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Impact of Artificial Intelligence (IA) on Service Delivery in Tertiary Education Sector of Benue State, Nigeria

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ABSTRACT

This study examined the impact of artificial intelligence (IA) in service delivery of tertiary education sector in Benue State. Seven research hypotheses were tested in the study. The study employed a survey research design Population for this study comprised all administrators from Joseph Sarwuan Tarka University Makurdi, Benue State University and University of Mkar, Mkar. The sample size of 284 respondents was used for the study. Data for the study was collected using structured questionnaire. Data for the study was analysed using descriptive statistical tools of percentages mean, standard deviation and inferential statistical tolls of analysis of variance (ANOVA), t-test and Pearson Product Moment Correlation Coefficient (PPMCC). The result of finding shows no significant difference between the mean responses of university administrators on the impact of artificial intelligence on administrative balance in tertiary education service. The finding also revealed no significant difference between the mean responses of male and female university administrators on the impact of artificial intelligence on service quality. It was found significant relationship between artificial intelligence and efficiency of service delivery. The finding of the study also revealed significant relationship between artificial intelligence and good service culture of tertiary education workers. Result of the study revealed significant relationship between artificial intelligence and employee engagement in tertiary education sector. Finding of the study revealed significant relationship between artificial intelligence and the productivity of tertiary education workers. Finally, the result of finding revealed significant difference between the mean responses of male and female university administrators on the factors militating against efficient use of artificial intelligence in tertiary education service. The study concludes that artificial intelligence can serves as a useful instrument in the administration of tertiary education service in Benue State. To ensure smooth administrative balance in the tertiary education service, the study recommended that artificial intelligence should be adopted for in all units and departments of the tertiary education service. The administrators should ensure that the complex algorithms, human interface as well as software malfunction; the cultural and religious barriers affecting effective use of artificial intelligence are eliminated for effective use of artificial intelligence.
Keywords: *Impact, Artificial Intelligence, Service Delivery and Tertiary education*

INTRODUCTION

The advent of technology is transforming services including government services and enhancing public service experience. The digital age today has good potential to assist public service delivery, making it more efficient, accurate, transparent, accessible, user-friendly and stable. Technology is also used for data collection and analysis which assures informed evidence-based decision-making especially in service delivery of tertiary education sector. Service encompasses a broad spectrum of government services, from healthcare and transportation infrastructure to emergency services, public schools, social services, and environmental protection. According to

Ewuim, Igbokwe-Ibeto and Nkomah in Ayoade and Alayande (2017), the service is therefore an influential public institution for service delivery that enhances development. It goes beyond service provision, encompassing service accessibility, delivery efficiency, and the level of engagement between the government and citizens. A positive service experience is characterized by clear job descriptions, a strong public service motivation, and a commitment to meeting citizens' needs. Public services involve the services provided by a government to its citizens, either directly or by financing private provision of such services (Shreedhar & Sundaram, 2011). Service delivery in the context of this study refers to any contact with the tertiary education sector administrators during which the customers, students and staff.

Tertiary education is a formal post-secondary education. This level of education which includes public and private universities, colleges, technical training institutes, and vocational schools. It is a level of education that prepare individuals not only by providing them with adequate and relevant job skills, but also by preparing them to be active members of their communities and societies. Tertiary education is instrumental in fostering growth, reducing poverty, and boosting shared prosperity. A highly skilled workforce, with lifelong access to a solid post-secondary education, is a prerequisite for innovation and growth: well-educated people are more employable and productive, earn higher wages, and cope with economic shocks better. Tertiary education benefits not just the individual, but society as a whole (World Bank, 2025).

The services are delivered in an effective, predictable, reliable and friendly manner. In order to improve the quality and quantity of services delivered to the customers, the university administrators may need continuous improvements. Such innovation is one way to improve the services delivered. It is noted that quality service delivery is a critical aspect of any government organization as it directly impacts the satisfaction and trust of citizens (Iniunam, 2023). One of the technological processes of technological advancement used for service delivery in tertiary education sector is artificial intelligence (AI).

