A Correlational Study on the Relationship between Exposure to Artificial Intelligence Technologies and Office Work Productivity among Office Technology and Management Professionals in Public Organizations in Kano State, Nigeria.

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ABSTRACT

As public institutions increasingly adopt digital technologies, understanding how AI tools influence employee performance has become critical. This study examines the relationship between exposure to Artificial Intelligence (AI) and office work productivity among Office Technology and Management (OTM) graduate employees in public organizations in Kano State. Three research questions guided the study. The population comprised of 187 supervisors of OTM professionals in ministries, departments, and agencies in the State. The sample was 125 using stratified sampling technique. The study adopted a correlational research design. Instrument for data collection was a five-point rating scale questionnaire containing 10 items each in three sections with Very high level (VHL), High level (HL), Moderate level (ML), Low level (LL) and very low level (VLL). The questionnaire was subjected to face validation by three experts in OTM profession. The internal consistency method was used to determine the reliability of the instrument and an overall reliability co-efficient value of 0.77 using Cronbach Alpha was obtained. Data were analysed using mean and standard deviation to answer the research questions one and two. While Pearson's Product Moment correlation was used to answer research question three Findings of the study revealed a moderate exposure to Ai and office productivity among office professionals showing a very high relationship between Ai exposure and office productivity. Based on the findings, it was concluded that a high level of exposure to Ai tools is essential for enhanced work productivity by office professionals which would lead to greater efficiency and effectiveness in the overall performance of the organizations. It was therefore recommended that, leadership of public organizations in the state should provide an enabling environment for utilization of Ai tools by the office professionals and sponsor them to acquire requisite competencies in Ai application. While, professional themselves should engage in self-training and development on the use of Ai to enrich their abilities and boost their work productivity.

Key Words: Artificial Intelligence. Office Professionals. Public organization. Office Work Productivity.

INTRODUCTION

In today's rapidly evolving job market, the ability to acquire, train, and upgrade skills through adequate training and retraining programmes has never been more critical. Technological advancements, particularly in artificial intelligence (AI), are not only changing the nature of work but also the way people learn and develop new competencies. Devenport and Ronanki (2018), averred that, as industries undergo digital transformation, workers must continuously adapt to new tools, methodologies, and roles to stay relevant.

This illustrates that AI is at the vanguard of this drastic transformation offering innovative solutions that revolutionize skill development. In the same vein, Jarrahi (2018) asserted that, from intelligent tutoring systems

to adaptive learning platforms, AI provides personalized learning experiences that cater to individual needs, learning styles, and paces. This personalized approach enhances the efficiency and effectiveness of training programs, enabling learners to achieve their goals more quickly and thoroughly.

Russell & Norvig, (2020) defined AI as computer system and software programmes that mimic human cognitive processes such as learning, reasoning, problem-solving, and decision-making. According to Dwivedi et al., (2021), natural language processing, speech recognition, machine learning, robotic process automation and predictive analytics which normally involve human intelligence are among the activities that technologies are expected to accomplish. Public and private organizations are now incorporating different AI technologies.

In order to improve decision-making accuracy, productivity, and efficiency among different categories of employees including office professionals for organizational efficiency, Davenport and Ronanki (2018) cited an example of AI usage in the workplace to include virtual assistants, automated document processing, intelligent scheduling tools, digital transcription services and chatbots for internal or customer contacts. By eliminating manual labor, reducing human error and enabling data-driven decision-making in real time, these tools are revolutionizing conventional office operations.

Furthermore, AI-driven analytics can predict emerging skills and job market trends, allowing educational institutions and employers to proactively address skill gaps (Ressell & Norvig, 2020). This predictive capability ensures that training programs are aligned with future workforce requirements, to adequately prepare individuals for the jobs of tomorrow. In another way, Dwivedi et al (2021) reported that, the exposure of Ai in a work place refers to the extent to which office professionals utilize AI-powered tools and systems in executing routine assignments. This implies that, a good understanding of the application of AI tools such as chatbots, automated scheduling tools, intelligent document processing system and decision-support system could enhance the productivity of office professionals in the workplace.

