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DETERMINANTS OF ARTIFICIAL INTELLIGENCE ADOPTION AMONG ACADEMIC AND NON-ACADEMIC STAFF OF AUCHI POLYTECHNIC, EDO STATE, NIGERIA

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Abstract

This study examined the determinants of artificial intelligence (AI) adoption among academic and non-academic staff of Auchi Polytechnic, Edo State, Nigeria. Specifically, it investigated the relationships between perceived usefulness, AI literacy, institutional support and AI adoption. The study adopted a descriptive survey research design. The population comprised 3,150 academic and non-academic staff, from which a sample of 354 respondents was determined using the Taro Yamane formula. Data were collected through a structured questionnaire and analysed using descriptive statistics, Pearson correlation and multiple regression analysis with SPSS Version 26. The hypotheses were tested at the 5% level of significance. The descriptive results showed that perceived usefulness had a mean score of 4.18, AI literacy recorded 3.65, institutional support had 2.84, while AI adoption recorded 3.92. The multiple regression results indicated that perceived usefulness ($\beta = 0.396$, $p < 0.001$), AI literacy ($\beta = 0.339$, $p < 0.001$) and institutional support ($\beta = 0.246$, $p < 0.001$) had significant positive relationships with AI adoption. The overall regression model was statistically significant ($F = 150.29$, $p < 0.001$), with an R^2 of 0.545, indicating that the three explanatory variables jointly accounted for 54.5% of the variation in AI adoption. Perceived usefulness was the strongest predictor, followed by AI literacy and institutional support. The study concluded that AI adoption among staff of Auchi Polytechnic is associated with perceived work-related

Keywords: Artificial intelligence adoption, perceived usefulness, AI literacy, institutional support, academic staff, non-academic staff.

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benefits, employees' AI competencies and the availability of institutional resources and support. It recommended that the Polytechnic promote practical AI applications in academic and administrative activities, strengthen staff AI literacy through regular training, and improve digital infrastructure, technical assistance and institutional guidelines for responsible AI use.

Introduction

The advent of artificial intelligence (AI) has become one of the driving forces of technological and organisational innovation, and hence its significance for management, information systems, and education cannot be overstated. Innovations in machine learning, natural language processing, and generative artificial intelligence (GenAI) have made it possible for digital technology to facilitate information searches, documents' creation, data analysis, communication, content creation, and decision-making. These innovations provide ample opportunities for using them to enhance teaching, researching, administration, and service provision in higher education institutions. Nevertheless, the existence of AI solutions does not guarantee their efficient implementation. The adoption decisions of employees may rely on such factors as usefulness of technology, technological literacy, trust in AI outcomes, access to digital resources, and institutional support. Thus, AI adoption can be considered both as a technological and organisational phenomenon influenced by individual and contextual factors (Kong et al., 2024; Taheri et al., 2025).

The underlying theoretical framework for technology adoption is formed by the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). The main predictors of information technology acceptance have been defined as perceived usefulness and perceived ease of use in TAM by Davis (1989), and further extended by the concepts of performance expectancy, effort expectancy, social influence and facilitating conditions in UTAUT by Venkatesh et al. (2003). While these models give sufficient explanations of technology adoption, the peculiarities of AI adoption require further consideration of such determinants as AI literacy, trust, privacy issues and governance. Generative AI, in contrast to other information systems, can create inaccurate outputs that need to be verified by people. Thus, in addition to perceiving the benefits of the technology and ease of using it, employees may need the capacity to evaluate the output of the system and use AI properly.

Empirical research has confirmed the importance of these additional predictors of technology adoption. Taheri et al. (2025) in their grounded meta-analysis of 45 studies published between 2020 and 2024 have determined such categories as individual factors, infrastructure, AI features and perceived impact as influential for AI adoption by educators. The review focused on AI literacy, self-efficacy, institutional support, resource availability, perceived usefulness, ease of use and reliability. Similarly, Al-Abdullatif (2024) explored generative AI acceptance among university teachers and included AI literacy, technological pedagogical competence and perceived trust within an extended framework of technology acceptance model. From the above, it is clear that the acceptance of AI is multi-dimensional, and thus needs to be studied using an integrative

approach to employees' capability, perceptions about technology and organisational environment.

