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Automated Machines, Robotics and its Impact on Employment in Nigeria

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A B S T R A C T

This study examined automated machines, robotics callistusogu@imsuonline.edu.ngand its impact on employment in Nigeria. The study centers on the economy of Nigeria and focused on the banking and retail sector. The theoretical foundation of this study is the labour replacement theory which explains that human labor is displaced or rendered obsolete often permanently due to technological, economic, or structural changes. The study adopted the survey research design and both the descriptive and inferential statistics were used to analyze the data obtained via questionnaire responses. It was identified after the analysis that automation significantly affects job displacement in the Nigerian banking and retail sector. Also, job opportunities in the Nigerian banking and retail sector exist as a result of automation but the Nigerian workforce is not ready to transit into these roles. Furthermore, government policies are effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector. It was recommended that, the use of automation in the workplace should be encouraged by employers in order to aid employees in overcoming hurdles, rigors and stress in the job, leading to job enhancement and hence increasing employee satisfaction and productivity

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INTRODUCTION

Development and innovations in science and technology in 21st century have impacted virtually all aspects of social structures and institutions, positively and otherwise in the world. Automation has always been a key factor to rising productivity and economic expansion. Early mechanization during the Industrial Revolution resulted in some manual labour positions being replaced, but it also opened up new opportunities in manufacturing and other industries (Acemoglu & Restrepo, 2019). However, Bessen (2019) posits that the current wave of automation, driven by advances in AI, robots, and machine learning, has caused serious concerns about how it will affect the labour market. The notion that 'Artificial Intelligence (AI) is going to take our jobs' has become a pervasive concern in Nigeria and globally. The democratization of artificial intelligence, signaled by the growing popularity of Generative AI, has only intensified the anxiety surrounding AI-driven job displacement. While these concerns are not entirely unfounded, the prevailing narratives appear to simplify the complex issues at play (Oloni, 2025). There has been a plethora of gaps in literature in relation to the conventional deliberation on automation, the induction of new technologies at the workplace and the future of work, especially as it concerns the interaction of human and robotic technology in modern organization. This ensuing discussion has paid critical attention basically on the number of jobs that will be lost as an aftermath of the utilization of robotics or machines in modern organization through the rising adventure in technological innovation (De Stefano, 2018). The pandemic disrupted labour markets globally during 2020 which caused short-term consequences that were sudden and often severe as millions of people were furloughed or lost jobs, and others have quickly adjusted to working from home as offices closed (Susan, Anu, James, Sven, Kweilin, & Oliva, 2021). These caused a shift in the traditional business model with rising competition both in local and global business environments resulting in modern firms adopting various approaches to remain productive, competitive, and retain market share. A replacement trend of technologies such as Automation, Robotics, and Artificial intelligence is promising further revolutions in production, forecasting, customer service, and more (Akosile, Banjo & Oyefodunrin, 2022; Makridakis, 2017). In recent years, automation technologies like robotics, artificial intelligence (AI), the internet of things (IoT), and data analytics have begun to proliferate in Nigeria's manufacturing sector (DigiInternational, 2023; Copper Digital, 2023). These technologies according to Ejemeyovwi et al., (2020) have the power to completely alter how goods are produced, increase productivity, and raise standards of quality. They present chances for cost-cutting and more market competition on a global scale. The effects of AI, IoT, and data analytics on the employment landscape are complicated (McKinsey & Company, 2021). Despite the possibility of employment creation, these technologies also present issues with job displacement and income inequality. An analytical and digitally skilled workforce is required by the changing labour market and empirical research is still essential for guiding policies and strategies to address the complex effects of these technologies on employment and society as technology develops further.

Statement of Problem

The advent of automated machines and robotics has revolutionized industries globally, bringing about increased efficiency, productivity, and cost savings. The increasing adoption of automated machines and robotics across various industries has raised concerns about its impact on employment in Nigeria. However, alongside these advancements, concerns have arisen regarding their implications on employment, particularly in developing economies like Nigeria. As automation continues to replace human labor in various sectors, there is a growing fear that it may exacerbate unemployment and underemployment in a country already grappling with labor market challenges. While automation enhances productivity, efficiency, and economic growth, it also poses a potential threat to job security, particularly in labor-intensive sectors. Nigeria, as Africa's largest economy, has a labor force that is predominantly engaged in low-skilled and routine-based jobs, many of which are highly susceptible to automation. According to the National Bureau of Statistics (NBS, 2023), the country's unemployment rate stands at 33.3%, with youth unemployment exceeding 40%. These figures highlight an already fragile labor market where job creation struggles to keep pace with the growing workforce. As businesses increasingly adopt robotics and artificial intelligence (AI) in manufacturing, agriculture, banking, and the service industry, there is a pressing concern that the displacement of human workers will further worsen socio-economic conditions.

Objectives of the Study

The general objective of the study is to evaluate the impact of automated machines, robotics on employment in Nigeria. The specific objectives for this study are:

1. To ascertain the extent to which automation has led to job displacement in the Nigerian banking and retail sector.
2. To investigate the effect of robotics on job enhancement and performance in the Nigerian banking and retail sector.
3. To find out the emergence of new job opportunities in the Nigerian banking and retail sector as a result of automation and the readiness of Nigeria's workforce to transit into these roles.
4. To determine the effectiveness of government policies in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector.

Significance of the Study

The study could highlight areas where automation can attract both local and foreign investments in tech-driven sectors. The study also can identify gaps in education and training that need to be addressed to prepare the workforce for automation. The study will help policymakers design strategies to balance automation with employment needs, ensuring sustainable economic

development. It will also contribute to discussions on how Nigeria can adapt to Industry 4.0 and the digital economy.

Scope of the Study

This study focused on automated machines, robotics and employment in Nigeria. It covers the area of Imo State, Nigeria. The study focused on banks and supermarkets in Imo State. Availability and accessibility to reliable data serves as a limitation to the study. However, the study made use of primary data as its source of data.

LITERATURE REVIEW

Concept of Automation

According to Aladesiun (2023), automation refers to the use of technology, specifically robots and computer-controlled systems, to perform tasks previously done by humans. This technological shift has been driven by advancements in artificial intelligence (AI), machine learning, and robotics. Automation offers the potential for increased productivity, efficiency, and accuracy, but it also raises concerns about job displacement and socio-economic inequalities.

Impact of Automation on the Nigerian Economy

Job Displacement and Transformation

One of the key concerns surrounding automation is job displacement. As robots take over routine and repetitive tasks, many low-skilled jobs are at risk. This could have a profound impact on the Nigerian workforce, which heavily relies on manual labor. However, automation also creates new job opportunities, particularly in the areas of robotics maintenance, programming, and AI development. The Nigerian economy needs to focus on upskilling and reskilling workers to adapt to this changing landscape.

Economic Growth and Productivity

Despite the challenges, automation can contribute to economic growth and increased productivity. By automating certain tasks, businesses can streamline their operations, reduce costs, and improve efficiency. This, in turn, can lead to higher profits and potentially create new industries and sectors. Nigeria has the opportunity to leverage automation to enhance its global competitiveness and attract foreign direct investment.