Office productivity is the ability to accomplish an office task or activity efficiently and effectivity with minimum or no error. Drucker (1999) viewed office productivity as the efficiency and effectiveness of office managers to complete mundane tasks such as documentation, communication, information processing and file tracking quickly. This entails that office productivity is influenced by both individual competencies and technological know-how. In the modern business world, productivity is no longer assessed by volume or speed of task completion but also covers accuracy, responsiveness, adaptability and service quality (Campbell, 1990). This is to say that, the productivity of office professionals in this era of AI is non-negotiable.

Office technology and management professionals are individuals who have undergone a series of training in accordance with the approved curriculum of different supervisory agencies of higher education in Nigeria such as National University Commission (NUC), National Board for Technical Education (NBTE) and National Commission for Colleges of Education (NCCE) among others and certified to practice as a secretary, office manager or office support assistant.

Due to challenges of inadequate infrastructure, low digital literacy, and innovation, the public sector in Nigeria lags behind in adopting AI tools, whereas the commercial sector has largely embraced them (Adeleke & Bagudu, 2020). However, in order to increase administrative efficiency, both federal and state governments in Nigeria have started to adopt e-governance and digital transformation (NITDA, 2021). That is why government agencies in Kano State have launched digitization projects. But little is known about the level at which office workers are exposed to AI tools and whether or not it affects their work productivity.

Several studies have established a positive relationship between AI integration and employee productivity, especially in the private sector (Jarrahi, 2018; Maroufkhani et al., 2020). Employees who are more exposed to AI tools tend to demonstrate higher levels of output, reduced workload and improved task accuracy. For instance, Shrestha et al. (2019) reported that AI enhances decision-making efficiency and allows workers to focus on complex, non-routine tasks. However, Chui et al., (2018) were of the opinion that excessive dependence on AI without adequate training or adaptation may lead to reduced employee initiative and task accomplishment.

Moreover, in the Kano State public sector, the relationship between exposure to AI and work productivity remains under-explored, especially because infrastructural and organizational readiness is still evolving (Adeleke &

Bagudu, 2020). Few studies have focused on how office professionals in government institutions perceive and utilize AI tools and whether such exposure correlates significantly with measurable gains in productivity. This leaves critical gaps in the body of knowledge which this research on correlation between exposure to AI and work productivity among office professionals in public organizations in Kano State, Nigeria sought to fill.

The content scope for this study is on correlational study between exposure to artificial intelligence and office productivity among office professional in Kano State Public Organizations. The respondents' variables are supervisors of OTM professionals and computer operators serving as secretaries in Kano State Public Organizations. However, since the respondents would assess their subordinates, it is likely that Male supervisors could rate their subordinates with bias and prejudice. For instance, Toyin (2009) revealed that male administrative supervisors rate male students as competent on computer applications against female students, while Igbinoba and Owolabi (2013) reported that male OTM students were rated more competent on computer applications than their female counterparts. Hence the need for the study base on the above varying factors.

Problem of the Study

The evolution of Artificial Intelligence (AI) has come to shape organizational processes across the globe due to the introducing new ways of automating tasks, managing data, and enhancing the decision-making. Process among other. According to Adeleke (2021), public organizations, especially in developing countries like Nigeria, are showing a growing interest in using AI to improve efficiency and service delivery. Office professionals otherwise known as Confidential secretaries, play a pivotal role in managing sensitive information, coordinating communication, and supporting administrative functions, are among the professionals directly affected by this technological shift.

