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# Artificial Intelligence and Employee Job Performance of Tertiary Institutions in Ogun State, Nigeria

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## Abstract

*This study explored the effect of artificial intelligence on employee job performance in tertiary institutions in Ogun State, Nigeria. Specifically, the study scrutinized the influence of automation capability, data analytics and predictive ability, and decision-support intelligence on employee job performance. A quantitative study approach was employed and data were gathered from a sample of 359 respondents. The reliability of the instrument was validated using Cronbach's alpha coefficient of 0.940, demonstrating elevated internal consistency. Data were examined utilizing descriptive statistics, Pearson correlation and multiple regression analysis. The outcomes revealed that artificial intelligence dimensions jointly have a significant effect on employee job performance ($R = 0.730$, $R^2 = 0.533$, $p < 0.05$), explaining 53.3% of the variance in performance. Individually, automation capability showed a weak but significant positive effect on employee job performance ($\beta = 0.264$, $p < 0.05$). Data analytics and predictive ability exhibited a strong positive and significant effect ($\beta = 0.688$, $p < 0.05$), emerging as the most influential predictor. Decision-support intelligence also had a moderate positive and significant effect on performance ($\beta = 0.594$, $p < 0.05$). However, in the combined regression model, automation capability demonstrated a negative significant relationship, suggesting possible inefficiencies or implementation challenges. The study concludes that artificial intelligence significantly enhances employee job performance, particularly through data-driven decision-making and intelligent support systems. It is recommended that tertiary institutions should invest more in advanced data analytics capabilities and optimize automation processes to improve employee productivity and overall institutional performance.*

**Keywords:** Artificial intelligence, automation capability, data analytics, decision-support intelligence, employee job performance.

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## Introduction

Artificial intelligence has become a transformative force across industries, reshaping decision-making, productivity and innovation in modern societies (Mossavar-Rahmani & Zohuri, 2024). Its applications span healthcare, finance, education, security and governance, enabling data-driven insights, automation and enhanced human capabilities (Iyer, 2025). As adoption accelerates, ethical concerns, regulatory frameworks and workforce implications continue to attract scholarly and policy attention worldwide (Huda, 2019). AI is defined as a structure's capability to precisely read external data, learn from it, and exploit that knowledge to achieve certain goals and tasks through flexible methods." (Ghosh & Thirugnanam, 2021). Artificial intelligence is a discipline concentrated in

computer science on developing intellectual computers competent in executing activities that often necessitate human intellect, including learning, problem-solving, and decision-making (Sarker, 2022). It is increasingly essential for fostering innovation and advancement in industries (Kamboj, 2024). The revolutionary power arises from AI's capacity to computerize tasks, analyze data, along with insights, allowing enterprises to function more efficiently and effectively (Aldoseri et. al., 2024). Historically, corporations emphasized individuals' competencies in conventional professional knowledge, communication skills, and leadership abilities. Nonetheless, the extensive implementation of AI technology is fundamentally altering the skills and competencies expected of individuals in their roles (Babashahi et. al., 2024). The digital revolution has significantly influenced the world, transforming it into a contemporary landscape defined by data supremacy in all business operations (Alghizzawi et. al.,2024a; Aboalganam et. al., 2024). Artificial intelligence increasingly influences employee job performance by enhancing efficiency, accuracy and decision quality while reshaping work processes and skill requirements (Mossavar-Rahmani & Zohuri, 2024). AI-enabled tools support task automation, performance monitoring and personalized feedback, potentially improving productivity and job outcomes. However, variations in employee adaptability, digital skills and organizational support suggest a need for empirical research to examine how AI adoption affects performance across different workplace contexts (Mohamud et. al., 2025).

Employee job performance is a central concept in human resource management and organizational behavior that captures how well individuals fulfill their work responsibilities and contributes to organizational goals (Alsafadi & Altahat, 2021). In today's dynamic workplaces shaped by digital transformation, hybrid work models and heightened performance expectations, understanding job performance is more important than ever for sustainable business success (Trenerry et. al.,2021). Employee job performance is characterized by the extent to which an employee assists the organization in achieving its objectives, reflected through both monetary and non-monetary outputs and the quality of behavior and actions exhibited while performing job tasks (Jaleta et. al., 2019). Employee job performance can also be defined as the assessment and evaluation of how effectively an employee uses their knowledge, skills and behaviors to achieve job responsibilities in alignment with organizational objectives (Alagaraja & Shuck, 2015). This includes productivity, adherence to standards, teamwork, adaptability and overall impact on organizational outcomes (Albogami et. al.,2024).