Concept of Automated Machines

An automated machine is a machine that can automatically perform a task or series of tasks with little to no human intervention. Automated machines are designed to operate independently and can work for extended periods of time without needing to be monitored or maintained. There are many different types of automated machines, from simple robots to complex computer-controlled systems (Oboloo, 2025).

Concept of Robot/Robotics

The word "robot" from the Czech robota (forced labour), is used to describe an incredibly wide range of machines that can perform tasks automatically. Robots are technically, machines that can perform complex activities automatically (Amaifeobu, Iyamu & Adewunmi, 2023). They are highly automated devices that carry out physical activities in the real world. According to Dario, (2019), robots are required to have a certain degree of "intelligence",

otherwise for as complex as they can be, they are simple machine. Intelligence in this context, is the capacity of a machine to put itself in the environment in which it is operating and to interact with it. Robots are extremely precise and fast machines that can repeat the same operation over and over.

According to Jingyi & Shanshan, (2020), a robot is an electromechanical device which is guided by computer or microcontroller and electronic programming. Robots are flexible in that they can easily change their function in order to meet the demands of the manufacturer or the client. In doing so, robots essentially perform three tasks, as they "sense" by drawing on environmental stimuli, then "think" by using pre- set algorithms for planning and finally "act", using the robots' end-effector (e.g. a clamp or welding torch) to pick up and place an object or weld two objects together (Laurent, 2013). Robots require both software and hardware for its function.

Automation, Robotics and the Quality of Jobs

Issues concerning the quality of jobs in future labour markets has gained a lot of interest because of the perceived negative impact of technological advancement that is positioning machines(robotics) to take many jobs ordinarily known to be undertaken by man. This increasing interest in these emerging debates as underscored previously is an attempt at discoursing the unfavourable effects on workers of awarding legal capacity and rights as well as obligation to robots. It points out that a vital function of labour law is to regulate these mandate and privileges by focussing more on the protection of human dignity of workers. There has been call by scholars for the evaluation of numerous consequences of establishing contemporary automated work processes in existing workplaces, as well as an all-embracing analysis of the relation between human and machine labour, on the other hand how workers interact with advanced manufacturing machinery (Kolhatkar, 2017). Undeniably, the theoretical and strategy discussion surrounding these matters has principally espoused a quantitative method, trying to evaluate the number of workers that could be put out of a job as a consequence of technological breakthroughs (Frey & Osborn 2013; Dauth et al. 2017). So far, the use of robotics, machines and other technological tools in the workplace has resonated this debate which has not sufficiently focused on the qualitative aspects connected with job automation. In other words, much less consideration has been paid to the quality of the jobs that will be left, but that will necessitate growing communications between humans and technological tools, both in the shapes of advanced machinery and of software used to manage businesses and production processes.

Theoretical Literature

In this review part, the key theoretical assumptions that underpin this study are described in detail. To logically link the elements, it emphasizes relevant theory that can be applied to the automation, artificial intelligence and its concepts.

Innovation Management Theory

The innovation management theory, particularly the concept of "creative destruction," was significantly developed by the Austrian economist Joseph Schumpeter in the 1930s, who identified innovation as a key driver of economic

growth. Schumpeter, working in the 1930s, posited that innovation, the introduction of new products, processes, or technologies, is a crucial factor in economic development and growth.

The innovation management theory provides the foundation for understanding how organizations manage and implement innovations, particularly AI technologies. Key concepts include:

- Innovation Process: This involves the stages of innovation from ideation to implementation and diffusion. The management of these stages determines the effectiveness of innovation (Bessant, 2020).
- Innovation Capabilities: These refer to the skills, resources, and strategies that organizations possess to successfully implement and manage innovations. In the context of AI, innovation capabilities include technical expertise, data infrastructure, and strategic vision (Teece, 2020).
- Dynamic Capabilities: According to Teece, Pisano, and Shuen (1997), dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. This is particularly relevant for AI technologies, which require continuous adaptation and learning (Teece, 2020).

Labour Replacement Theory

The Labour Replacement Theory is a conceptual framework describing how human labor is displaced or rendered obsolete—often permanently—due to technological, economic, or structural changes. This is not always about substituting one worker for another; it usually involves machines, automation, or globalization replacing the need for human workers altogether in certain jobs or industries. The theory is not associated to a single scholar but is linked to Karl Marx (1867) and John Maynard Keynes (1930). Karl Marx in his book Das Kapital (1867) argued that capitalists continuously seek to reduce costs and increase profits by replacing human labor with machinery. In Capital, he explains how machines become direct competitors to labor. He was of the opinion that machinery does not merely act as a substitute for labor, but actively displaces it. Labour replacement theory has important societal and industrial ramifications for businesses looking to boost productivity and save costs. Processes could be streamlined, precision could be improved, and mistake rates could be decreased with the help of automation and AI-driven systems (Brynjolfsson & McAfee, 2014).

Technology Acceptance Theory

Davis (1989) created the Technology Acceptance Model (TAM) from the Theory of Reasoned Action (TRA). TAM can and has been used to describe or forecast individual behaviors across a broad spectrum of end user computer technologies and user groups in general, because it specifies generic determinants of individual technology acceptance (Davis et al., 1989). TAM can and has been to describe or forecast individual behaviors across a broad spectrum of user computer technologies and user groups generally, because it specifies generic determinants of individual technology acceptance (Davis et al., 1989).

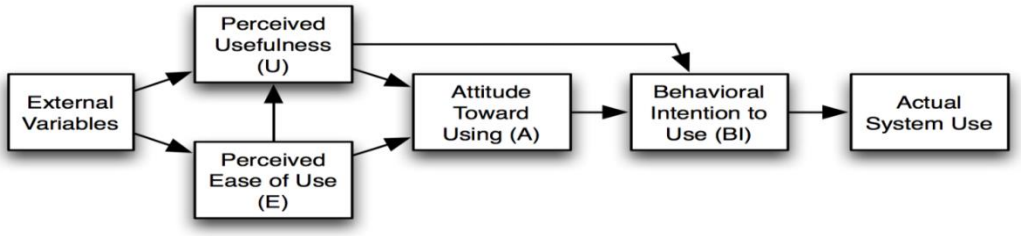


Figure 1. Technology Acceptance Model
Source: Researcher Compilation (2025)

