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ARTIFICIAL INTELLIGENCE AND SELECTION OUTCOME IN FEDERAL UNIVERSITIES, SOUTH EAST, NIGERIA

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Abstract

The study examined the relationship that exists between Artificial Intelligence and Selection Outcome in Federal Universities, South East, Nigeria. The study adopted descriptive survey research design. The population of the study comprised of 28,326 senior teaching and senior non-teaching staff of Federal Universities in the South East Region of Nigeria. The sample size for the study comprised of 394 senior teaching and senior non-teaching staff of Federal Universities in the study area which was determined using Taro Yamane formula. Cluster probability sampling technique was used to determine the number of questionnaire distributed. The study was guided by two research questions and two research hypotheses. The instrument for data collection was a questionnaire. The instrument was validated by two experts, one from Faculty of Education (Education Foundation Department) and the other from Faculty of Management Sciences, both in Nnamdi Azikiwe University, Awka. The reliability of the instrument was determined using Cronbach's Alpha method with an overall reliability of 0.91. The data was analyzed using descriptive statistics and hypotheses were tested with the aid of Pearson Product Moment Correlation Coefficient on Statistical Packages for Social Science (SPSS version 27) at 5% level of significance. The findings of the study showed that there is a strong positive significant correlation (r = 0.724) that exist between the Applicant Tracking System (ATS) and Assessment Test Result, with p-value of 0.000 (p<0.05the study concludes that

Artificial Intelligence (AI) has the potential to revolutionize selection outcomes in Federal Universities in South East Nigeria by enhancing efficiency, objectivity, and candidate experience. By implementing AI-driven tools like Applicant Tracking Systems and Chatbots, universities can streamline the recruitment process, reducing biases that often influence hiring decisions. The study recommended that the Management of Federal universities in South East Nigeria should enhance the implementation and effectiveness of Applicant Tracking Systems (ATS) to improve assessment test results.

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force, reshaping various domains, including human resources and talent acquisition. Within the realm of selection processes, AI technologies have garnered increasing attention and adoption, promising to revolutionize traditional recruitment practices and enhance organizational outcomes (Nawaz, Arunachalam, Pathi, and Gajenderan, 2024).

The application of AI in selection processes has gained momentum, driven by advancements in machine learning, natural language processing, and data analytics. These technologies enable universities to automate and streamline various aspects of the hiring process, from candidate sourcing and screening to interview scheduling and performance evaluation (Guenole, and Feinzig, 2022). AI holds the promise of mitigating common challenges and biases inherent in traditional selection practices, enhancing fairness, objectivity, and meritocracy in the process (Ochmann, 2022). However, the integration of AI into selection processes also raises concerns about algorithmic bias, privacy, transparency, and accountability. In the context of federal universities in Southeast Nigeria, where competition for academic and administrative positions is fierce and talent acquisition is a critical strategic imperative, the implications of AI-driven recruitment outcomes are particularly significant (Chukwuemeka, KN, Chinenye and Promise, 2024). As AI continues to evolve, stakeholders in federal universities in Southeast Nigeria must engage in proactive dialogue and collaboration to navigate the opportunities and challenges presented by this transformative technology (Barney, and Wright, 2021).

Statement of the Problem

Selection processes in federal universities in the South East, Nigeria, face inefficiencies and lengthy turnaround times. Manual tasks like candidate sourcing, screening, and scheduling are time-consuming and resource-intensive, hampering organizational productivity. Traditional methods limit access to a diverse candidate pool, hindering inclusivity. Human bias in decision-making risks excluding qualified candidates based on irrelevant criteria, undermining fairness and meritocracy. Inadequate technology use leads to subpar candidate experiences, damaging employer brand and missing top talent. Universities lack insights to inform recruitment strategies and adapt effectively, hindering optimization and decision-making.

The integration of Artificial Intelligence (AI) in the selection processes of federal universities in Southeast Nigeria has the potential to enhance efficiency and improve decision-making. However, the effectiveness of these tools is often hindered by various challenges, such as inadequate staff training, high acquisition and maintenance costs, and the need for contextual adaptation to address the unique needs of the target population. Addressing these barriers is crucial for universities to leverage the benefits of AI and foster fair, inclusive, and efficient selection processes that support the development of diverse and talented academic communities.

Objectives of the Study:

The broad objective of this study is to ascertain the relationship that exists between Artificial Intelligence and Selection Outcome in Federal Universities, South East, Nigeria. Specific objectives include:

1. To examine the relationship between Applicant Tracking System (ATS) and Assessment Test Result in Federal Universities, South East, Nigeria.

