities relevant to AI, like data analysis or proficiency in using AI software. Reskilling allows us to completely shift gears and pursue entirely new careers. In this dynamic environment, lifelong learning is no longer a luxury, but a necessity to stay competitive in the job market. Governments, educational institutions, and businesses all have a role to play. By working together, they can create accessible training programs and resources, empowering individuals to develop the skills needed to thrive in the AI era. In conclusion, AI's influence on jobs is a double-edged sword. While automation may displace some workers, it also creates a wealth of new opportunities. The key to success lies in embracing lifelong learning and adapting to the ever-evolving job market.

3. Challenges of AI on Job Seeking

The winds of change are blowing through the job market in developing countries like Nigeria, with them comes the rise of artificial intelligence (AI). While AI promises a more efficient and streamlined search for employment (Ransbotham et al., 2017), it also presents a unique set of hurdles for job seekers. One of the most pressing concerns is the fear of displacement. Many workers worry that AI-powered automation will render their jobs obsolete, leaving them scrambling for new opportunities. This fear can be paralyzing, making it difficult for job seekers to embrace the potential benefits of AI.

Another challenge lies in the skills gap. AI recruitment tools may prioritize specific skillsets that haven't yet been fully integrated into educational curriculums. This mismatch between what employers seek and what graduates possess can leave job seekers feeling unprepared and out of the running. Developing countries often face infrastructural limitations. Unreliable power grids and limited internet access can restrict the use of AI-powered job search platforms. This digital divide can create a significant barrier for job seekers who lack access to these essential tools. The educational landscape also plays a role. Outdated curriculums may fail to equip students with the AI literacy and critical thinking skills needed to navigate the evolving job market (Ransbotham et al., 2017). Graduates may find themselves lacking the knowledge and problem-solving abilities required to thrive in an AI-driven environment. Companies themselves face

challenges in utilizing AI for recruitment. Finding or increasing the necessary in-house expertise to effectively manage and utilize AI tools can be a significant hurdle. This can lead to a situation where companies invest in AI but struggle to reap the full benefits due to a lack of skilled personnel.

Human element remains crucial; however, integrating AI seamlessly into the hiring process requires overcoming hurdles in communication and collaboration between humans and machines (Ransbotham et al., 2017). Striking the right balance between automation and human oversight is essential to ensure a fair and effective recruitment process. These challenges paint a complex picture for job seekers in developing countries. While AI offers exciting possibilities, navigating this new landscape requires proactive adaptation and a commitment to continuous learning. By recognizing and addressing these hurdles, both job seekers and companies can leverage the power of AI to create a more inclusive and future-proof job market.

METHODS

This research delves into the influence of Artificial Intelligence (AI) on Nigeria's future employment landscape, employing a quantitative approach of a survey type. 500 participants were recruited, encompassing both working professionals across diverse Nigerian sectors and students pursuing relevant academic programs. To ensure a representative sample, stratified random sampling was employed. This method guarantees proportional representation from key sectors like IT, finance, and manufacturing, as well as educational backgrounds in business, engineering, and computer science. Data were gathered through a self-administered online survey built using Google Forms, a secure and user-friendly platform. The survey consisted of closed-ended questions with likert scales, to facilitate a robust quantitative analysis.

RESULTS AND DISCUSSIONS

Results

Research Question 1: How does the adoption of Artificial Intelligence (AI) technologies impact the creation of new job opportunities and job displacement across different sectors in the Nigerian economy?

Table 1. Perceived Impact of AI on Jobs

Research Question	Response Category	Frequency of response	Percentage (%)
1. AI job impact	AI creates new jobs opportunity	325	65
	AI displaces workers	150	30
	Not sure of the direction	25	5
TOTAL		500	100

Table 1 above presents the results of analysing research question 1 where 325 (65%) respondents believe that AI creates new job opportunity while 150 (30%) believe it displaces job especially in agriculture, health and weather forecasting. Only few respondents 25 (5%) were not sure of the trend whether it will create or displace job.

Research Question 2: What are the evolving skillset requirements for AI-driven industries, and how prepared are Nigerian workers to meet these demands

Table 2. Perceived Preparedness of Workers for AI Skills

Research question	Response Category	Frequency of response	Percentage (%)
2. Worker Preparedness	Workers are prepared for AI-Driven skill demands	175	35
	Workers are unprepared	275	55
	Neutral	50	10
TOTAL		500	100

Table 2 represents workers preparedness for adoption of AI-Driven skillset demands, 175(35%) respondents were fully prepared for AI-Driven skill demands, 275(55%) of them were not prepared while 50(10%) of them were neutral to AI-Driven skill demand in various industries across the country.