2.3 Empirical Literature

Table 1

Author(s)	Year	Topic/Title	Methodology Used	Findings	Recommendations
Fillipi, Banno & Trento	2023	Review of Automation Technologies and Employment	Structured Systematic Literature Review	Impact of automation varies by level (global to firm); results are often inconsistent	Further empirical studies needed to clarify automation impacts at various levels
Ugwuozor & Egenti	2024	Awareness and Preparedness of Graduates on AI Threat	Descriptive Stats, Multinomial Logit Model	Graduates were largely unaware of AI threats and policy; willing to learn	Update curricula; develop robust AI policy frameworks
Yi & Ayangbah	2024	AI Innovation Management and Economic Growth	Case Study Analysis	AI improves productivity, boosts GDP, but may worsen inequality	Promote inclusive AI policies; support retraining and ethical standards
Nnamdi, Ogunlade & Abegunde	2023	AI and Socio-political Rights: Job Loss Focus	Desk-based Doctrinal Analysis	AI causes more job losses than creation; only skilled can benefit	Enact AI legislation; promote technical training;

					implement robot tax
Ojikeya et al.	2023	Digitization and Future of Jobs in Nigeria	Survey across 10 Industrial Cities	Skill gap exists; robots to replace ~63% of jobs	Introduce humanism into education; balance tech and human skills
Chinedu-Chiejine & Owa	2023	RPA in Nigerian Accounting and Finance Firms	Literature Review	Mixed feelings hinder adoption; RPA is still new	Sensitize firms; promote gradual RPA integration
Ikumapayi et al.	2023	Human-Robot Co-working through Automation	Inductive Research Design	Mixed societal reactions; future generations may adapt better	Design ethical systems for human-robot collaboration
Akosile, Banjo & Oyefodunrin	2022	Automation Impact on Employment: Interswitch Case	Survey (262 Respondents), SPSS (Pearson's Correlation)	Automation improves performance, upskilling; also displaces jobs	Leverage automation benefits; mitigate displacement risks
Hue, Thu and Quynh	2022	Bibliometric analysis of automation and labour market	Bibliometric analysis using VOSviewer 1.6.19 on WoS database (2002–2022)	287 papers analysed; US leads in publications. Top institutions include MIT and Harvard. Keywords like 'automation', 'employment', and 'jobs'	Identified literature gaps; proposed future study directions in automation and labour dynamics.

				dominated discussions.	
Joe	2022	Review of studies on automation's effect on employment	Structured systematic review of 105 publications	Differentiated between methods assessing probability vs. net employment impact. Covered various analysis levels (global to work activity).	Stressed methodological diversity and suggested refining approaches to better understand automation's multilevel effects on employment.
Ake	2021	Human and Robot Rights in Industry 4.0	Theoretical Appraisal	Debate over granting robot rights; ethical concerns raised	Consider ethical treatment; address machine-induced human mistreatment
Schlogl & Sumner	2018	Automation and Economic Development	Lewis Model Adaptation	Automation may shift labor to service sector, causing wage stagnation	Rethink labor policies; support service sector transformation
Mamudu & Lamido	2017	Economic Analysis of Robotics Impact on Labor	Economic Analysis Technique	Robotics may displace jobs but create new ones	Encourage skill diversification into human-centered roles

Literature Gap

The literature on automated machines, robotics, and employment in Nigeria reveals several gaps that warrant further investigation. While existing studies provide insights into the global and regional impacts of automation, there is a lack of focused research on the specific implications for Nigeria's labor market, particularly in the context of its unique economic and social landscape.

METHODOLOGY

Research Design

The overarching strategy or design of a research study has three separate but linked parts: the study design, period, and methodological choice (Dissanayake, 2023). According to Bryman and Bell (2019), the process of utilizing scientific ways in obtaining and analyzing a data is called research strategy or design. In any case, this study adopted a descriptive survey design. The justification for adopting this method was based on its usefulness, distancing the researcher from influencing any data collected for its analysis (Bouchrika, 2024). A descriptive survey research design is a method of collecting data from a sample population to provide a detailed description of their characteristics, behaviors, opinions, or attitudes. This approach focuses on describing a population or phenomenon as it naturally exists, without attempting to establish cause-and-effect relationships. Descriptive survey design is a crucial method within survey methodology, assumed to provide a detailed overview of a population's characteristics, behaviors, and opinions. This approach primarily focuses on collecting quantitative data to describe patterns and trends within a sample. The purpose of descriptive surveys is not to manipulate variables or establish causation but to gain insights into specific phenomena as they naturally occur (Siedlecki, 2020). The essence of these surveys lies in their ability to offer clarity and structure. Researchers utilize this design to identify relationships, gauge public sentiment, and uncover underlying issues relevant to various contexts. By capturing a snapshot of perspectives from a diverse group, descriptive surveys enable stakeholders to make informed decisions based on empirical evidence. This foundational understanding allows organizations to align their strategies effectively, meeting the needs and expectations of their target audiences (Williams, 2025). The Onion research theory by Saunders, 2019, was adopted to analyse the objective of the study, which looks at how automated machines, artificial intelligence affect employment. This theory was chosen because it transparently collects and analyzes data without researcher influence (Bryman & Bell 2019). The figure below explores the processes in the Onion Model;

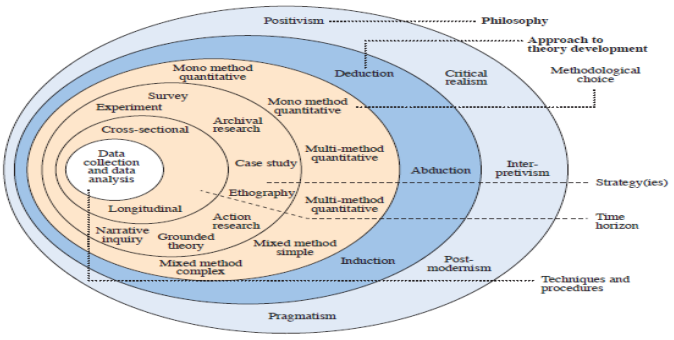


Figure 2. Onion Model Layers
Source: (Saunders et al 2019)

According to Raithatta (2017), the research onion offers a detailed description of the primary steps needed to develop a successful technique.

Study Area

One of the inner layers of the Onion Model is the research area, which is composed of "tactics" regarding the finer points of data collection and analysis (Mahesh, 2020). The research area aids the researcher limiting the study to a particular section of the entire population for easy accessibility of data collection and interpretation, (Alturki 2021). The Southeast state of Nigeria which is Imo State was used for the research. Because of the region's resiliency in the country's quest for automation and the fact that the study is looking at how automated machines and artificial intelligence impacts on employment in the banking and retail sector, the necessity to narrow it to a segment becomes inevitable. The rationale for choosing Imo State was based on the fact that it was within the proximity of the researcher. Obasi (2023) argues that studying automated machines and artificial intelligence as it affects employment in Imo State and South East Nigeria is crucial to understanding the region's economic growth and development because of the industry's substantial contribution to the region's GDP.

Study Population

The selection of banks and supermarkets in Owerri, Imo State, as the study population for the research on "Automated Machines, Robotics, and Employment" is both strategic and pertinent. Banks and supermarkets constitute a significant segment of the economic activities that is potentially susceptible to the impacts of automation and robotics. Their roles, often characterized by routine administrative and customers service tasks, are among those most likely to be affected by technological advancements.

As of 2025, the Imo State government reported having about 185 bank branches and 35 big supermarkets in Owerri (Smartscrapers, 2025). Given that Owerri is the capital city and administrative hub of Imo State, it hosts a substantial proportion of these banks and supermarkets. This concentration makes Owerri an ideal location for studying the potential effects of automation on banking and retail sector employment. The choice of this population is further justified by the need to understand how automation and robotics could influence employment patterns within the banking and retail sector. Insights gained from this study could inform policy decisions aimed at mitigating potential job losses and guiding workforce development strategies.