However, despite the fact that Kano State is one of the major administrative and commercial hubs in Northern Nigeria and host a wide range of public organizations employing the services of office professionals. There seems to be a growing concern from supervisors regarding the justification of secretaries' exposure to Ai in relation to office work productivity. While studies have shown that AI can significantly enhance productivity by reducing repetitive tasks and improving information management (Brynjolfsson & McAfee, 2017; Makridakis, 2017), others caution that the benefits are not automatically realized without adequate training, infrastructure and organizational readiness (Davenport & Ronanki, 2018; NITDA, 2022). Consequently, Iwuoha & Aniche (2020) submitted that, the exposure of office managers to AI in the face of poor ICT infrastructure and limited digital literacy might have a repercussion on their work effectiveness and productivity. The problem of this study therefore is that, the extent to which office professionals in the public organizations in Kano State are exposed to AI technologies and whether this exposure correlates with improvements in their work productivity, remains largely unexplored and unknown. This knowledge gap is critical, given the strategic role office professionals play in maintaining organizational efficiency and productivity. This makes it imperative to conduct this study on correlation between exposure to AI and office work productivity among office professionals (confidential secretaries) in public organizations in Kano State In order to provide empirical data to inform workforce development strategies and support of the digital transformation agenda of Nigeria's public sector.

Purpose of the Study

The main objective of this study was to examine the relationship between exposure to Artificial Intelligence (AI) and work productivity among office professionals in public organizations in Kano State, Nigeria. Specifically, the study determined:

1. The level of exposure to AI tools among office professionals in public organizations in Kano State, Nigeria.
2. The level of work productivity among office professionals in public organizations in Kano State, Nigeria.
3. Relationship between exposure to AI tools and work productivity among office professionals in public organizations in Kano State, Nigeria.

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Research Questions

The following research questions guided the study:

1. What is the level of exposure to AI tools among office professionals in public organizations in Kano State, Nigeria?

2. What is the level of work productivity among office professionals in public organizations in Kano State, Nigeria?

3. What is the level of relationship between exposure to AI tools and work productivity among office professionals in public organizations in Kano State, Nigeria.?

METHOD

The study adopted a descriptive survey and correlational research design since it involves the use of questionnaire to collect data from a sample of office Supervisors of office professionals. Umoru (2022) affirmed that survey research design is appropriate for a study utilizing questionnaire as instrument for data collection. The area for the study was Kano State which was known as the centre of commerce with a population of about 10 million (Census Report, 2016). The state has boundaries with Katsina, Jigawa, Kaduna, Bauchi and Plateau States. The population comprised of 187 supervisors of OTM professionals drawn from ministries, departments and agencies across the state. Stratified sampling technique was used to draw a sample size of 125 as follows:

Public Organization	**Population**	**Justification**
Ministries	71	71/187 x 125 = 48
Departments	62	62/187 x 125 = 41
Agencies	54	54/187 x 125 = 36
Sample size		**125**

A five-point rating scale questionnaire titled “Questionnaire on correlational study between the exposure to AI and office work productivity among office professionals” (QCSBAIEAOWP) was used to collect data for the study. The instrument contained three sections with 10 items each with response options of very high level (VHL), high level (HL), moderate level (ML), low level (LL) and very low level (VLL). It was subjected to face validation by three experts in Office Technology and Management from higher education institution in the state.

The internal consistency method was used to establish the reliability of the instrument using Cronbach alpha and reliability co-efficient values of 0.88, 0.83 and 0.78 were obtained for the three clusters with an overall reliability co-efficient value of 0.83. The researcher collected data for the study through direct contact with the respondents with the help of two research assistants using on-the-spot method with prior notification through phone calls in order to facilitate a high response rate. Out of the 125 copies of the instrument distributed, 107 (representing 86%) were retrieved with an attrition rate of 14%. The arithmetic mean and standard deviation were used to answer research questions one and two and determine the consistency of the respondents’ mean ratings. While Pearson’s product moment correlation co-efficient formula was used to answer research question three. Decision on research questions one and two was based on the cluster mean score relative to the real limit of numbers viz:

4.50 – 5.00	Very High Level
3.50 – 4.49	High Level
2.50 – 3.49	Moderate Level
1.50 – 2.49	Low Level
0.50 – 1.00	Very low Level

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Decision on research question three was based on the following scale by Nworgu (2015):

r = 0.80 and Above Very High

r = 0.60 to 0.80 High

r = 0.40 to 0.60 Moderate

r = 0.20 to 0.40 Low

r = 0.00 to 0.20 Very Low

RESULTS

Table 1: Respondents' Mean and Standard Deviation on the Level of Ai exposure among Office Professionals in Public Organisation in Kano State.