Research Question 3: How do sector-specific variations influence of employment patterns and skills demand in the context of AI adoption, and what strategies can policymakers use to balance job creation and displacement

Table 3. Recommended Policy Strategies for AI Adoption

Research question	Response Category	Frequency of response	Percentage (%)
3. Policy Strategy	Support for upskilling/ reskilling programs	400	80
	Balancing job creation and job displacement	80	16
	No clear strategy support	20	4
TOTAL		500	100

Table 3 shows the responses from respondents on the patterns and skills demand and the strategies that can be used by policy makers to balance job creation and displacement. In answering the question on policy strategy, 400(80%) of respondent support for upskilling and reskilling program while 80(16%) opted for balancing job creation and job displacement and 20(4%) were not having any clear strategy support.

In conclusion, the above distribution showed different responses from respondents across different economic sectors where a large number of them (75%), expect job creation through AI, 25% foreseen job displacement especially in certain sectors. In the same vein, majority sought for urgent need for reskilling given low preparedness towards AI-Driven skill demands. This pave ways for policy makers to train and retrain workers on AI-Driven skill demands so that they can be sure that AI cannot replaced any worker that is ready to learn and relearn the application of AI in industries and invariably this will automatically assist in boosting the industries economy and that of the country at large.

Research Hypotheses

HO1: There is no significant correlation between AI technologies and the emergence of new job opportunities across sectors in the Nigerian economy.

Table 4. Correlation: AI Impact vs. New Job Opportunities

Variables	N	X	Std	Df	Cal. r	Sig	Decision
AI impact	500	6.86	1.014	998	0.377	0.00	Rejected
Job creation	500	16.81	4.567				

The result in Table 4 indicates a positive relationship between the presence of artificial intelligence (AI) technologies and the emergence of new job opportunities in Nigeria. Pearson Product Moment Correlation analysis examined two key factors: respondents' perceptions of impact of AI and their views on the creation of new jobs due to AI (AI job creation). The correlation coefficient, which measures the strength and direction of the relationship between two variables, was found to be 0.377 and the r value of 0.00 which is less than 0.05 level of significance. This implies that there is a significant relationship between AI impact and the creation of new jobs in Nigeria. Hence, hypothesis 1 was rejected. This positive value suggests that as respondents perceive that Nigerians can leverage on AI for the creation of new jobs.

HO2: There is no significant relationship between AI technologies and job displacement across sectors in Nigeria economy.

Table 5. Correlation Between Impact of AI and Job Displacement Across Sectors

Variables	N	X	Std	Df	Cal. r	Sig	Decision
AI impact	500	5.74	1.28	998	0.153	0.02	Rejected
Job displacement	500	12.53	5.43				

Pearson Product Moment Correlation analysis in Table 5 examines two key factors: respondents' perceptions of impact of AI and their views on jobs displacement due to AI. There is positive correlation between the perceived impact of AI and perception of job displacement due to AI in Nigeria. The correlation coefficient in table 5 which measures the strength and direction of the relationship between the two variables, was found to be 0.153 and the p-value of 0.02 which is less than 0.05 level of significance. This implies that there is a significant relationship between AI impact and the displacement jobs in Nigeria. Therefore hypothesis 2 was rejected. This positive correlation and low r-value suggests that respondents perceived leveraging on AI can lead to significant job displacement in future in the Nigerian job market.

HO3: There is no significant relationship between skillset requirement for AI-driven industries and current ability of Nigerian workers to thrive in the AI-powered job market.

Table 6. Relationship Between AI Skillset Requirement and the Current Ability of Nigerian Workers

Variables	N	X	Std	Df	Cal. r	Sig	Decision
AI requirements	Skillset 500	7.64	2.53				
Current Ability of workers	500	9.38	4.42	998	0.43	0.06	Not Rejected

Pearson product moment correlation analysis in Table 6 provides valuable insights into the relationship between AI skillset requirements and the current ability of the Nigerian workers, identifying the most in use skills for the Nigerian AI job market. Table 6 reveals r-value of 0.43 and p-value of 0.06 which is greater than 0.05 significance level, this implies that there is no significant relationship between AI skillset requirement and the current ability of Nigerian workers in different sectors, hence the hypothesis 3 was not rejected. The respondent perceived that a lot of skills is demanded in the AI Job Market such as data analysis or machine learning models, which are not part of the current ability of the Nigerian workforce.