In summary, focusing on banks and supermarkets in Owerri provides a relevant and accessible population for examining the implications of automation and robotics on employment, with the findings potentially offering valuable guidance for policymakers and stakeholders in the banking and retail sector.

Sampling Technique

The study adopted the multi-stage sampling technique. This study adopted a multistage sampling technique to select respondents among 185 bank branches and 35 big supermarkets in Owerri, Imo State. The choice of this technique was guided by the need to ensure representativeness across various banks and supermarkets within the state's retail sector. From this list, a purposive selection of 6 banking and retail institutions was made to reflect a cross-section of technical, administrative and functions. The aim was to include organizations

likely to be affected differently by the implementation of automated systems and robotics in public service delivery.

Stage Two: Determining Sample Size using the Taro Yamane Formula

In the second stage, the sample size was determined using the Taro Yamane formula:

In order to select samples from the population, an appropriate sample size was determined. The Yamane (1965) formula was used in the calculation. Formula:cc

$$n = \frac{N}{(1 + N(e)^2)} \quad \text{.....(3.1)}$$

To define the elements of the formula: N = Sub-total numbers of civil servants, n = Sample size, e = Error margin (approximately 0.1). The essence of using this approach is because the total population if finite; and Yamane formula makes it possible to choose part of the population for the study, (Smith 1983).

As of 2025, there are approximately 185 bank branches and 35 big supermarkets in Owerri, according to estimates derived from the internet (Imo Sate Government E-Procurement Platform, 2025) and corroborated by data published by Smartscrapers (2025). Six institutions were purposively selected with a population of 200.

Given this figure and using the Taro Yamane Formula;

$$n = \frac{200}{(1+200(0.1)^2} = 99.5 \sim 100$$

Hence, a total sample of 100 respondents was deemed statistically sufficient and manageable for the study.

Stage Three: Distribution via Simple Random Sampling

In the third stage, a simple random sampling technique was applied to distribute the research instrument (Google Forms) to respondents. To implement this:

- The researcher visited the branches of each selected bank and retail outlet in Owerri.
- During these visits, the Google Forms link containing the questionnaire was shared with the Heads of Departments or Units.
- The heads were instructed to disseminate the link to their official WhatsApp groups comprising staff members of their respective institutions.
- This approach enabled broad coverage and eliminated selection bias, as all staff within the groups had equal opportunity to participate.

The use of WhatsApp as a distribution medium leveraged its ubiquity and ease of access among civil servants, especially in urban administrative settings like Owerri. The online form also allowed for real-time response collection and ensured anonymity, which was vital for encouraging honest feedback on sensitive employment-related topics. Once the number of responses required was attained, the survey was ended and the data cleaning commenced in excel. The data was thereafter transferred to the SPSS software where the analysis was carried out. The 10% attrition rate was used. This enabled for any incomplete response to be replaced with a complete one.

Method of Data Collection

According to Bouchrika (2024), data collection strategy is the term used to describe the methods used to compile data for simple analysis. Data is a critical component of research that influences the investigation of the study's objectives and the formulation of recommendations. In any event, the researcher utilised a structured questionnaire to collect the data for this study. Prior to administering the questionnaire to the respondents, certain questions were assessed to ensure that they aligned with the objectives and goals of the study (Tiwari, 2024). The rationale for utilising a structured questionnaire lies in its cost-effectiveness and convenience for collecting information from a substantial cohort of respondents, as well as its ability to evaluate varying perspectives among diverse participants on the topic at hand (Cleave 2023) The researcher, in pursuit of data collection, disseminated the data collection instruments online using Google Forms through a WhatsApp group comprising respondents which were randomly selected. Google Forms is an internet research platform utilised to distribute questionnaires to respondents when accessibility is limited. It alleviates the researcher's burden of travelling to the study area specifically to deliver the surveys. The rationale for utilising this medium is that Google Forms provides a user-friendly and fast method for data collection in diverse situations, ranging from academic research to corporate surveys. (Tiwari, 2024). A structured questionnaire was used to acquire data. The questionnaire used a 4-point-Likert scale, which included the following:

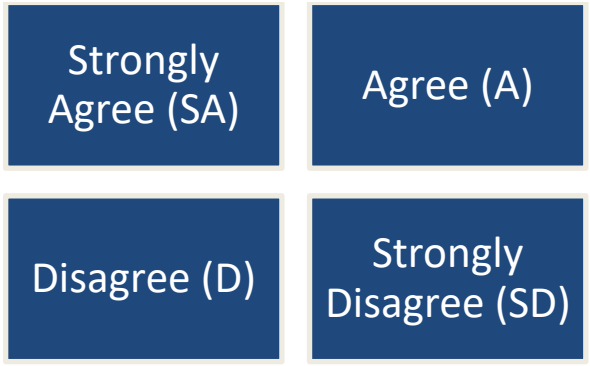


Figure 3

The reasoning for using this scale is that respondents may be more engaged if the 4-point Likert scale is clear and easy to understand. This makes it easier to understand and respond, which in turn leads to higher response rates and more reliable data (Christina, 2024). There were three parts to the questionnaire: Part A contains an introductory statement that explains the researcher's goals and assures the respondents that their responses will be kept confidential. Part B details the respondents' demographic information, such as their gender, age, educational background and cadre. The assessment of the study topics was covered in Section C.

The data was analysed using SPSS statistical software. SPSS is a versatile statistical software suite that was bought by IBM in 2009. According to Williams, (2024), SPSS offers a swift visual modeling environment that can accommodate

both simple and complex models. SPSS is employed to acquire data to conduct investigations, coding, and market research purposes. The justification for employing the software instead of other statistical programs was that its data processing processes are exemplary, particularly its capability to merge files, regardless of whether they involve the same subjects with varying variables or distinct subjects with the same variables (Williams, 2024). The data was initially generated using Google Forms and transferred to Excel to ensure its integrity, preventing any issues that could impact computation and facilitating coding for efficient analysis. The rationale for employing the coding method is supported by Chalisa (2019), who contends that coding is applicable when a study lacks a hypothesis for evaluation. The researcher aims to ascertain the respondents' opinions regarding the subject matter. This necessitates postponing the analysis until all data have been collected, owing to the diverse opinions expressed by the respondents.

Test of Validity

To evaluate the instrument's dependability, it was submitted to a research scholar. The rationale for the reliability test is to ensure that the instrument accurately reflects the study's aims and objectives. The corrections and input of the supervisor were duly considered and reflected in the final copy of the questionnaire.

Method of Data Analysis

Descriptive Statistics

Mean:

The mean is the most common form of central tendency. It is a key descriptive statistic that represents the average of the dataset. It is calculated by summing all the values of the dataset and dividing by the total number of values (Yellapu, 2018).

Summing Likert: $\frac{4+3+2+1}{4} = 2.5$

The question items were analyzed based on their respective mean values as calculated above.