The swift implementation of artificial intelligence (AI) technologies has profoundly impacted how firms design work processes and evaluate employee job performance (Malik et. al., 2022). Despite increasing investment in AI systems, many organizations still face uncertainty regarding how specific AI capabilities influence employee performance outcomes (Jarrahi, 2018). In particular, automation capability**,** data analytics and predictive ability and decision-support intelligence are reshaping task execution, performance monitoring and decision-making at work (Akter & Kudapa, 2024). While automation capability improves speed and efficiency by reducing manual effort, it may also alter job roles and performance expectations, creating adjustment challenges for employees (Parker & Grote, 2022). Similarly, AI-driven data analytics and predictive tools provide real-time insights that can enhance accuracy and productivity, yet employees may lack the skills required to fully leverage these systems, thereby limiting performance gains (Zong & Guan, 2025). Furthermore, decision-support intelligence influences how employees interpret information and make work-related decisions, raising concerns about over-reliance on AI recommendations and reduced human judgment (Oliveira, 2025). Despite these developments, empirical evidence remains insufficient on how these AI dimensions affect employee job performance, particularly in developing and emerging work contexts. This disparity highlights the need for

systematic conduct research to examine the effect of AI capabilities on employee job performance in contemporary organizations (Bankins et. al., 2024).

**$H0_1$:** Automation capability has no significant effect on employee job performance of Tertiary Institutions in Ogun State, Nigeria.

**$H0_2$:** Data analytics and predictive ability has no significant effect on employee job performance of Tertiary Institutions in Ogun State, Nigeria.

**$H0_3$:** Decision-support intelligence has no significant effect on employee job performance of Tertiary Institutions in Ogun State, Nigeria.

## Methodology

This study adopted a quantitative survey research design to examine the effect of artificial intelligence on employee job performance in tertiary institutions in Ogun State, Nigeria. The population comprised 5,855 academic and non-academic staff drawn from nine selected tertiary institutions, namely Federal University of Agriculture, Abeokuta, Olabisi Onabanjo University, Covenant University, The Federal Polytechnic Ilaro, Moshood Abiola Polytechnic, All Over Central Polytechnic, Federal College of Education, Sikiru Adetona College of Education and Yewa Central College of Education. A sample size of 361 respondents was determined using the Krejcie & Morgan (1970) sample size determination approach, out of which 359 questionnaires were properly completed and returned. The inclusion of both academic and non-academic staff was justified because artificial intelligence applications are widely utilized in academic and administrative operations within tertiary institutions. Data were collected through a structured questionnaire to ensure standardized responses and facilitate objective statistical analysis. The survey design enhanced the generalizability of findings and supported empirical examination of the relationship between the variables.

## Results and Discussion

**Table I: Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .940 | .942 | 20 |

**Source: SPSS Version 26**

Table 1: The Cronbach's Alpha of 0.940 shows that the questionnaire items have very high internal consistency. The instrument's strong reliability and the items' consistent measurement of the constructs being studied are confirmed by the value of 0.940.

**Table II: Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| EJB | 8.0669 | 3.93324 | 359 |
| AutC | 11.0111 | 4.74016 | 359 |
| DAPA | 9.3203 | 3.93174 | 359 |

| | | | |
|---|---|---|---|
| DSI | 9.0947 | 4.00725 | 359 |

**Source: SPSS Version 26**

Table II: The highest mean score was 11.01 for automation capabilities, indicating that respondents reported comparatively higher levels of this variable than others. Out of all the variables, employee job performance had the lowest mean value (8.07). The standard deviations (3.93 to 4.74) show moderate dispersion, which means that although respondents' opinions differ, they are still very close to the mean.

**Table III: Correlations**

| | | EJB | AutC | DAPA | DSI |
|---|---|---|---|---|---|
| Pearson Correlation | EJB | 1.000 | .264 | .688 | .594 |
| | AutC | .264 | 1.000 | .625 | .540 |
| | DAPA | .688 | .625 | 1.000 | .773 |
| | DSI | .594 | .540 | .773 | 1.000 |
| Sig. (1-tailed) | EJB | . | .000 | .000 | .000 |
| | AutC | .000 | . | .000 | .000 |
| | DAPA | .000 | .000 | . | .000 |
| | DSI | .000 | .000 | .000 | . |
| N | EJB | 359 | 359 | 359 | 359 |
| | AutC | 359 | 359 | 359 | 359 |
| | DAPA | 359 | 359 | 359 | 359 |
| | DSI | 359 | 359 | 359 | 359 |

**Source: SPSS Version 26**

Table III: Shows that data analytics and predictive abilities have the largest association (0.688) with employee job performance, according to the correlation table, indicating that improvements in this variable will be closely linked to advances in employee job performance. Additionally, there is a significant positive correlation between decision-support intelligence and employee job performance (0.594). Nevertheless, there is little correlation between employee job performance and automation capability (0.264). At the 1% level, the entire variables have a p-value of 0.000, indicating a statistically significant correlation between artificial intelligence and employee job performance.