N107

S/N	Office Professional exposure to Ai	Mean	SD	Remarks
1	My office professional regularly uses AI power tool	3.44	1.13	Moderate level
2	Attend workshop and training session on AI related applications	2.33	1.17	Low level
3	Frequently use AI application for task accomplishment	3.11	1.10	Moderate level
4	Demonstrate understand of AI functionalities	2.67	1.10	Moderate level
5	Uses Ai tools in proofreading and drafting documents.	3.00	1.01	Moderate level
6	Applies AI features like Ms office suite to compose documents	3.78	1.00	Moderate level
7	Explores new Ai tools relevant to secretarial duties	3.11	1.12	Moderate level
8	Use Ai tools to manage routine mails and correspondence.	2.56	1.10	Moderate level
9	Integrate Ai tools into their daily secretarial workflow.	3.78	1.18	Moderate level
10	Show confidence in adapting to new AI technologies.	2.56	1.15	Moderate level
	Total mean	**3.03**		**Moderate level**

Source: Field survey 2025

Table 1 shows a varying level of exposure to AI tools in the performance of different tasks among office professionals in public organizations in Kano State, Nigeria. However, the cluster mean score of 3.03 shows the overall. This means that, office professionals have moderate level of exposure to AI tools in their work performance. The standard deviation score for all the items is within the same range which also show that the respondents' opinions are closely related.

Table 1: Respondents' Mean and Standard Deviation on the Level of Office Work Productivity among Office Professionals in Public Organisation in Kano State.

N107

S/N	Possessed Artificial intelligence skills	Mean	SD	Remarks
1	Completes assigned task within expected timelines.	3.78	1.13	Moderate level
2	Produces high quality and error free documents	2.44	1.17	Low level

3	Demonstrate initiative and efficiency in managing workload	3.11	1.10	Moderate level
4	Maintain effective filing and record-keeping system	2.56	1.10	Moderate level
5	Handles communication (emails, memos and letters) professionally and promptly	3.11	1.01	Moderate level
6	Support office operations with minimal supervision	3.44	1.00	Moderate level
7	Organize meetings, appointments and schedules efficiently	3.44	1.12	Moderate level
8	Demonstrate multitasking ability without compromising standard	2.78	1.10	Moderate level
9	Show reliability and consistency in daily performance	3.56	1.18	Moderate level
10	Contribute positively to the smooth functioning of the office.	2.78	1.15	Moderate level
	Cluster mean	**3.10**		**Moderate level**

Source: Field survey

The information presented in Table 2 reveal that, two out of the 10 items have mean scores of 3.56 and 3.78 indicating that office professionals have high work productivity level in the indicated area of work performance. Mean ratings for the seven items fell between 2.78 and 3.11 which shows that the productivity level of the office professionals is moderate. While, one item covering a key work activity of the office professionals has mean rating of 1.17 indicating low level productivity. However, the cluster mean score of 3.10 shows that the work productivity level of the office professionals is moderate in the overall. The standard deviations are within the same range, showing that the respondents were not wide apart in their mean ratings.

Table 3: Summary of Pearson Product Moment Correlation Co-efficient on the Relationship Between AI Exposure and Office Work Productivity Among Office Professionals in Public Organizations in Kano State.