Any mean above 2.5 = Positive Response

Any mean below 2.5 = Negative Response

An example is shown below:

Table 2

ITEM	RESPONSES				CUMULATIVE	MEAN	
	SA 4 points	A 3 points	D 2 points	SD 1 point			DECISION
1.	A	B	C	D	A*4 + B*3 + C*2 + D*1	Cumulative/Sample Size	If $\bar{x}$ > 2.5: Positive If $\bar{x}$ < 2.5: Negative

Standard Deviation:

The standard deviation is a measure of the amount of variation of the values of a variable about its mean.

The standard deviation is given by $\sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$

- If the standard deviation is high, it implies that the data has a high dispersion from the mean.
- If the standard deviation is low, it means that the data has a low level of the dispersion from the mean.

Percentage Analysis: Each question item response is represented by the percentage value. The interpretation is also done using the percentage.

Table 3

Item	SA	A	D	SD
Item 1	A	B	C	D
Percentage	$\frac{A}{Sum\ of\ A\ to\ D} \times 100$	$\frac{B}{Sum\ of\ A\ to\ D} \times 100$	$\frac{C}{Sum\ of\ A\ to\ D} \times 100$	$\frac{D}{Sum\ of\ A\ to\ D} \times 100$

Inferential Statistics

The hypotheses will be tested using the t-test for group sample. A student test (t-test) developed by William Gosset in 1908 is an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related. The t-test is a test used for hypothesis testing in statistics and uses the t-statistic, the t-distribution values, t-probability values and the degrees of freedom to determine statistical significance (Hayes, 2025).

The t-test is given by

$$t = \frac{\bar{d}}{s_{d/\sqrt{n}}}$$

Where;

$\bar{d}$ = Mean of the differences between paired observations

s_d = Standard deviation of differences

Decision Rule for Hypothesis Testing:

If the p-value is greater than 0.05, accept the null hypothesis (H_0)

If the p-value is less than 0.05, reject the null hypothesis (H_0)

Ethical Consideration

Research ethics must be carefully considered in order to protect the confidentiality and credibility of research participants, according to Alturki (2021). Ethical considerations are carefully assessed throughout the project. We made sure our study was legal by gathering all the information we needed and getting the respondents to agree to it. University policies on research ethics were followed in this investigation. While protecting the participants' privacy and anonymity, it gave top priority to ethical concerns and followed set criteria as closely as feasible.

RESULTS

Data Presentation, Analysis and Interpretation

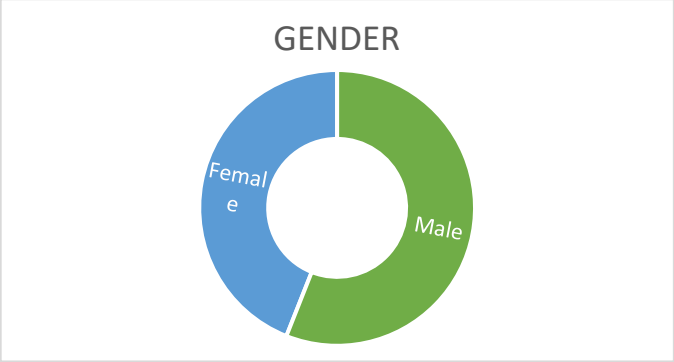
This chapter deals mainly with the analysis of data which were gathered in the previous chapter. The data analysis is presented in two sub-sections. The first sub-section is the demographic distribution of the participants. The participants' demographic information is necessary in order to properly classify them and get a clear picture of their characteristics going in to the main data analysis. The second sub-section is the presentation and analysis of main research questions.

Data Presentation

Presentation of Participants' Demographic Information

The figures below summarize the demographic distribution.

Gender



Fiugure 4. Gender of the Participants

Information from figure 4 above shows that male respondents constituted 56 per cent of the total while female respondents constituted 44 per cent. The implication of this is that banks and retail stores in Owerri, Nigeria is predominantly male-dominated as observed from information gotten from the respondents.

Age Bracket

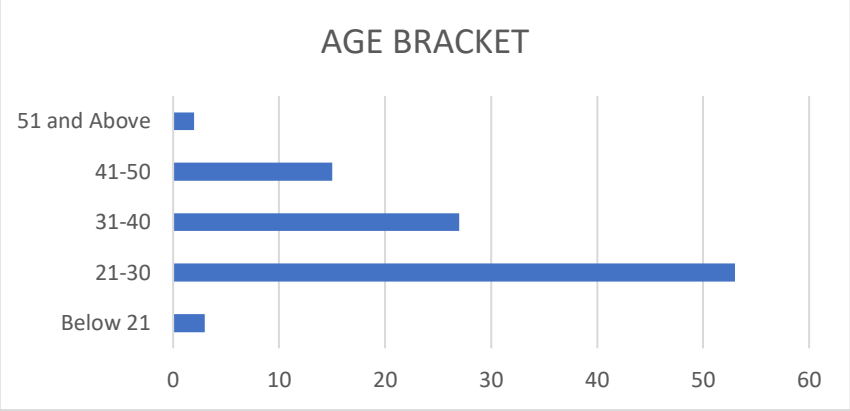


Figure 5. Age Bracket of the Participants

Figure 5 above reveals that participants aged 21-30 years constituted majority in the research. They represented 53 per cent out of the total participants

in the study. This was closely followed by the age group of 31 – 40 years with percentage of 27 per cent. The least age bracket were those in the category of 51 years and above who constituted 2 per cent of the total respondents. Therefore, the majority age falls in the category of 21-30 years and this shows that human capacity in the banking and retail sector in Nigeria has great potentials since they are in their productive age hence this research targeted the needed participants.

Educational Level

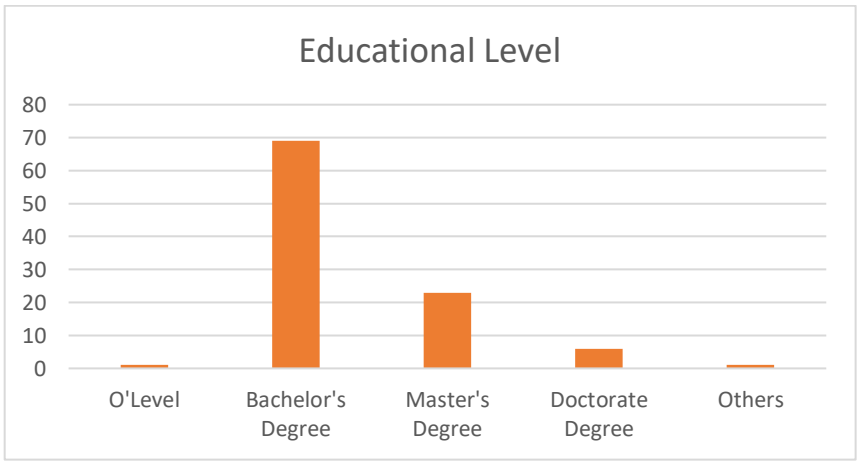


Figure 6. Educational Level of the Participants

Figure 6 above summarizes the educational level of the participants. About 69 per cent have bachelor's degree which represents the majority. Again, 23 per cent are master's degree holders while 1 per cent are Ordinary Level school leavers. What this implies is that the study comprises of mostly permanent employees of banks and supermarkets who have bachelor's degree as their educational qualification. However, just about 6 per cent are doctorate degree holders which represent a fairly even distribution of their educational qualifications.