**Table IV: Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .730[a] | .533 | .529 | 2.69940 | 2.072 |

a. Predictors: (Constant), DSI, AutC, DAPA
b. Dependent Variable: EJB

The coefficient determination value of 0.730 in Table IV suggests that the artificial intelligence dimensions used in this study have a strong correlation with employee job performance, contributing roughly 73.0% to the job performance of academic staff in Ogun State's tertiary institutions. The R-squared value of 0.533 indicates that differences in the use of automation capabilities, data analytics and predictive ability, and decision-support intelligence account for about 53.3% of the systematic variances in employee job performance.

**Table V: ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2951.589 | 3 | 983.863 | 135.020 | .000[b] |
| | Residual | 2586.806 | 355 | 7.287 | | |
| | Total | 5538.396 | 358 | | | |

a. Dependent Variable: EJB
b. Predictors: (Constant), DSI, AutC, DAPA

Table V: F-statistic shows a value of 135.020 indicating that the models are statistically significant. As a result, the predictors, automation capability, data analytics and predictive ability, and decision-support intelligence are appropriate and adequate for forecasting the degree of fluctuations in employee job performance. Furthermore, the significance value of 0.000, which is less than the significance level of 0.05, suggests that artificial intelligence significantly affects employee job performance in Ogun State tertiary institutions.

**Table VI: Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 2.278 | .406 | | 5.608 | .000 |
| | AutC | -.240 | .039 | -.289 | -6.189 | .000 |
| | DAPA | .718 | .062 | .717 | 11.568 | .000 |

| | | | | | |
|---|---|---|---|---|---|
| DSI | .192 | .056 | .195 | 3.395 | .001 |

a. Dependent Variable: EJB

According to Table VI, employee job performance is significantly affected negatively by automation capabilities (β = -0.240, p < 0.05). As a result, the alternative hypothesis is accepted at a 95% confidence interval while the null hypothesis is rejected at a 5% significant level.

Employee job performance is significantly positively impacted by data analytics and predictive capacity (β = 0.718, p < 0.05). As a result, the alternative hypothesis is accepted at a 95% confidence level while the null hypothesis is rejected at a 5% level of significance.

Lastly, there is a weak significant effect of decision-support intelligence on employee job performance (β = 0.192, p < 0.05). Consequently, the alternative hypothesis is endorsed within a 95% confidence interval while at a significance level of 5%, the null hypothesis is rejected.

Accordingly, when all other factors are held equal, an increment of one-unit in automation capability results in a -0.240 increase in employee job performance.

Employee job performance boosts by 0.718 for every unit increase in data analytics and predictive abilities, assuming all else is equal.

If all other factors remain unchanged, a one-unit increase in decision-support intelligence will result in a 0.192 rise in employee job performance.

## Discussion of Findings

The first objective showed that among employees of tertiary institutions in Ogun State automation capability (AutC) had a weak but statistically significant detrimental impact on work performance. This suggests that even if automation technologies are being incorporated into academic settings more and more, academic staff performance may not always improve as a result. Instead, the negative coefficient implies that, when improperly matched with the work procedures and competences of academic staff, a greater reliance on automation capability may be linked to a minor drop in job performance.

The second objective demonstrated that employee job performance is positively and statistically significantly impacted by data analytics and prediction ability (DAPA). This indicates that employees' job performance is much improved by their capacity to use data analytics tools and predictive insights. Academic staffs are therefore more equipped to make decisions about teaching, research and administrative duties when they have access to data-driven tools and analytical capabilities.

The last objective shows that employee job performance is positively yet statistically significantly affected by decision-support intelligence (DSI). This implies that staff performance is enhanced by decision-support tools. It also shows that employees can enhance the effectiveness and caliber of their professional decisions by making appropriate use of decision-support tools. However, in comparison to data analytics and predictive power, their impact is rather little.

## Conclusion

The study looked at how employees at Ogun State's tertiary institutions performed on the job in relation to artificial intelligence. The results showed that, although their effects differ in strength and direction, all three variables automation capability, data analytics and predictive ability, and decision-support intelligence include a considerable effect on employee job performance. Thus, the research came to the conclusion that employee job performance in Ogun State's higher institutions is significantly influenced by

automation capability, data analytics and predictive ability, and decision-support intelligence.

## Recommendations

For the tertiary institutions to enhance job performance through the adoption of artificial intelligence, the following recommendations were made:

i. Management of Tertiary Institution in Ogun State should ensure that automation systems are user-friendly, adequately supported and aligned with academic and administrative workflows to reduce technological stress and enhance performance outcomes.
i. Management of Tertiary Institution in Ogun State should invest more in advanced data analytics infrastructure and training programmes that enable employees to develop competencies in data analysis, predictive modelling, and evidence-based decision-making.
ii. Management of Tertiary Institution in Ogun State should provide continuous training and technical support to ensure that academic and non-academic staff can effectively utilize decision-support tools to enhance teaching, research and administrative performance.

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