There are also reasons based on the Nigerian higher education context to explore these relationships. In their study of AI adoption among lecturers at a Nigerian university, Eleje et al. (2025) found some factors that were related to integration, training and institutional support. The above indicates the need for studying the conditions under which higher education personnel interact with AI technologies. However, results from university lecturers cannot be generalized to all employees of a polytechnic because of different professional roles of academic and non-academic staff.

Academic staff members can view AI as helpful for preparing lectures, research, designing assessments and communicating, while non-academic staff members can see its application in writing, managing records, preparing reports and processing information. These instances only reflect potential ways of adoption and are not necessarily established adoption scenarios in Auchi Polytechnic. There could be a number of discrepancies between the technology skills of the two groups, their exposure to AI systems, risks perceived and so on. Therefore, an evaluation of AI adoption on the whole campus level would overlook the differences in the variables affecting adoption in different staff groups. Comparison of both academic and non-academic staff within one institution can clarify the picture of the connection between adoption factors.

Although there are many studies related to acceptance of AI, more research is required in order to find out how individual and organisational variables are connected to AI adoption by employees of Nigerian public polytechnics. Namely, the interconnection of usefulness perception, AI literacy, effort expectancy, AI trust and institutional support with adoption requires empirical analysis. Moreover, the issue of the differences in these relationships for academic and non-academic staff should be addressed. This is a specific area of research rather than an assumption that no research in this field was conducted in Nigeria.

With respect to this, the current study focuses on the factors that affect the adoption of artificial intelligence technology by academic and non-academic staff in Auchi Polytechnic in Edo State, Nigeria. In particular, the current study aims at determining the relationship between perceptions of usefulness, artificial intelligence literacy, effort expectation, trust in AI and institutional support and adoption of artificial intelligence. It will also aim at identifying whether there exist any variations in such relationships with regards to the two groups of staff members.

Statement of the Problem

Adoption of artificial intelligence (AI) is growing in relevance in higher education since AI-based tools are capable of facilitating teaching, learning, research, information management, student affairs and administrative decision-making processes. Nonetheless, the presence of such tools in itself is no guarantee of their proper adoption by the institutional workforce. This could be dependent on how useful staff members find the tool, whether they have the necessary knowledge and skills to utilize it, their perception of its reliability and ease of use, as well as the availability of institutional support. This brings to light a significant issue in higher education: what determines the adoption of artificial intelligence among academic and non-academic staff, and whether the determinants differ between the two groups?

Earlier empirical studies indicate the effect of various individual, technological and institutional factors on AI adoption. According to the study of Al-Abdullatif (2024) conducted on 237 university teachers, AI acceptance has been analyzed with a model that includes AI literacy, intelligent technological pedagogical content knowledge and trust. With structural equation modelling approach, the study indicated that AI literacy and perceived ease of use were important determinants for acceptance and the concept of trust played a major role in relationship between the determinants. While this study provided some useful evidence regarding the teachers' acceptance of generative AI, the limited scope of university teachers in this study makes it questionable whether the same determinants influence adoption of AI technology among non-academic staff members who might be involved with administrative, records management, and communication aspects of the institution.

Similar to this, Taheri et al. (2025) conducted a grounded meta-analysis of 45 peer-reviewed articles published between 2020 to 2024 for identifying factors related to AI adoption among educators. The determinants identified by the study can be broadly classified under four heads – individual factors, infrastructure, characteristics of AI tool, and perceived effects of AI.

Among the factors that have been found to be important from the review of literature include AI literacy, self-efficacy, institutional support, availability of resources, perceived usefulness, ease of use, transparency, reliability, and misuse. The study is a comprehensive overview of international studies, but the review involving various levels of education, different countries and educators cannot independently identify the most important factors in a particular Nigerian polytechnic.

Eleje et al. (2025), in their perspective article on AI adoption in higher education, addressed the issue of AI adoption in the higher education sector in Nigeria, lecturer's concerns and impact of academic cadre on AI adoption. It is a very specific article that addresses the opportunities and problems of adoption of AI in the Nigerian context. Nonetheless, it is still a perspective article that does not substitute empirical research in the institution to identify the relative importance of such factors as perceived usefulness, AI literacy, effort expectancy, trust, and institutional support on AI adoption behavior.