Broadly speaking, artificial intelligence (AI) is intelligence exhibited by machines, particularly computer system. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals. Such machines may be called AIs (Russel & Norvig, 2021). Kanade (2022) posits that artificial intelligence (AI) is the intelligence of a computer or machine that enables it to imitate or mimic human capabilities. Artificial intelligence uses varieties of technologies that enable machines to sense, comprehend, plan, act, and even learn with human-like levels of intelligence. AI systems perceive environments, recognize objects, contribute to decision making, solve complex problems, learn from past experiences, and imitate patterns. These abilities are combined to accomplish tasks like driving a car or recognizing faces to unlock device screens (Rock 'n' Block, 2024). According to (2024), artificial intelligence assures reduction in human error; decision-making; zero risks; availability; digital assistance; new inventions; unbiased decisions; automate repetitive tasks; daily applications; AI in risky situations; medical applications; enhanced efficiency and productivity; enhanced safety and fraud detection; improving human workflows; enhanced customer experience; smarter surveillance; bias and fairness; cost effective; increase in workforce productivity; personalization; easily handles big data; and problem-solving. Diagrammatically, the process of artificial intelligence in service delivery system is shown in Figure 1 below:

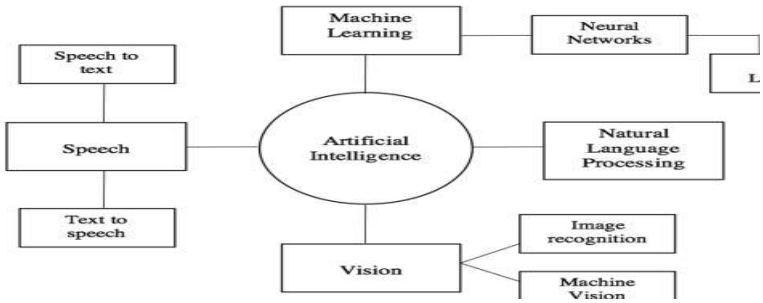

Fig. 1: Artificial Intelligence in Service Delivery System
Source: Adopted from Reis, Amorim, Cohen and Rodrigues (2020)

In tertiary education service deliverance, Reis, Amorim, Cohen and Rodrigues (2020) assert that artificial intelligence-based technologies can be put in use in human services to help organizations alleviating considerable administrative burden and free up time for more critical responsibilities by improving decision-making, and creating cheaper and faster delivery services. However, tertiary education service delivery in Benue State is characterised by administrative imbalance, inefficiency, poor service culture, poor employee engagement, poor service quality, poor customer service and loss of productivity. Several attempts have been made to address these problems for quality service delivery in various government organisations in Benue state but still, the service delivery is remains poor. It is against this background that the study is designed to examine impact of artificial intelligence in tertiary education service delivery in Benue State.

Objectives

The main purpose of this study was to examine impact of artificial intelligence on the service delivery in tertiary education sector of Benue State. Specifically, the study sought to:

1. Determine the impact of artificial intelligence on administrative balance in tertiary education service
2. Determine impact of artificial intelligence on good service quality of tertiary education administrators
3. Examine the impact of artificial intelligence on the efficiency of tertiary education workers
4. Find out the impact of artificial intelligence on good service culture of tertiary education workers
5. Ascertain impact of artificial intelligence on the employee engagement in tertiary education sector
6. Examine impact of artificial intelligence on the productivity of tertiary education workers
7. Identify factors militating against efficient use of artificial intelligence in tertiary education service

Hypotheses

1. There is no significant difference between the mean responses of university administrators and staff of tertiary education workers on the impact of artificial intelligence on administrative balance in tertiary education service

2. There is no significant difference between the mean responses of university administrators and staff of tertiary education workers on service quality of public servants
3. There is no significant relationship between artificial intelligence and efficiency of tertiary education workers
4. There is no significant relationship between artificial intelligence and good service culture of tertiary education workers
5. There is no significant relationship between artificial intelligence and employee engagement in tertiary education sector
6. There is no significant relationship between artificial intelligence and the productivity of tertiary education workers
7. There is no significant difference between the mean responses of university administrators and staff of tertiary education on the factors militating against efficient use of artificial intelligence for service delivery

LITERATURE REVIEW

2.1 Concept of Artificial Intelligence (AI)

Artificial intelligence is the intelligence demonstrated by machines in place of natural intelligence displayed by humans and other animals (McCorduck in Reagan, (2018). According to Gupta and Mitra (2023), the idea is that machines can be made to perform tasks commonly associated with intelligent beings like humans and animals. Subih, Nueangnong and Pokkasut (2019) submitted that .AI is an area of computer science with the help of digital electronics that emphasizes the creation of intelligent machines that work and react like humans. The SUPERFLARE (2024), explained that the term 'artificial intelligence' is frequently applied to the project of developing systems endowed with the intellectual processes and characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experiences. It has been demonstrated that computers can be programmed to carry out very complex tasks like discovering proofs for mathematical theorems and playing chess with great proficiency (Evergreen Publications India Ltd, 2022).