2. To determine the relationship between Chatbot and Educational Qualification of candidates in Federal Universities, South East, Nigeria.

Research Questions:

The following questions will guide the study:

1. What is the relationship between Applicant Tracking System (ATS) and Assessment Test Results on performance outcomes in Federal Universities in South East, Nigeria?

2. How does the use of Chatbot technology relates with candidates' educational qualifications in Federal Universities in South East, Nigeria?

Research Hypotheses

The following null hypotheses will be tested during the study:

Ho: There is no significant relationship between Applicant Tracking System (ATS) and Assessment Test Result in Federal Universities, South East, Nigeria.

Ho: There is no significant relationship between Chatbot and Educational Qualification of candidates in Federal Universities, South East, Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Artificial Intelligence

Artificial Intelligence (AI) is the field of computer science and technology that focuses on the development of machines and systems capable of performing tasks that require human

intelligence. It is an interdisciplinary branch that encompasses various subfields such as machine learning, natural language processing, computer vision, robotics, expert systems, and many others (Johansson, and Herranen, 2020). AI seeks to develop algorithms, models, and computational techniques that enable machines to exhibit intelligent behavior, learn from data, make decisions, and solve complex problems. The ultimate goal of AI is to create machines that can replicate or surpass human cognitive abilities, including perception, reasoning, understanding, learning, language processing, planning, problem-solving, and decision-making (Guenole, and Feinzig, 2022). AI involves the design and development of intelligent agents, which are software or hardware entities that perceive their environment, reason about it, and take actions to achieve specific goals. These agents typically follow a cycle of sensing, reasoning, and acting, where they gather information through sensors, analyze and interpret this information using various algorithms and models, and then execute actions based on the obtained knowledge (Acikgoz, Davison, Compagnone, and Laske, 2020).

Applicant Tracking Systems (ATS)

An Applicant Tracking System (ATS) is a software application designed to streamline and automate the recruitment and hiring process for organizations. This comprehensive and sophisticated tool enables businesses to manage their entire recruitment workflow, from posting job openings to sourcing candidates, screening resumes, scheduling interviews, tracking applicant progress, and making hiring decisions. ATS systems are equipped with a range of features and functionalities, including resume parsing, keyword searches, candidate scoring, interview scheduling, communication management, reporting and analytics, and integration with other HR systems (Koechling, Wehner, and Warkocz, 2023).

Applicant Tracking System utilize algorithms and data analysis to efficiently identify and attract qualified candidates, while also improving the overall recruitment experience for both employers and job seekers. These system helps to centralize and standardize the

recruitment process, ensuring consistency, compliance, and transparency throughout the hiring lifecycle (Lamberti, and Wallace, 2020). ATS platforms play a crucial role in enhancing collaboration among hiring teams, facilitating communication with candidates, and providing valuable insights into recruitment metrics and performance. By leveraging technology to streamline administrative tasks, reduce manual effort, and enhance decision-making, Applicant Tracking Systems contribute to optimizing recruitment outcomes, increasing productivity, and driving organizational success in today's competitive talent market (Geetha, and Reddy, 2020).

Chatbots

A chatbot is a computer program or artificial intelligence application that is designed to simulate human conversation through text or voice interactions. These advanced systems are developed using Natural Language Processing (NLP) and machine learning algorithms to understand and respond to user queries in a conversational manner. Chatbots can be deployed across various platforms, such as websites, messaging applications, social media platforms, and customer service channels, to engage with users in real-time and provide personalized and contextually relevant responses (Esch, Black, and Ferolie, 2021).

Chatbots are programmed to interpret user input, analyze the context of the conversation, and generate appropriate and accurate responses based on predefined rules or learning from past interactions. They can handle a wide range of tasks and activities, including providing product information, scheduling appointments, processing orders, troubleshooting technical issues, and offering personalized recommendations. Chatbots can also be integrated with other systems and databases to access and retrieve relevant information, automate workflows, and perform tasks more efficiently (Deshpande 2022).

Selection Outcome

Selection outcome is the result or decision reached through a structured evaluation and decision-making process during the selection or recruitment of individuals for a specific role, position, program, or opportunity within an organization, educational institution, or any other context requiring a competitive selection process. The selection outcome is typically determined based on a comprehensive review of candidates' qualifications, skills, experiences, competencies, and suitability for the role or position in question, as assessed through various selection methods, assessments, interviews, and evaluations (Geetha, and Reddy, 2020). The selection outcome is crucial in determining which candidates are chosen or appointed to fill the designated role or position from a pool of applicants or candidates who have expressed interest in the opportunity. It represents the final decision or outcome of the selection process, reflecting the organization's or selection committee's judgment and evaluation of each candidate's potential to effectively perform the duties and responsibilities associated with the role (Huber, 2022).