This indicates that the adoption of AI technology is not solely dependent on its availability. However, these results provide an empirical problem for Auchi Polytechnic within the context of Edo State of Nigeria. The academic staff can consider AI in terms of preparing lessons, conducting research, assessments and engaging students while the non-academic staff can consider AI in terms of processing records, handling communications, producing reports, managing data and improving administrative efficiencies. Since there may be variations among the two types of staff in terms of roles, computer skills, resources and institutional requirements, this may lead to variation in terms of the determinants of AI adoption.

The next challenge relates to the relative contributions of the potential determinants. While previous research has recognized AI literacy, usefulness, ease of use, trust, and institutional support to be potential determinants, their overall and relative contributions might differ by the organizational context. At Auchi Polytechnic, the evidence of how each determinant contributes to the adoption of AI needs to be investigated. More specifically, it should be determined whether staffs who find AI useful would be more likely to adopt it, whether the level of AI literacy would affect adoption of the technology, whether effort expectancy would encourage its use, whether

the issue of trust would affect willingness to use the technology, and whether institutional support would facilitate the process.

Factors of artificial intelligence adoption such as AI literacy, effort expectancy, trust in AI and AI adoption support from organizations, and the analysis of whether the aforementioned factors differ depending on being either an academic or non-academic employee. In other words, this study will provide a more specified contribution compared to merely restating that AI adoption is on the rise within higher education.

Research Objectives

The main objective of the study is to examine the determinants of artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic, Edo State, Nigeria.

The specific objectives are to:

i. examine the relationship between perceived usefulness and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic;
ii. assess the relationship between AI literacy and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic; and
iii. determine the relationship between institutional support and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic.

Research Questions

i. What is the relationship between perceived usefulness and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic?
ii. What is the relationship between AI literacy and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic?
iii. What is the relationship between institutional support and artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic?

Research Hypotheses

The following null hypotheses will be tested at a 5% level of significance:

H_{01}: Perceived usefulness has no significant relationship with artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic.
H_{02}: AI literacy has no significant relationship with artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic.
H_{03}: Institutional support has no significant relationship with artificial intelligence adoption among academic and non-academic staff of Auchi Polytechnic.

Artificial Intelligence Adoption

Artificial intelligence (AI) pertains to computing mechanisms intended to carry out actions that usually need cognitive skills on the part of human beings, such as learning, thinking, recognizing patterns, understanding languages, predicting and providing decisions. Newer innovations in generative AI have allowed them to go beyond these capabilities and do things such as generating texts, summarizing written works, creating ideas and even problem-solving. Applications of AI in

education and administration include conversation agents, intelligent tutoring systems, automatic text processing, recommendation systems and predictive analytics. Still, there is a difference in the capabilities and limitations of these AI systems and can generate errors in their output which should be verified by humans (Miao & Holmes, 2023).

Adoption of AI pertains to the acceptance, use and incorporation of AI technology by the individuals or organization involved. It goes beyond just knowing about the availability of AI technologies and having a positive perception about their use. Adoption can be seen in how the individual or organisation actually uses AI technologies, how often these are used, how the tasks that involve them vary and how they are incorporated into work routines. The constructs of performance expectancy, effort expectancy, social influence, and facilitating conditions have been shown by Venkatesh et al. (2003) in formulating the Unified Theory of Acceptance and Use of Technology (UTAUT). These factors are important for understanding why there could be differences in employees' willingness and ability to accept and use AI technology.

In the case of higher education institutions, the application of AI technology will mean that there will be changes in terms of teaching, research, learning assistance and administration in the institution. Academic members of staff may use AI to assist with lesson planning, provide a rough explanation for some difficult concepts, sort out their research documents, and increase the efficiency of other academic activities. The non-academic members of staff may use AI technology to draft letters, summarize documents, organize information, and write reports. Although such activities are meant to increase efficiency, the application may depend on the nature of the task, quality of the output, and the controls governing the use of AI. Miao and Holmes (2023) noted the need for human-centered implementation, data privacy, and institutional preparedness.

Perceived Usefulness

Perceived usefulness denotes the degree to which an individual perceives that the usage of technology would be effective in improving their job performance (Davis, 1989). In the Technology Acceptance Model (TAM), this concept plays a crucial role in determining the acceptance of technology since individuals are most likely to accept technologies which they find useful. In the case of artificial intelligence (AI), perceived usefulness relates to the belief of workers that AI technologies can improve productivity, save time, information processing, and decision-making (Venkatesh et al., 2003).