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S/N	x	Y	Xy	x^2	y^2
1	3.44	3.78	13.00	11.83	14.29
2	2.33	2.44	5.69	5.43	5.95
3	3.11	3.11	9.67	9.67	9.67
4	2.67	2.56	6.84	7.13	6.55
5	3.00	3.11	9.33	9.00	9.67
6	3.78	3.44	13.00	14.29	11.83
7	3.11	3.44	10.70	9.67	11.83
8	2.56	2.78	7.12	6.55	7.73
9	3.78	3.56	13.46	14.29	12.67
10	2.56	2.78	7.12	6.55	7.73
Total	**30.34**	**31.00**	**95.87**	**94.40**	**97.89**

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

$$r = \frac{(10)(9.87) - (30.34)(31.00)}{\sqrt{[10(94.40) - (30.34)^2][10(97.89) - (31.00)^2]}}$$

$$r = \frac{958.70 - 940.54}{\sqrt{[944.00 - 920.51][978.90 - 961.00]}}$$

$$r = \frac{18.16}{\sqrt{[23.49][17.90]}}$$

$$r = \frac{18.16}{\sqrt{420.47}}$$

$$r = \frac{18.16}{20.50}$$

$$r = \frac{18.16}{20.50}$$

$$r = 0.88$$

Table 3 above shows the summation of x = 30.34, summation y reveals the value of 31.00. The total for xy is 95.87, while x^2 and y^2 yield the values of 94.40 and 97.89 respectively. The achieved co-efficient value of 0.88 shows a very high relationship between AI exposure and work productivity among office professionals in Public Organizations in Kano State.

DISCUSSION

Findings of the study indicates a moderate level of Ai exposure among office professionals in public organizations in Kano State which implies that the office professionals' exposure to AI is still in the early stage. The finding agrees with Adeleke and Bagudu (2020) which reported that the level of exposure to AI by employees in public organizations in Nigeria is not impressive due to low digital literacy. It also supports the assertion of Olatokun and Adebayo (2023) that, absence of AI skills is an impediment to potential workers in this era of digitalization.

Furthermore, the findings of the study indicate that work productivity among office professionals in public organizations in Kano State is at moderate level. This finding support that of Brynjolfsson and McAfee (2017) that there is low productivity among employees due to lack of maximum use of Ai tools. The implication of this finding might be that supervisors of office professionals are not engaging their subordinates in the use of AI or that the devices are lacking in the work place. This agrees with Bashir and Ibrahim (2023) which reported that, limited knowledge on the AI tools has negative effect on productivity in public organizations.

The study finally revealed a high level of relationship between AI exposure and office work productivity among office professionals in public organizations in Kano State. The finding tally with Jarrahi (2018) and Maroufkhani et al. (2020) which narrated that employees who are more exposed to AI devices tend to demonstrate higher levels of output and improve task accuracy. This implies that adequate exposure to AI technologies is the pillar of office productivity in the current era of digitalization. However, as averred by Chui et al. (2018), excessive dependence on AI without adequate training may reduce employee initiatives in task performance.

CONCLUSION

Findings of the study reveal that there is a high level of relationship between exposure to AI technologies and office work productivity among office professionals in public organization in Kano State. Based on the findings, the study concluded that, there is need to enhance the exposure of these key office professionals to AI applications

in order to improve their work productivity and overall performance of the organizations for the socio-economic growth and development in Kano State.

RECOMMENDATIONS

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

1. Leadership or management of public organizations in Kano State and other part of the country should provide adequate AI technologies and suitable environment for their effective utilization by office professionals to enhance their work productivity levels

2. Leadership or management of public organizations in Kano State and other part of the country should motivate and support their office professionals to acquire skills for the efficient application of AI tools to enhance their work productivity levels.

3. Kano State Government should provide suitable digital platform and train the employees on digital literacy for maximum productivity.

4. Office professionals in public organization in Kano State and other part of the country should seek out and take advantage of training opportunities to upgrade and update their AI skills for maximum work productivity.

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