2.2 Impact of Artificial Intelligence in Tertiary Education Service

There is positive impact of the application of artificial intelligence (AI) in the public service. According to Mulyana (2023), these include: government performance increases effectively and efficiently; fast bureaucratic processes will reduce costs and time; assisting the government in meeting community needs in the service sector, and public satisfaction with community services has increased. Similarly, Rahiman, Suvarna, Abhishek, Dinesh (2024) opined that the adoption, employment, and usage of AI is the impact good quality of public service. AI eliminates corruption risks and enhances overall efficiency and transparency in public service delivery mechanisms. The application of AI also in public service delivery aids governmental bodies in forecasting and better decision-making, improving communication between the citizens and government, public service personalization, and administrative burden reduction. These may help to improve the quality of public service and create public value. The artificial intelligence-based technology is useful used in areas such as process automation, knowledge management, predictive analysis, conversational agents, resource allocation and assistants, fraud and threat detection, and supporting expert tasks.

2.3 Challenges affecting use of AI Public Service

There challenges affecting effective use of AI in organization include ethical considerations, lack of transparency, cyber security risks, and potential biases in AI (Ahn and Chen, 2020). As noted by Reagan, (2018), the challenges affecting use of AI are complex algorithms, human interface; decline of investment; software malfunction; and cultural and religious barriers. The technical side of AI involves some huge data and complex algorithm; sometimes making users not to grasp AI concepts. Concerning human interface**,** the shortage of data science skills within humans to get maximum output from artificial intelligence experience a clear shortage of advanced skills that will interface between Nigerians and AI technology. All business owners or managers are willing to invest in artificial intelligence. The funds required to set up and implement Artificial Intelligence is very high, thus not every business owner or organization in Nigeria can invest in it. No technology of human is perfect. A case of software or hardware crash could be highly frustrating to researchers especially in Nigeria where storage and retrieval systems are poor. Hence, software tasks performed by humans can be difficult to trace. This kind of problem can be frustrating and discouraging. Cultural affiliation and religion bigotry are also barriers to development in Nigeria; hence artificial intelligence technology is not spared, language might not be a much challenge to artificial intelligence progress in Nigeria, but persons of the same tribal affiliation are usually biased in working cooperatively with other tribes especially in knowledge acquisition. Similarly, there is so much religious intolerance that can seriously militate against AI technology in Nigeria.

METHODOLOGY

Area of the Study

The study was conducted in Benue State, Nigeria. Benue State is a state in the North Central Nigeria is a region carved out from the west, around the confluence of the River Niger and the River Benue. It is a state in the region stretching around central Nigeria longitudinally and forming a transition zone between Northern and Southern Nigeria. The state bounded on the south by Cross River, Ebonyi, and Enugu states, on the west by Kogi state, on the north by Nassawara state, and on the northeast by Taraba state. It has 23 local government areas with many public offices.

Design

This study employed a survey research design. This design is suitable because the researcher collected and described the characteristics or facts about the population under study. The survey design also offers research subjects the opportunity to express their opinions based on their experiences and the researcher could collect data from small sample drawn from the population in order to draw inferences.

Population

Population for this study comprised all administrators from Joseph Sarwuan Tarka University Makurdi, Benue State Makurdi and University of Mkar, Mkar. University administrators were used in the study because they are directly involved in day-to-day administrative activities. It was therefore believed that this category of respondents would supply the needed information for making inferences for the study.

Sample Size

The sample size of 284 respondents was used for the study. Purposive sampling technique was employed to select 100 administrators from Joseph Sarwuan Tarka University Makurdi, 100 administrators from Benue State Makurdi and 84 from University of Mkar, Mkar, making a total of 284 respondents for the study.

Instrument for the Study

Data for the study was collected using structured questionnaire. The instrument was divided into two parts; part 'A' sought to elicit information on demographic characteristics of the respondents while part 'B' dwell on objectives of the study and was sub-divided into section A to D. The instrument had restricted responses of very high impact (VHI), high impact (HI), low impact (LI and very low impact (VLI), strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD). These had corresponding values of 4, 3, 2, and 1 respectively.