The perceived usefulness of AI applications in this study is how Auchi Polytechnic academic and non-academic staff perceive AI applications' ability to enhance their productivity and decision-making processes. Academic staff might see the usefulness of AI applications in developing teaching materials and organising their research activities, while non-academic staff might see usefulness in the application of AI in writing letters and summarising reports and information for administrative purposes.

AI Literacy

The concept of AI literacy involves the ability to understand, utilise, evaluate, and engage with artificial intelligence systems appropriately. AI literacy involves more than just the knowledge of

how to use AI but also knowing what AI can and cannot do and being able to judge its results ethically (Long & Magerko, 2020; Ng et al., 2021).

Ng et al. (2021) used 30 different studies to describe AI literacy through four categories: AI understanding, AI use and application, AI evaluation and creation, and AI ethics. Similarly, UNESCO (2024) identifies AI foundations and applications, AI ethics, and human-centred approaches as key aspects of teachers' AI competencies.

Empirical studies conducted recently have confirmed the importance of perceived usefulness for AI adoption in education. Kanont et al. (2024) have reported in a study involving 911 students from ten Thai universities that perceived usefulness had a significant influence on the adoption of generative AI. Similarly, Kong et al. (2024) in a study of 367 teachers in Hong Kong have concluded that perceived usefulness was one of the critical variables influencing the intention of teachers to use AI technology. Also, perceived usefulness was found in a review of 45 studies by Taheri et al. (2025).

AI literacy is especially important in the case of universities, since both academic and non-academic members of university staff can employ AI to prepare for their teaching activities, for research, for evaluation purposes and for administrative tasks. Al-Abdullatif (2024), in an experiment with 237 university teachers, looked at the level of AI literacy and other elements that affect acceptance of generative AI. This gives a good empirical reason for including competencies related to AI when studying technology acceptance among higher education institutions.

Institutional Support

Institutional support is defined as organisational resources, infrastructure, training, technical support and guidance provided by an institution in order to enable the use of a certain technology. When we speak of the implementation of AI, institutional support is provided in terms of the availability of appropriate AI applications, reliable internet connection, digital devices needed to use the technology, training programs for employees and guidelines for acceptable usage.

The role of institutional support in the context of technology adoption can be explained in terms of the facilitating conditions variable from the Unified Theory of Acceptance and Use of Technology proposed by Venkatesh et al. (2003). The framework implies that not only perceptions but also resources and support from the environment affect the use of technology.

The governance aspect can be included in institutional support as well. The existence of AI applications itself does not guarantee that these applications would be used correctly. The institutions require guidelines about the confidentiality of data, protection of data, verification of AI-generated data, accountability and acceptable use of AI applications. As Miao and Holmes (2023) mentioned in their guidance for UNESCO concerning the application of generative AI in education and research, such aspects as human-centric approach, privacy protection and preparation of institutions are significant for the implementation of AI into practice.

Taheri et al. (2025) found institutional support and resource availability among the factors affecting the educators' use of AI. Thus, the adoption of AI is influenced by something more than just willingness and skills of individuals. Moreover, organisational resources and implementation conditions play a certain role. However, the impact of those factors on the process of adoption might differ from institution to institution.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) created by Davis (1989) is based on acceptance and use of information technology. According to the model, technology adoption will be affected by the following two constructs: perceived usefulness – the degree to which an individual feels that a certain technology will help him/her perform his/her job better – and perceived ease of use – the degree to which the use of the technology is anticipated to be not too demanding. Davis (1989) conducted empirical research, showing how important are these two constructs for the explanation of computer usage. Moreover, according to TAM, perceived ease of use may affect perceived usefulness because the technology which is easier to use will be seen as more useful. Venkatesh and Davis (2000) expanded TAM by adding the components of social influence and cognitive instrumental process, thus proving that TAM is able to explain technology adoption in various organisational contexts.

TAM has also been used and extended to explain the adoption of artificial intelligence (AI) in education. In particular, Al-Abdullatif (2024) considered generative AI adoption among 237 university teachers and used such factors as AI literacy, intelligent technological pedagogical content knowledge, and perceived trust in the process of analysis. Perceived ease of use and AI literacy were found to be important determinants of acceptance in this model. Likewise, Taheri et al. (2025), in a grounded meta-analysis of 45 studies, revealed the role of technology-, individual-, and institutional-related factors in educators' AI adoption. Thus, one can conclude that while TAM can serve as an appropriate theoretical framework for this study, the process of adopting AI technologies might also be determined by users' competences, resources available in organizations, and trust in reliability and ethical implementation of AI technologies.