The selection outcome may result in candidates being selected, hired, appointed, admitted, promoted, or accepted based on their performance, qualifications, fit, and alignment with the organization's requirements, expectations, and criteria for the role. The outcome of the selection process can have significant implications for both the selected candidates and the organization, influencing their future opportunities, growth, development, and success (Ochmann, 2022).

Assessment Test Result

An assessment test result is a comprehensive evaluation of an individual's knowledge, skills, abilities, and performance in a specific domain or subject area. It is a systematic, multifaceted, and objective process that aims to provide a detailed and accurate representation of an individual's current level of competence, understanding, and proficiency (Nawaz, Arunachalam, Pathi, and Gajenderan, 2024). Assessment test result is typically generated through the administration of a standardized, structured, and validated

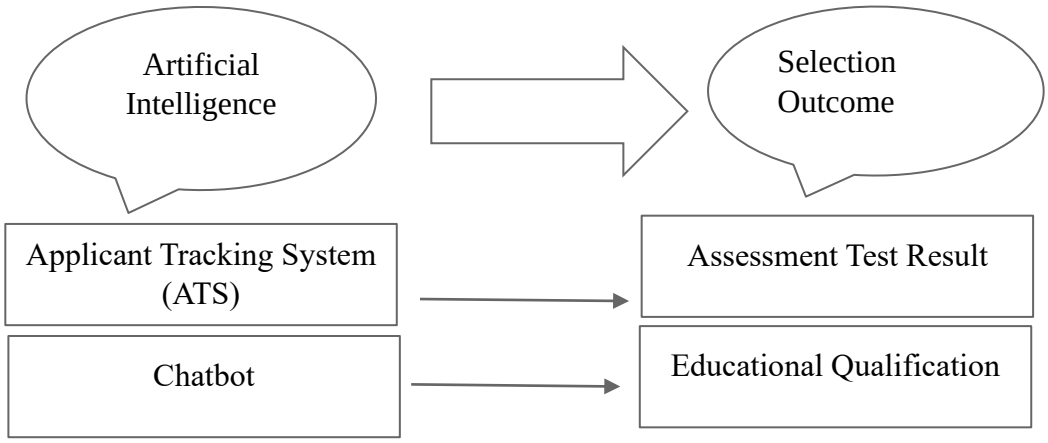
assessment instrument, such as an exam, quiz, or performance-based task. This assessment tool is carefully designed to measure and evaluate various aspects of the individual's learning, including their theoretical knowledge, practical application, problem-solving skills, critical thinking, and overall academic or professional competence (Geetha, and Reddy, 2020).

Educational Qualification

Educational qualification is a formal recognition of an individual's successful completion of a structured educational program or course of study, which demonstrates their attainment of specific knowledge, skills, and competencies within a particular field or academic discipline. It is a crucial aspect of an individual's educational and professional development, serving as a testament to their intellectual achievements, commitment to lifelong learning, and readiness to contribute to their chosen career or further educational pursuits (Ochmann, 2022).

Educational qualification encompasses a diverse range of credentials, certificates, diplomas, and degrees awarded by accredited educational institutions, professional associations, or recognized governing bodies. These qualifications are the culmination of a systematic and rigorous learning process, wherein individuals engage in a comprehensive curriculum, participate in various learning activities, and undergo assessments to demonstrate their mastery of the subject matter (Rogers, 2021).

Conceptual Framework



Empirical Review

Koechling, Wehner, and Warkocz (2023) examined affective responses to artificial intelligence in the recruitment process in Germany. In particular, by using a scenario-based between-subject design with German employees (N = 160), the study investigated whether and how AI-support during a complete recruitment process diminishes the opportunity to perform and increases emotional creepiness during the process

Kaushal, Kaurav, Sivathanu, and Kaushik (2023) determined artificial intelligence and HRM: identifying future research Agenda using systematic literature review and bibliometric analysis in Indonesia. The present research aimed to identify significant contributors, recent dynamics, domains and advocates for future study directions in the arena of integration of Artificial Intelligence (AI) with Human Resource Management (HRM), in the context of various functions and practices in organizations