Cadre

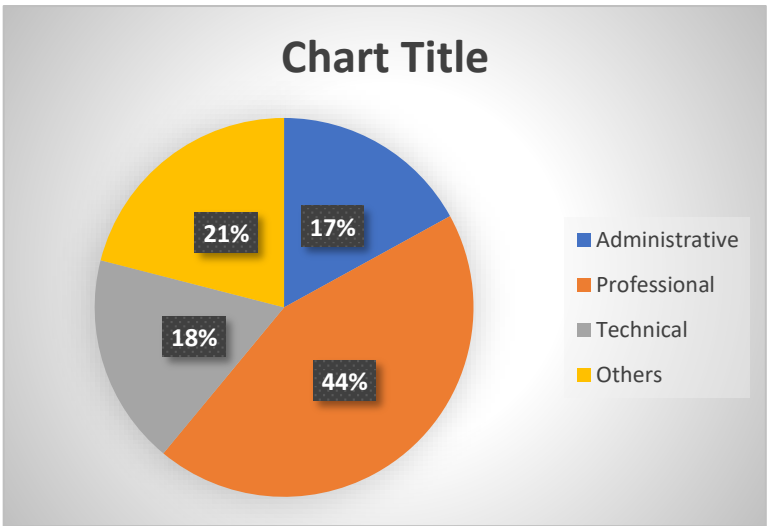


Figure 7. Cadre

More than half of the participants are in the professional staff category in their various organizations as shown in Figure 4.4 above. Professional staff make up 44 per cent of the total respondents. With technical staff and administrative staff constituting 18 per cent and 17 per cent respectively, it means that the study targeted professional staff employees of the banks and retail enterprises. It is also important to note that 21% of the respondents' selected others as their cadre level.

Analysis of Research Questions

In this sub-section, the research questions are analyzed using the mean value of the cumulative responses as a basis for making decision. The mean value is compared with the criterion mean of 2.5. The criterion mean is obtained by computing the average of the 4-point Likert scale. Any mean value that is above 2.5 is regarded as "Agreed" while any mean value that is below 2.5 is regarded as "Disagreed".

Research Question One:

What is the extent to which automation has affected job displacement in Nigeria?

Table 4. Responses on Automation and Job Displacement

A	Automation and Job Displacement	SA	A	D	SD	Mean	Decision
1.	The adoption of automated machines has led to the reduction of manual labor positions in Nigerian industries.	64 (64.0)	29 (29.0)	7 (0.0)	0 (0.0)	3.57	Agree
2.	Artificial Intelligence (AI) systems are replacing roles traditionally held by human workers in Nigeria.	30 (30)	49 (49)	20 (20)	1 (1)	3.08	Agree
3.	Increased automation in the Nigerian banking and retail sector has contributed significantly to employee layoffs.	23 (23)	57 (57)	18 (18)	2 (2)	3.01	Agree
4.	Many Nigerian workers lack the digital skills required to retain their jobs in an increasingly automated environment	35 (35)	50 (50)	12 (12)	3 (3)	3.17	Agree

Source: Researcher's Field Work (2025)

Table 4 above summarizes the cumulative responses on the extent to which automation affects job displacement in Nigeria. The participants mostly agreed to the responses in the survey. As a follow-up to the responses, the mean rating is made more explicit in figure 4.6 below:

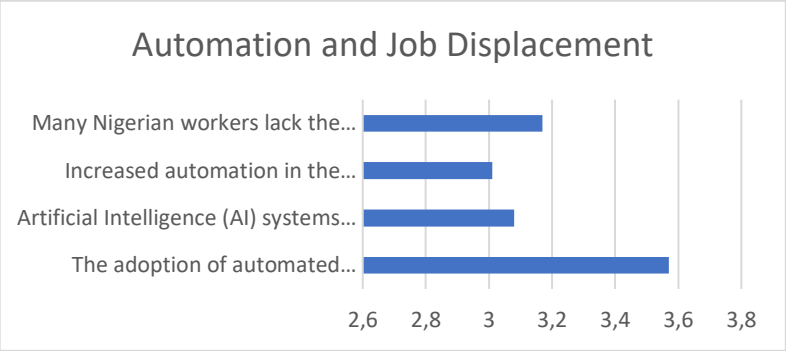


Figure 8

The results show that a significant majority of respondents agreed that the adoption of automated machines has led to the reduction of manual labor positions in the Nigerian banking and retail sector. This was the main problem identified by the participants as it returned a mean value that is greater than 2.5 criterion mean ($\bar{x}$=3.57). Similarly, lack of digital skills posed a considerable threat, as noted by majority of the participants which returned mean rating of $\bar{x}$ = 3.17. Artificial Intelligence (AI) systems are replacing roles traditionally held by human workers in Nigeria came with a mean of $\bar{x}$ = 3.08 and increased automation in the Nigerian banking and retail sector contributing significantly to employee layoffs had a mean of $\bar{x}$ = 3.01

Research Question Two:

Does robotics affect job enhancement and performance in Nigeria?

Table 5. Responses on Robotics and Job Enhancement

A	Robotics and Job Enhancement	SA	A	D	SD	Mean	Decision
1.	The use of robotics has improved job efficiency and task accuracy among Nigerian workers.	38 (38)	41 (41)	13 (13)	8 (8)	3.09	Agree
2.	Robotics has enabled Nigerian employees to focus on more strategic and creative tasks rather than repetitive duties.	29 (29)	49 (49)	17 (17)	5 (5)	3.02	Agree
3.	The integration of AI technologies in Nigerian firms has enhanced overall employee productivity	37 (37)	46 (46)	14 (14)	3 (3)	3.17	Agree
4.	Robots and Automated Machines encourages skill development and continuous learning among Nigerian workers	35 (35)	54 (54)	10 (10)	1 (1)	3.23	Agree

Source: Researcher's Field Work (2025)

Table 5 above summarizes the cumulative responses on the extent to which robotics affects job enhancement in Nigeria. The participants mostly agreed to the responses in the survey. As a follow-up to the responses, the mean rating is made more explicit in figure 4.7 below:

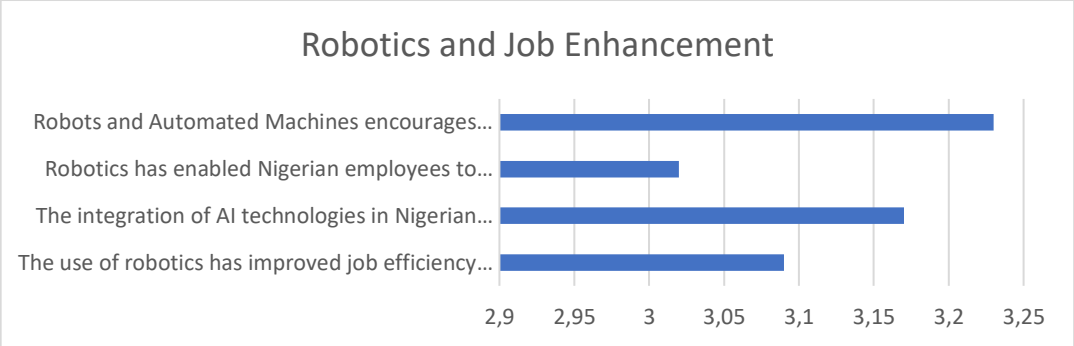


Figure 9

The results show that a significant majority of respondents agreed that robots and automated machines encourage skill development and continuous learning among Nigerian workers with a mean rating of $\bar{x}$ = 3.23. In terms of their mean ratings, robotics improving job efficiency and task accuracy among Nigerian workers and the integration of AI technologies in Nigerian firms enhancing overall employee productivity were rated $\bar{x}$ = 3.09 and $\bar{x}$ = 43.17 respectively. Furthermore, robotics enabling Nigerian employees to focus on more strategic and creative tasks rather than repetitive duties returned mean rating $\bar{x}$ = 3.02.

Research Question Three:

Are there new job opportunities as a result of automation and is the Nigerian workforce ready to transit into these roles?

Table 6. Automation and Workforce Transition

A	Robotics and Job Enhancement	SA	A	D	SD	Mean	Decision
1.	Automation has created new job roles that did not previously exist in the Nigerian labor market.	36 (36)	44 (44)	17 (17)	3 (3)	3.13	Agree
2.	There are increasing employment opportunities in technology and data-related fields due to automation and robotics in Nigeria.	37 (37)	41 (41)	19 (19)	3 (3)	3.12	Agree
3.	The majority of the Nigerian workforce are not adequately prepared to transit into automation-driven roles.	30 (30)	53 (53)	13 (13)	3 (3)	3.09	Agree
4.	The Nigerian education and training systems are lagging behind in equipping workers	43 (43)	48 (48)	8 (8)	1 (1)	3.33	Agree

	with the skills needed for automation-related jobs.

Source: Researcher's Field Work (2025)

Table 4.3 above summarizes the cumulative responses on whether there are there new job opportunities as a result of automation and is the Nigerian workforce ready to transit into these roles. The participants mostly agreed to the responses in the survey. As a follow-up to the responses, the mean rating is made more explicit in figure 4.8 below:

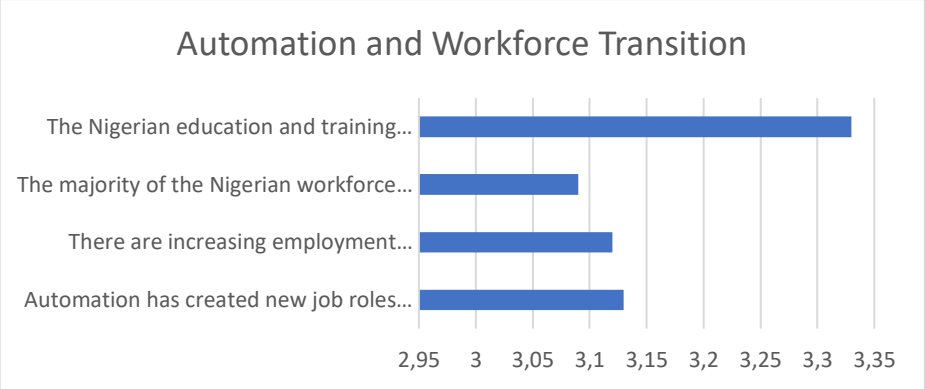


Figure 10

Analysis of the mean responses is summarized in Figure 4.8 and the result indicates that Nigerian education and training systems lagging behind in equipping workers with the skills needed for automation-related jobs had a mean of ($\bar{x}$ = 3.33). Automation has created new job roles that did not previously exist in the Nigerian labor market as opined by the respondents ($\bar{x}$ = 3.13) and increasing employment opportunities in technology and data-related fields due to automation and robotics in Nigeria had a mean ($\bar{x}$ = 3.12). The majority of the Nigerian workforce are not adequately prepared to transit into automation-driven roles had a mean 3.09.

Research Question Four:

Are government policies effective in addressing labour market disruptions caused by automation and robotics?

Table 7. Government Policies and Market Disruptions Caused by Automation and Robotics

A	Government Policies and Market Disruptions	SA	A	D	SD	Mean	Decision
1.	The Nigerian government has implemented effective policies to cushion the impact of automation and robotics on employment	22 (22)	15 (15)	38 (38)	25 (25)	2.34	Disagree
2.	There is a lack of proactive government initiatives to	43 (43)	46 (46)	9 (9)	2 (2)	3.30	Agree

	prepare workers for automation-driven changes in the labor market.						
3.	Government support for upskilling and reskilling programs is insufficient to address automation-related job losses	44 (43)	47 (44)	8 (11)	1 (12)	3.34	Agree
4.	Labour market policies in Nigeria are outdated and do not adequately respond to the challenges posed by automation and robotics	37 (37)	49 (49)	12 (12)	2 (2)	3.21	Agree

Source: Researcher's Field Work (2025)

Excerpts from Table 4.5 above show the cumulative responses on whether government policies are effective in addressing labor market disruptions caused by automation and robotics in Nigeria. As obtained in previous tables, the participants mostly agreed to the responses in the survey and so the mean rating of their responses is computed and shown in figure 4.9 below for clarity:

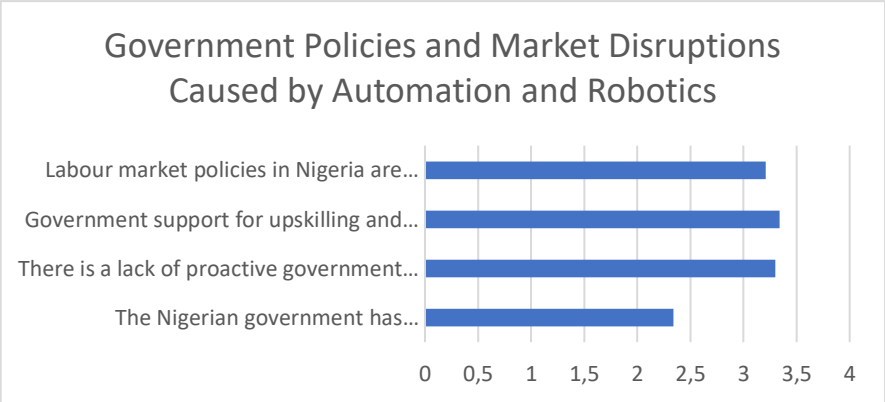


Figure 11

Analysis of the mean responses is summarized in Figure 4.9 and the result indicates that government support for upskilling and reskilling programs is insufficient to address automation-related job losses had the highest of mean of ($\bar{x}$ = 3.34) followed by the lack of proactive government initiatives to prepare workers for automation-driven changes in the labor market with a mean rating of ($\bar{x}$ = 3.30).