Data Analysis Techniques

Data for the study was analysed using descriptive statistical tools of percentages mean, standard deviation and inferential statistical tolls of analysis of variance (ANOVA), t-test and Pearson Product Moment Correlation Coefficient (PPMCC). The reason for use of ANOVA and PPMCC was because it compares more than two groups simultaneously to determine whether a relationship exists between them. The reason for use of t-test was because the study also aims to compare the mean of two groups.

RESULTS AND DISCUSSION

Table 1: Mean and Standard Deviation of University Administrators and Staff of the Ministry on the Impact of Artificial Intelligence on Administrative Balance (N=284)

S/N	Item Statement	N_1	N_2	$\bar{x}_1$	$\bar{x}_2$	SD_1	SD_2	Remarks
1	Increases administrative performance	200	84	3.320	2.6071	0.8005	1.01812	Impacted
2	Enhances fast administrative bureaucratic processes	200	84	3.210	2.7071	0.79312	1.01812	Impacted
3	Reduces cost and waste of time	200	84	3.215	2.8081	0.81984	1.01812	Impacted
4	Increases administrative performance	200	84	3.105	2.5005	0.89329	1.01812	Impacted
5	Assisting the administration in meeting societal needs in the service sector	200	84	3.1103	2.7104	0.88986	1.01812	Impacted
	Grand Mean			**3.192**	**2.66664**	**0.83932**	**1.01812**	

*N_1 = Number of Lecturers, N_2 = Number of Staff of Ministry, $\bar{x}_1$ = Mean of Lecturers, $\bar{x}_2$ = Mean of Staff of Ministry, SD_1 = Standard Deviation of Lecturers SD_2= Standard Deviation of Staff of Ministry
Source: Field survey, 2024

Result in Table 1 show that all the 5 items had their University Administrators mean values ranged from 3.110 to 3.320 while the mean values for staff of Ministry ranged from 2.500 to 2.8081 respectively. This means that the item is the impact of artificial intelligence on administrative balance.

Table 2: Mean and Standard Deviation of Male and Female Administrators on the Impact of Artificial Intelligence on Quality Service (N=284)

S/N	Item Statement	N_1	N_2	$\bar{x}_1$	$\bar{x}_2$	SD_1	SD_2	Remarks
1	Process automation	200	84	3.110	2.9701	0.8842	1.01812	Impacted
2	Knowledge management	200	84	3.035	2.7771	0.84697	1.01812	Impacted
3	Predictive analysis	200	84	3.044	2.8071	0.89105	1.01812	Impacted
4	Conversational agents	200	84	3.010	2.5071	0.8506	1.01812	Impacted
5	Resource allocation and assistants	200	84	3.141	2.5951	0.81469	1.01812	Impacted
6	Process automation	200	84	2.882	2.9341	0.94342	1.01812	Impacted
7	Process automation	200	84	2.905	2.6071	0.95422	1.01812	Impacted
	Grand Mean			**3.011**	**2.74253**	**0.88359**	**1.01812**	

*N_1 = Number of Male Administrators, N_2 = Number of Female Administrators, $\bar{x}_1$ = Mean of Male Administrators, $\bar{x}_2$ = Mean of Female Administrators, SD_1 = Standard Deviation of Male Administrators SD_2= Standard Deviation of Female Administrators
Source: Field survey, 2025

Result in Table 1 show that all the 7 items had their University Administrators mean values ranged from 2.882 to 3.110 while the mean values for female administrators ranged from 2.5071 to 2.9701 respectively. This means that the items are the impact of artificial intelligence on quality service.

Table 5: ANOVA Descriptive Result on the Relationship between Artificial Intelligence and Employee Engagement in Tertiary Education Sector

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
JOSTUM	101	1.3168	.39927	.03973	1.2380	1.3957	1.00	3.00
BSU	99	1.3535	.57982	.05827	1.2379	1.4692	1.00	3.80
Mkar	84	1.5452	.40042	.04369	1.4583	1.6321	1.00	2.40
Total	284	1.3972	.47880	.02841	1.3413	1.4531	1.00	3.80

***JOSTUM**= Joseph Sarwuan Tarka University Makurdi and BSU=Benue State University and Mkar = University of Mkar
Source: Field survey, 2025

Table 5 shows ANOVA descriptive result. Joseph Sarwuan Tarka University Makurdi administrators had mean value of 1.3168 while the Benue State University administrators had their mean value of 1.3533 and the University of Mkar administrators had their mean value of 1.5472 respectively.