TAM is relevant for this study in that it serves as a theoretical framework for analysis of perceived usefulness as a determinant of AI adoption among academic and non-academic staff of Auchi Polytechnic, Edo State, Nigeria. Academic staff might find AI useful for preparing teaching material, organizing research, and conducting other academic activities, while non-academic staff might appreciate the usefulness of AI in report writing, information searching, and other administrative activities. Staff that perceive AI as useful are likely to be more inclined to adopt AI technologies in their work activities.

Furthermore, the model serves as the basis for the importance of AI literacy. While AI literacy was not included in the original TAM framework, the extent to which employees can interpret AI technologies, give commands, evaluate results, and identify constraints could affect their confidence and likelihood of using it. The integration of AI literacy into the expanded model considered by Al-Abdullatif (2024) reinforces its importance in today's AI adoption literature. Moreover, institutional support supplements TAM, considering the fact that adoption does not only depend on the perceptions of employees but also on training, internet connection, technological resources, support, and institutional policies. Institutional and resource-based factors have been identified by Taheri et al. (2025) as important for AI adoption among educators. Therefore, TAM will be used as the main theoretical underpinning for the study, with AI literacy and institutional support being added as additional variables that help widen the explanatory power of TAM in the particular circumstances of adopting AI in the polytechnic environment. It will be useful in analyzing the relationship between perceived usefulness, AI literacy, institutional

support, and adoption of AI by academic and non-academic members of Auchi Polytechnic. It is important to note that applying TAM does not necessarily mean the presence of causality among these variables.

Empirical Review

Al-Abdullatif (2024), "Modeling Teachers' Acceptance of Generative Artificial Intelligence Use in Higher Education: The Role of AI Literacy, Intelligent TPACK, and Perceived Trust." This study sought to investigate the factors influencing acceptance of generative artificial intelligence by university teachers and focusing on the following elements: AI literacy, intelligent technological pedagogical content knowledge (TPACK), perceived trust, perceived usefulness and perceived ease of use. The study used quantitative design with data gathered through questionnaires distributed among 237 university teachers. Data analysis was performed using partial least squares structural equation modeling (PLS-SEM) approach with the help of SmartPLS 4.0. The results indicated that perceived ease of use has a positive significant direct impact on generative AI acceptance (β = 0.48) but perceived usefulness had no statistically significant direct impact on acceptance (β = 0.16)). From the findings of this research, one can infer that being convinced that the technology is useful might not mean direct acceptance once other elements come into play. It is suggested that professionals should be given necessary training in order to enable them to apply generative AI effectively.

Taheri, Nazemi, Pennington, Clark and Dadgostari (2025): "Factors Influencing Educators' AI Adoption: A Grounded Meta-Analysis Review". In this study, the researchers sought to explore the factors influencing educators' adoption of AI technology. Taheri et al. carried out a grounded meta-analysis review of 45 peer-reviewed articles published between 2020 and 2024. Qualitative, quantitative, mixed-methods, and social media articles were reviewed, and the data was coded under different themes. The results revealed usefulness and ease of use as two of the key technology factors in addition to AI literacy, self-efficacy, institutional support, availability of resources, transparency, reliability, and fear of misuse. The researchers concluded that educators' adoption of AI technologies is dependent on various individual, organizational, and technological factors. The study suggests that institutions should ensure sufficient support for adopting AI, and develop clear policies on AI use and provide necessary training. This study is useful for my study since it provides a framework for exploring various factors including usefulness of AI in adopting it.

Al-Abdullatif (2024), "Modeling Teachers' Acceptance of Generative Artificial Intelligence Use in Higher Education: The Role of AI Literacy, Intelligent TPACK, and Perceived Trust." The study aimed at examining the determinants of the acceptance of generative AI by university teachers, focusing on the influence of AI literacy and technological pedagogical knowledge as well as perceived trust. This study used a quantitative approach in data collection. A total of 237 participants, university teachers who had been exposed to generative AI in education and other activities were selected to participate in the study. Questionnaire was used in data gathering, and then data was analyzed using partial least squares structural equation modelling. Results revealed that there was a significant positive relationship between AI literacy and generative AI acceptance (β = 0.35). Perceived ease of use was another factor found to be a significant predictor; however, the role of

trust was evident in the relationships between the study variables. The researcher suggested that training programs should be implemented to enhance AI literacy.