Kawya, and Wijesinghe (2023) examined Applicant Tracking System: A definitive pillar of support for employer branding in Sri Lanka. The study used the theory of job signalling to identify the opportunities and challenges of implementing the ATS for Small and Medium scale organisations in Sri Lanka. The data were collected from 413 school leavers and fresh graduates in Sri Lanka

METHODOLOGY

The study employed a survey research design to investigate a large population. The population of this study is 28,326 with a sample size of 394 which comprises of the Senior teaching and Senior non-teaching staff of Federal University of Technology, Owerri, Imo State, Micheal Okpara University of Agriculture, Umudike, Abia State, Nnamdi Azikiwe University, Awka, Anambra State, and University of Nigeria, Nsukka, Enugu State. Simple random sampling was used to ensure equal opportunity for each firm to be selected in the survey.

Data for the research were gathered from both primary and secondary sources. Primary data, obtained through questionnaire, provided firsthand information from the respondents. Secondary information where sourced from textbooks, journals, earlier publications, and the internet. Descriptive statistics were used to analyze the generated data, and hypotheses were tested using Pearson Product Moment Correlation Coefficient on Statistical Packages for Social Science (Version 25) at 5% level of significance.

DATA PRESENTATION AND ANALYSIS

This section is concerned with the presentation and analysis of data collected from the field of study and the test of hypotheses. The aim is to present the data in an interpretable form so that the variables of the study can be well understood. Out of the 394 distributed questionnaires, 334 were filled and retrieved.

Analysis of Data Related to Research Question

Decision Rule:

The decision in the analysis section is determined by the average of the responses of respondents. Strongly Agreed (5 points), Agreed (4 points), Disagreed (3 points), Strongly Disagreed (2 points) and Undecided (1 point). The average of the responses:

$$\frac{(5 + 4 + 3 + 2 + 1)}{5} = 3.0$$

Therefore, a mean score below 3.0 would be considered rejected and a mean score of 3.0 and above would be considered accepted.

RQ1: What is the relationship between Applicant Tracking System (ATS) and Assessment Test Results on performance outcomes in Federal Universities in South East, Nigeria?

S/N	Items	N	Mean	Standard Deviation	Remark
	Applicant Tracking Systems (ATS)				
1	There is room for customizable workflows within the ATS to match the organisational-specific hiring process	334	3.87	0.927	Accepted
2	ATS gives features such as; resume parsing, job posting, and candidate communication which are essential for selection.	334	4.12	0.843	Accepted
3	ATS ensures candidate data management and organization	334	3.96	0.891	Accepted
4	It is important for the ATS to have a user-friendly interface for both recruiters and candidates	334	4.23	0.769	Accepted

	Assessment Test Result				
5	Assessment test results are fair and unbiased in evaluating candidates	334	3.62	1.073	Accepted
6	Assessment test methodologies could be: psychometric tests, situational judgment tests, or skills assessments	334	3.89	0.917	Accepted
7	A situation where a candidate's assessment results conflict with their performance during interviews or other evaluations such a candidate will not be employed	334	3.41	1.129	Accepted
8	This institution does not stay updated on best practices and advancements in assessment testing	334	2.87	1.193	Rejected

Source: Field survey, 2024

RQ2: How does the use of Chatbot technology relates with candidates' educational qualifications in Federal Universities in South East, Nigeria?

S/N	Items	N	Mean	Standard Deviation	Remark
	Chatbot				
1	The chatbot's functionality is good in screening and pre-qualifying candidates	334	3.53	1.067	Accepted
2	Chatbot can integrate with other recruitment tools or systems used by the organization	334	3.78	0.931	Accepted
3	Chatbot cannot schedule interviews or assessments with candidates	334	2.69	1.183	Rejected
4	There are inadequate measures in place to ensure the security and privacy of candidate data collected by the chatbot	334	2.93	1.157	Rejected

	Educational Qualification				
5	With an M.Sc. certificate, one can get a teaching job in this institution.	334	3.72	1.039	Accepted
6	Recruitment in this institution is not really based on educational qualifications but on nepotism	334	3.17	1.247	Accepted
7	This institution only accepts PhD holders for teaching positions	334	2.83	1.179	Rejected
8	I have been opportune in this institution to upgrade my educational qualification	334	3.59	1.087	Accepted

Source: Field survey, 2024

Hypothesis Testing

Decision Rule: Reject the null hypothesis if the p-value is less than or equal to 0.05 ($p \leq 0.05$), indicating a statistically significant relationship between the variables, while the strength of this relationship is determined by the magnitude of the correlation coefficient (r).