Test of Hypothesis (Student test).

Table 8. Student test

	t	**df**	**Pro. Value (Sig.2 tailed)**
Automation and Job Displacement	**69.631**	**99**	**0.000**
Robotics and Job Enhancement	**60.665**	**99**	**0.000**

Automation and Workforce Transition	**63.341**	**99**	**0.000**
Government Policies and Labor Market Disruptions	**65.075**	**99**	**0.000**

Source: Extracted from SPSS Output 2025

The individual test was carried out to test for joint significance of the independent variables on the dependent variable at 5% level using t-probability and t-statistic shown in table 4.7. The rule applied was: If t-probability is greater than the prescribed level of 5% or 0.05, accept the null hypothesis, otherwise reject the null hypothesis when f-probability is less than 0.05.

Hypothesis 1

H_{o1}*: There is no significant effect of automation on job displacement in the Nigerian banking and retail sector.*

Conclusion

From table 4.7 above, the probability of t-stat of was **0.000**, and less than 0.05 critical values. Thus, we reject the null hypothesis and conclude that automation has a significant effect on job displacement in the Nigerian banking and retail sector.

Hypothesis 2

H_{o2}*: There is no significant impact of robotics on job enhancement and performance in the Nigerian banking and retail sector.*

Conclusion

From table 4.7 above, the probability of t-stat of was **0.000**, and less than 0.05 critical values. Thus, we reject the null hypothesis and conclude that robotics has a significant impact on job enhancement and performance in the Nigerian banking and retail sector.

Hypothesis 3

H_{o3}*: There are no job opportunities in the Nigerian banking and retail sector as a result of automation and the Nigerian workforce is not ready to transition into these roles.*

Conclusion

From table 4.7 above, the probability of t-stat of was **0.000**, and less than 0.05 critical values. Thus, we reject the null hypothesis and conclude that there are job opportunities the Nigerian banking and retail sector as a result of automation and the Nigerian workforce is ready to transition into these roles.

Hypothesis 4

H_{o4}*: Government policies are not effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector.*

Conclusion

From table 4.7 above, the probability of t-stat of was **0.000**, and less than 0.05 critical values. Thus, we reject the null hypothesis and conclude that government policies are effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector

DISCUSSION

The study analyzed automated machines, robotics and employment in Nigeria focusing on the banking and retail sector using a survey study. Based on the specific objectives of the study, the study discusses the findings below:

The study discovered that although the adoption of automated machines has led to the reduction of manual labor positions in Nigerian industries, job opportunities as a result of automation exist and the Nigerian workforce is ready to transition into these roles. As for government policies and labour market disruptions caused by automation and robotics. The test of hypothesis revealed that that there is a significant difference on how automation affects job displacement; there is also a significant difference on how automation affects job enhancement and performance in Nigeria and government policies are effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector.

CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

1. There is a significant effect of automation on job displacement in the Nigerian banking and retail sector.
2. There is a significant impact of robotics on job enhancement and performance in the Nigerian banking and retail sector.
3. Job opportunities in the Nigerian banking and retail sector as a result of automation exist and the Nigerian workforce is ready to transition into these roles.
4. Government policies are effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector.

Conclusion

The study analyzed automated machines, robotics and employment in Nigeria. The study obtained its data from a survey where a questionnaire was distributed to respondents electronically and responses extracted from the questionnaire. The mean and percentage analysis were used to examine the research questions. The student test was used to test the hypothesis. The study revealed that there is a significant impact of automation on job displacement in the Nigerian banking and retail sector. It also revealed that robotics significantly affects job enhancement and performance in the Nigerian banking and retail sector. These findings were in line with the findings of Akosile, Banjo and Oyefodunrin (2022) who examined the impact of automation on employment and work using Interswitch Nigeria Limited as case study. The study focused on job enhancement, job performance, Upskilling, and wages and benefits as components of employment and work and the effects of automation. The hypotheses were tested using Pearson's correlation with the aid of Statistical Package for Social Sciences (SPSS). The results indicated that there is positive and significant relationship between both automations job performance, job enhancement, upskilling and wages and benefits. Based on this finding, organizations should improve on the use of automation in increasing performance, upskilling employees and enhancing them on the job. However,

organisation should consider the displacement of employees when deploying automation as it leads to job loss.

The study also revealed that job opportunities in the Nigerian banking and retail sector as a result of automation exist and the Nigerian workforce is ready to transition into these roles. This finding was contrary to the finding of Ugwuozor and Egenti (2024) whose results show that most of the graduates are essentially ignorant or unsure of the threat of AI to their lives and especially for the foreseeable future. Also, the study discovered that there is a significant difference on how automation affects job enhancement and performance in the Nigerian banking and retail sector. This was in line with the findings of Yi and Ayangbah (2024) who examined the relationship between AI innovation management, organizational productivity, and economic growth, providing insights for policymakers and industry leaders. The study was of the opinion that AI innovation management involves the strategic implementation and oversight of AI technologies, including adopting AI tools, managing AI projects, and integrating AI into business processes. The study discovered that effective AI innovation management boosts productivity by automating routine tasks, enhancing decision-making, and fostering innovation, thereby increasing efficiency and competitiveness. Furthermore, the study revealed that government policies are effective in addressing labour market disruptions caused by automation and robotics in the Nigerian banking and retail sector.

FURTHER STUDY

Based on the study's findings and conclusion, the following recommendations were made.

Adopt Phased Automation with Clear Workforce Transition Plans:

To improve performance and achieve corporate objectives in the banking and retail sectors, automation should be integrated into business operations in a phased manner. Employers should conduct Workforce Impact Assessments (WIAs) before major automation rollouts, and ensure redeployment or transition packages for affected employees, thereby reducing sudden job displacement.

Enhance Job Design and Implement Augmentation-Focused Training:

Automation should be deployed not only to replace tasks but to enhance job roles. Employers are encouraged to redesign jobs to complement automation and provide targeted upskilling programmes so that employees can shift to more strategic and creative tasks, boosting job enhancement and productivity.

Launch Targeted National Reskilling and Apprenticeship Programmes:

In order to maximise the opportunities created by automation, the government in partnership with the private sector should create subsidised training, apprenticeships, and internships in AI, robotics, and related technical fields. This should prioritise displaced workers and new entrants into the labour market, ensuring readiness for emerging roles.

Implement Automation with Strategic Intent and Measurable Outcomes:

Automated processes should be introduced with clearly defined goals, measurable performance indicators, and ongoing evaluation to ensure the

greatest possible benefits to both employers and employees. This strategic approach will also mitigate unintended negative impacts.

Contribution to Knowledge and Area for Future Research

This study made a significant contribution to employment and work by concentrating on automated machines, robotics and employment in Imo state. Additionally, the research targeted banks and supermarkets especially banks who are often viewed as early participants in the automation technology. Future studies should focus on other sectors such as manufacturing and entertainment.

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