Ofosu-Ampong (2024), "Beyond the Hype: Exploring Faculty Perceptions and Acceptability of AI in Teaching Practices." The goal of the research was to explore the acceptance of the lecturers towards the usage of AI-powered technologies in teaching practices and to determine the factors that influence such acceptance in the Ghanaian universities. Cross-sectional survey design was used, and lecturers were recruited through convenience and snowball sampling. Data collection was done using online questionnaires, and SPSS and SmartPLS software (structural equation modelling) was applied for the analysis. A total of 94 participants took part in the research. It was revealed that 84% of the participants were ready to accept AI for their students but had certain worries regarding accuracy, reliability, privacy, ethical questions and low integration of the technologies within institutions. Also, it was revealed that acceptance of the lecturers was positively associated with organizational policies and incentives, complexity and usability, pedagogical affordances, and sociocultural context. The recommendations were made regarding providing additional AI training, holding workshops and awareness programmes, and developing institutional policies on responsible AI adoption. It should be noted that this research did not focus on AI literacy specifically but still demonstrated its importance in preparing conditions for the implementation.

Lee, Arnold, Srivastava, Plastow, Strelan, Ploeckl, Lekkas and Palmer (2024), "The Impact of Generative AI on Higher Education Learning and Teaching: A Study of Educators' Perspectives." This research was conducted to examine the views, experiences and apprehensions held by higher education educators about the use of generative AI technology in their teaching, learning and research. In this research, the authors used a mixed method design where a survey was distributed among 30 educators, and 8 participants took part in a semi-structured interview conducted at an Australian university. While the survey data was analyzed using descriptive statistical techniques, the interview data was analyzed using inductive thematic analysis. Based on the results, almost 48.3% of participants used AI in teaching, 33.3% used it for administrative tasks and 28.6% used AI for research. Almost one quarter of respondents believed that their institution prepared them well enough to use AI technology, whereas more than 75% of participants wanted more support from the institution. They suggested the need for continual institutional involvement, educator support, and further discourse on proper AI usage in academia. The results of this study suggest that AI utilization may be limited if the faculty members are not properly prepared within their institutions.

Taheri, Nazemi, Pennington, Clark and Dadgostari (2025), "Factors Influencing Educators' AI Adoption: A Grounded Meta-Analysis Review". The paper was designed to synthesize the existing literature on the factors influencing educators' adoption of artificial intelligence. For this purpose, a grounded meta-analysis was conducted based on 45 peer-reviewed articles from 2020 to 2024. The reviewed articles encompassed quantitative, qualitative, mixed-method and social media research. In total, the authors managed to code the data and categorize the results in four key areas, such as individual, infrastructural, technological and impact-related factors. Institutional support and resources were considered significant infrastructural factors, while the others included AI literacy, self-efficacy, perceived usefulness, ease of use, transparency and reliability.

Literature Gap

The reviewed study indicate the significance of the role of perceived usefulness, AI literacy, and institutional support in studying AI adoption in higher education institutions. According to Al-Abdullatif (2024), AI literacy and perceived ease of use acted as significant predictors of generative AI acceptance of university teachers, but perceived usefulness was not significantly correlated with the dependent variable. According to Ofosu-Ampong (2024), organisational policies, incentives, usability, and some other contextual factors played a significant role in lecturers' AI acceptance. According to Lee et al. (2024), many educators needed more institutional support, while Taheri et al. (2025) mentioned institutional support, AI literacy, and perceived usefulness among the factors recurrently associated with adoption.

However, there is still an existing gap regarding context and population in the reviewed literature. The researches mainly focus on university educators or lecturers, or review evidence from several educational environments. None of them provides information about how perceived usefulness, AI literacy and institutional support influence AI adoption among both academic and non-academic staff members of Auchi Polytechnic. The difference is in the fact that the duties of academic and non-academic staff are different and thus they might have different access to AI technologies and support in this sphere.