Hypothesis One:

Ho: There is no significant relationship between Applicant Tracking System (ATS) and Assessment Test Results in Federal Universities in South East, Nigeria.

H_A: There is a significant relationship between Applicant Tracking System (ATS) and Assessment Test Results in Federal Universities in South East, Nigeria.

Correlation between Applicant Tracking System (ATS) and Assessment Test Result

		ATS	Quality Service Delivery
ATS	Pearson correlation	1.000	.724**
	Sig. (2-tailed)		.000
	N	334	334
Assessment Test Result	Pearson correlation	.724**	1.000
	Sig. (2-tailed)	.000	
	N	334	334

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

Source: SPSS version 27 Output

The analysis in Table 4.12 revealed a strong positive correlation (r = 0.724) between the Applicant Tracking System (ATS) and Assessment Test Result. This relationship was found to be statistically significant ($p < 0.05$). Based on these results, the null hypothesis is rejected. There is a significant relationship between ATS and Assessment Test Results in Federal Universities in South East, Nigeria. This finding suggests that as the effectiveness of the ATS increases, there is a corresponding improvement in the Assessment Test Results.

Hypothesis Two:

Ho: There is no significant relationship between Chatbot and the Educational Qualification of candidates in Federal Universities in South East, Nigeria.

H_A: There is a significant relationship between Chatbot and the Educational Qualification of candidates in Federal Universities in South East, Nigeria.

Correlation between Chatbot and Educational Qualification

		Chatbot	Educational Qualification
Chatbot	Pearson correlation	1.000	.612**
	Sig. (2-tailed)		.000
	N	334	334
Educational Qualification	Pearson correlation	.612**	1.000
	Sig. (2-tailed)	.000	
	N	334	334

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

Source: SPSS version 27 Output

The analysis this Table showed that a moderate positive correlation (r = 0.612) was observed between Chatbot technology and the Educational Qualification of candidates. This correlation was statistically significant ($p < 0.05$). Therefore, the null hypothesis is rejected. There is a significant relationship between Chatbot and the Educational Qualification of candidates in Federal Universities in South East, Nigeria. This result implies that the implementation of Chatbot technology is positively associated with the educational qualifications of candidates in the recruitment process.

Discussion of Findings

Hypothesis One analysis revealed a strong positive correlation ($r = 0.724$, $p < 0.05$) between the Applicant Tracking System (ATS) and Assessment Test Results in Federal Universities in South East, Nigeria. This finding suggests that as the effectiveness of the ATS increases, there is a corresponding improvement in the Assessment Test Results.

Hypothesis Two analysis showed a moderate positive correlation ($r = 0.612$, $p < 0.05$) between Chatbot technology and the Educational Qualification of candidates in Federal Universities in South East, Nigeria. This result implies that the implementation of Chatbot technology is positively associated with the educational qualifications of candidates in the recruitment process.

5.1 Conclusion

Artificial Intelligence (AI) has the potential to revolutionize selection outcomes in Federal Universities in South East Nigeria by enhancing efficiency, objectivity, and candidate experience. By implementing AI-driven tools like Applicant Tracking Systems and Chatbots, universities can streamline the recruitment process, reducing biases that often influence hiring decisions. AI algorithms can analyze vast amounts of data swiftly, identifying the best candidates based on objective criteria rather than subjective judgments. Furthermore, these technologies can facilitate personalized interactions, improving candidate satisfaction and engagement. The adoption of AI can also aid in predicting candidate success, allowing institutions to make informed decisions that align with their strategic goals. However, challenges such as data privacy, the need for adequate training, and potential resistance from traditional hiring practices must be addressed. Ensuring that AI systems are transparent and continuously evaluated will be crucial in maintaining trust among stakeholders. Ultimately, embracing AI in selection processes can significantly enhance the recruitment landscape in Federal Universities by fostering an environment that values efficiency, equality, and quality, paving the way for a more qualified and diverse workforce that meets the evolving demands of the educational sector.

5.2 Recommendations

The study recommended that:

1. Management of Federal universities in South East Nigeria should enhance the implementation and effectiveness of Applicant Tracking Systems (ATS) to improve assessment test results. This can be achieved through targeted training for staff and regular evaluations of the ATS features that contribute most positively to outcomes.

2. Federal universities in South East Nigeria can implement Chatbot technology in their recruitment processes to enhance the assessment of candidates' educational qualifications. This could streamline candidate interactions and improve the overall effectiveness of the recruitment process.

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