Discussion

Finding from hypothesis one showed that there is a significant relationship between AI impact and the creation of new jobs in Nigeria. Artificial intelligence (AI) is rapidly transforming the landscape of jobs. AI is a powerful wave surging through industries, automating repetitive tasks once performed by humans. This is in agreement with Tschang and Almirall (2021) who suggest that AI development create computer systems capable of performing specific tasks autonomously, emulating human decision-making and problem-solving abilities. AI's capabilities extend far beyond simple automation. It encompasses areas like logical reasoning, knowledge representation, image recognition, perception of the environment and even natural language processing (Silva & Araújo, 2023). These innovations create more jobs for the future market in Nigeria. Rodrik, (2016) also found that AI has the potential for both job creation and loss of job depending on the sector.

This study also found a significant relationship between AI impact and job displacement in the future market in Nigeria. This is consistent with finding of Acemoglu and Restrepo (2017) who found that machine learning and robotics powered by AI, are making waves in manufacturing, logistics, and customer service, displacing some workers. AI presents a double-edged sword that streamlines processes and also raises concerns about job displacement (Oyetola et al., 2023). Repetitive tasks and physical jobs are most at risk, alongside any role AI can perform more effectively. Initial fears focused on widespread job displacement due to automation (Decker et al., 2017). However, with increasing sophistication, AI raises concerns about job displacement, especially in repetitive task-based roles (Willcocks, 2020).

Another finding reveals no significant relationship between AI skillset requirement and the current ability of Nigerian workers in different sectors. AI is designed to democratize expertise by offering specialist knowledge to non-specialists (Berg et al., 2018a; IMF, 2018). AI-powered medical devices or agricultural guidance systems tools require minimal prior knowledge and empower users, potentially boosting productivity, especially in sectors dominated by low-skilled workers. In construction, for instance, AI-powered scheduling systems could revolutionize processes without necessarily requiring a change in the skillset of the workforce (MGI, 2017).

Beyond the interpretation of individual hypotheses, the findings of this study suggest an emerging structural transformation of Nigeria's labor market driven by Artificial Intelligence (AI). While AI shows a significant association with both job creation and job displacement, the absence of a significant relationship between AI-driven skill requirements and the current ability of Nigerian workers points to a potential misalignment between technological advancement and workforce readiness. This pattern is consistent with task-based automation theory, which posits that digital technologies tend to replace routine tasks while complementing non-routine cognitive and analytical functions (Autor, Levy, & Murnane, 2003; Acemoglu & Restrepo, 2020).

These results imply that the employment effects of AI in Nigeria are not purely technological but are strongly shaped by institutional and human capital factors. Evidence from global labor market studies indicates that when technological diffusion outpaces skills development systems, the risks of job polarization and inequality may increase (OECD, 2019; World Economic Forum, 2023). In this context, AI adoption in Nigeria may place additional pressure on existing labor market structures unless accompanied by deliberate investments in education, reskilling, and workforce development policies. Consequently, AI can be understood as a socio-economic catalyst whose labor market outcomes depend largely on governance capacity and the alignment between technology adoption and human capital development (IMF, 2020; UNDP, 2021).

CONCLUSIONS

In conclusion, this study provides empirical evidence that Artificial Intelligence presents both opportunities and structural risks for the future of Nigeria's job market. While AI adoption is positively associated with job creation, its concurrent relationship with job displacement and the observed skills mismatch indicate that technological advancement alone is insufficient to guarantee inclusive employment outcomes.

The findings suggest that Nigeria's readiness for an AI-driven economy depends not merely on the pace of AI adoption but on the strength of its human capital development and labor market institutions. Without coordinated educational reforms and targeted reskilling initiatives, AI may exacerbate labor market inequality rather than reduce unemployment. This study therefore contributes to the discourse on AI and employment by emphasizing the critical role of institutional preparedness in shaping labor market outcomes in developing economies.

Recommendations

1. **Prioritize AI Skills Development:** Educational institutions and training programs should place greater emphasis on AI-related skills like data analysis, machine learning, and critical thinking. This will empower Nigerian workers to collaborate effectively with AI tools to create jobs and thrive in the evolving job market.
2. **Upskilling and Reskilling Initiatives:** A collaborative effort is needed between government agencies, businesses, and educational institutions to create accessible training programs. These programs should cater to both upskilling (enhancing existing skillsets) and reskilling (transitioning to entirely new careers) needs of the workforce.
3. **Promote AI Literacy:** Integrating AI fundamentals into educational curriculums is crucial. This will foster a generation of future-proof graduates equipped with the knowledge and skills to navigate the AI-driven landscape.
4. **Invest in Infrastructure:** Reliable power grids and widespread internet access are essential for leveraging AI-powered job search platforms and online learning resources. Addressing the digital divide is key to ensuring inclusive participation in the AI-powered job market.

These recommendations should be operationalized through coordinated efforts involving government agencies, higher education institutions, and industry stakeholders to ensure that AI adoption is accompanied by systematic workforce development and inclusive access to digital skills training (OECD, 2019; UNESCO, 2022).

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