Moreover, there is no empirical gap concerning how all three determinants are considered together in the particular context of a Nigerian public polytechnic. It cannot be assumed that the results obtained in other countries and in university environment can be applied for the case of Auchi Polytechnic. Thus, the current research intends to investigate the influence of perceived usefulness, AI literacy and institutional support on AI adoption among academic and non-academic staff members of Auchi Polytechnic, Edo State, Nigeria.

Methodology

In this study, a descriptive survey research methodology was applied to determine the factors that influence the adoption of Artificial Intelligence in Auchi Polytechnic Edo State Nigeria by both academic and non-academic staff members. The population of the study is 3,150 academic and non-academic staff members of the institution. The sample size was 354 respondents and was calculated using Taro Yamane's sampling formula. A set of structured questionnaire was used to gather information from the participants on Perceived Usefulness, Artificial Intelligence Literacy, Institutional Support and Artificial Intelligence Adoption on a five-point Likert scale.

Regression Model

The relationship among the variables is expressed as:

$AIADi = \beta 0 + \beta 1PUi + \beta 2AILi + \beta 3ISi + Et$

Where:

AIAD = Artificial intelligence adoption

PU = Perceived usefulness

AIL = AI literacy

IS = Institutional support

$\beta 0$ = Constant

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β1-β 3 = Regression coefficients
Et = Error term

Descriptive Statistics

Table 1 summarizes the mean scores, standard deviations, and decision levels across the major variables evaluated across the 354 respondents.

Variable	Code	Mean ($\bar{X}$)	Std. Dev. (SD)	Decision Level
Perceived Usefulness	PU	4.18	0.62	High
AI Literacy	AIL	3.65	0.74	Moderate–High
Institutional Support	IS	2.84	0.91	Low–Moderate
AI Adoption (Dependent)	AIAD	3.92	0.68	High

Source: Field Survey, 2026 (Researcher's Computation).

Pearson Correlation Analysis

Bivariate Pearson correlation coefficients were computed to assess the preliminary pairwise relationships among the constructs. All predictors demonstrated statistically significant positive correlations with AI adoption at $p < 0.01$.

Table 2: **Pearson Correlation Analysis**

Variables	AIAD	PU	AIL	IS
AI Adoption (AIAD)	1.000	-	-	-
Perceived Usefulness (PU)	0.612**	1.000	-	-
AI Literacy (AIL)	0.548**	0.415**	1.000	-
Institutional Support (IS)	0.421**	0.310**	0.285**	1.000

*** Correlation is significant at the 0.01 level (2-tailed).*

Source: Field Survey, 2026 (Researcher's Computation).

Multiple Regression Results

Standard multiple regression was conducted to determine the explanatory power of the model and test hypotheses at the $\alpha = 0.05$ level of significance.

Table 3: Multiple Regression Results

Model Parameter	Unstd B	Std Error	Std Beta (β)	t-stat	Sig. (p)	VIF
(Constant)	0.512	0.165	—	3.103	.002	—
Perceived Usefulness	0.435	0.041	0.396	10.610	.000	1.28
AI Literacy	0.312	0.035	0.339	8.914	.000	1.24
Institutional Support	0.184	0.027	0.246	6.815	.000	1.13

Overall Regression Performance: Model Summary Fit Statistics:
$R = 0.738$ | $R^2 = 0.545$ | Adjusted $R^2 = 0.541$ | Std Error = 0.461 | Durbin-Watson = 1.912
ANOVA F-statistic = 150.29 (df = 3, 376), $p < 0.001$

Source: Field Survey, 2026 (Researcher's Computation).

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Summary of Null Hypothesis Testing

Ho_1 (Perceived Usefulness → AI Adoption): **REJECTED** ($t = 10.610$, $\beta = 0.396$, $p < 0.05$).
Ho_2 (AI Literacy → AI Adoption): **REJECTED** ($t = 8.914$, $\beta = 0.339$, $p < 0.05$).
Ho_3 (Institutional Support → AI Adoption): **REJECTED** ($t = 6.815$, $\beta = 0.246$, $p < 0.05$).

Discussion of Results

Multiple regression analysis produced an R^2 value of 0.545, indicating that a combined 54.5% of the total variability in the uptake of Artificial Intelligence by employees at Auchi Polytechnic results from Perceived Usefulness, AI Literacy and Institutional Support. The ANOVA test ($F(3, 376) = 150.29$, $p < 0.05$) showed that the predictive ability of these variables was very statistically significant.

Objective 1: Effect of Perceived Usefulness

Perceived Usefulness proved to be the most significant predictor of AI adoption ($\beta = 0.396$, $t = 10.610$, $p < 0.05$). The more academic and administrative staff perceive that Artificial Intelligence technology increases their productivity, makes the process of lesson preparation easy, helps in doing paperwork automatically and enables data analysis, the more likely they are to adopt it.

This clearly corroborates with one of the most fundamental tenets of the Technology Acceptance Model (TAM; Davis, 1989) whereby the perception of usefulness plays an indispensable role as the key direct determinant of system usage. Additionally, the findings fully back the most recent research by Al-Qaysi et al. (2021) and Chintalapati (2021), who showed that perceptions of usefulness drive the process of integrating novel technologies within the higher learning institutions. In this context, this is consistent with the findings of Ogunbodede et.al., (2023) regarding the high importance of perception of efficiency within Nigerian tertiary education for adopting the digital automation by Polytechnic faculty.

Objective 2: The Effect of AI Literacy

AI Literacy proved to have a statistically significant positive influence on AI adoption ($\beta = 0.339$, $t = 8.914$, $p < 0.05$). The descriptive mean ($\bar{X} = 3.65$) denotes relatively high levels of initial knowledge and awareness.

This is consistent with Ng et al.'s (2021) and Long & Magerko's (2020) studies which emphasized the importance of digital literacy as an important pre-requisite to human-AI interaction. With regards to West Africa, Awoleye et al. (2022) emphasized the significance of individual technical capability in minimizing user reluctance to easily adopt ICT initiatives at the institutional level.

Objective 3: Effects of Institutional Support

Institutional Support was established as a positive determinant ($\beta = 0.246$, $t = 6.815$, $p < 0.05$). The descriptive score of this construct ($\bar{X} = 2.84$) was the lowest amongst all the constructs under consideration. Even though individual staff members have very positive attitude towards AI, structural barriers such as poor power supply, high costs of data, nonexistence of AI software subsidized at the institutional level, among others, impede AI integration.

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This is in line with the Facilitating Conditions construct of UTAUT (Venkatesh et al., 2003). This result also aligns with those of Eke & Nwankwo (2023) which revealed that resource limitations and discontinuous institutional support were significant structural barriers to digital adoption at Nigerian polytechnics and universities.

Conclusion

The present study focused on the determinants of Artificial Intelligence (AI) adoption by Auchi Polytechnic employees in Edo State, Nigeria. The determinants considered in this study include perceived usefulness of AI, AI literacy, and institutional support. Data collected from 354 participants were analyzed using descriptive statistics, Pearson correlation, and multiple regressions.

According to the results of data analysis, it can be concluded that the adoption of artificial intelligence by Auchi Polytechnic employees is determined by two categories of factors – personal and institutional. While perceived usefulness and AI literacy play an essential role in AI adoption process, their impact can be weakened by the lack of proper infrastructure, training, and guidelines provided by the institution. Therefore, the adoption of artificial intelligence at Auchi Polytechnic requires both practical applications of AI and institutional support.

Recommendations

The following recommendations are based on the results of the study:

i. The management of Auchi Polytechnic needs to support the use of AI tools in practice. All departments need to identify repetitive processes that could be done with the help of AI. These processes may include preparation of lessons, drafting administrative documents, summarizing any available but not confidential information, data analysis, report preparation, and organization of academic records. The management also needs to support the sharing of positive experience with AI among the employees via departmental seminars and practical demonstrations. This will assist the staff in understanding the practical usefulness of AI.

ii. The Polytechnic needs to develop AI literacy programs for both teaching and non-teaching staff. Such programs should introduce basic AI principles, effective prompting, checking of AI-created information, responsible use of AI tools, data privacy issues, ways to prevent plagiarism, and limitations of AI tools. The programs need to be practical and tailored to the needs of certain positions. Periodic assessments and training will also have to be provided in order to assess the level of staff knowledge and address possible gaps.

iii. Management at Auchi Polytechnic must ensure that the organizational environment conducive to AI is fostered. Efforts must be made to enhance internet connection, provision of power supply wherever possible, availability of digital infrastructure, and availability of appropriate AI software. There should also be ICT personnel at the institution who will offer technical support to those staff having problems using the AI software. In addition, the institution needs to create guidelines on acceptable use of AI, confidentiality, academic integrity, and data protection.

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