Table 6: ANOVA Descriptive Result on the Relationship between Artificial Intelligence and Productivity of Tertiary Education Sector

					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
JOSTUM	101	3.1386	.94900	.09443	2.9513	3.3260	1.00	4.00
BSU	99	2.9175	.42617	.04283	2.8325	3.0025	1.17	4.00
Mkar	84	2.6071	1.01812	.11109	2.3862	2.8281	1.00	4.00
Total	284	2.9043	.85499	.05073	2.8045	3.0042	1.00	4.00

***JOSTUM**= Joseph Sarwuan Tarka University Makurdi and BSU=Benue State University and Mkar = University of Mkar
Source: Field survey, 2025

Table 6 shows ANOVA descriptive result. Lecturers of Joseph Sarwuan Tarka University Makurdi had mean value of 3.1386 while the Benue State University administrators had their mean value of 2.9175 and the University of Mkar administrators had their mean value of 2.6071 respectively.

Table 7: Mean and Standard Deviation of Male and Female University Administrators on the Challenges of Artificial Intelligence in Tertiary Education Sector (N=284)

S/N	Item Statement	N_1	N_2	$\bar{x}_1$	$\bar{x}_2$	SD_1	SD_2	Remarks
1	Complex nature of algorithms	200	84	3.320	3.0595	0.93915	0.97377	Agree
2	Human interface	200	84	3.315	3.5476	0.88866	0.62873	Agree
3	Decline of investment	200	84	3.255	3.2143	0.89104	0.87909	Agree
4	Software malfunction	200	84	3.310	3.2738	0.93717	1.06817	Agree
5	Costs of procurement of equipment	200	84	3.245	2.9524	0.75353	0.84888	Agree
	Grand Mean			**3.289**	**3.20952**	**0.88191**	**0.87973**	

*N_1 = Number of Male Administrators, N_2 = Number of Female Administrators, $\bar{x}_1$ = Mean of Male Administrators, $\bar{x}_2$ = Mean of Female Administrators, SD_1 = Standard Deviation of Male Administrators SD_2= Standard Deviation of Female Administrators
Source: Field survey, 2025

Result in Table 7 shows that male University Administrators had mean value ranged from 3.245 and female university administrators had their mean value ranged from 2.9523 to 3.5476 respectively. This implies that the items are the challenges militating against effective use of of artificial intelligence in tertiary education sector.

Table 8: t-test Result of Male and Female University Administrators on the Impact of Artificial Intelligence on Administrative Balance in Tertiary Education Sector (N=294)

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	17.841	.000	5.300	282	.000	.58486	.11035	.36764	.80208
Equal variances not assumed			4.731	124.351	.000	.58486	.12362	.34018	.82953

Source: Field survey, 2025

Result presented in Table 8 reveals a p-value is .000 with 282 degrees of freedom. The result is statistically significant. This implies that the difference in mean values of male and female University Administrators on the impact of artificial intelligence on administrative balance in tertiary education sector is not significant different at 0.05 alpha level.

Table 10: t-test Result of Male and Female University Administrators on the Impact of Artificial Intelligence on Service Quality (N=294)

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	26.120	.000	3.708	282	.000	.40429	.10904	.18965	.61892
Equal variances not assumed			3.283	122.622	.001	.40429	.12313	.16054	.64803

Source: Field survey, 2025

Result presented in Table 10 reveals a p-value is .000 with 382 degree of freedom. The result is statistically significant. This implies that the difference in mean values of male and female University Administrators on the impact of artificial intelligence on administrative balance on service quality is not significant at 0.05 alpha level.

Table 11: Coefficient of the Relationship between Artificial Intelligence and Good Service Culture of Workers of Tertiary Education Sector

		Artificial Intelligence	**Good service culture**
Artificial Intelligence	Pearson Correlation	1	.674**
	Sig. (2-tailed)		.000
	N	284	284
Good service culture	Pearson Correlation	.674**	1
	Sig. (2-tailed)	.000	
	N	284	284

Source: Field survey, 2025

Result in Table 11 shows the relationship between artificial intelligence and good service culture of public servants with r value of .674 and significant value of 0.000. This is an implication that there is perfect linear relationship between artificial intelligence and good service culture of workers of tertiary education.

Table 9: Coefficient of the Relationship between Artificial Intelligence and Employee Engagement in Tertiary Education Service

		Artificial Intelligence	**Employee engagement**
Artificial Intelligence	Pearson Correlation	1	.567**
	Sig. (2-tailed)		.000
	N	284	284
Employee engagement	Pearson Correlation	.567**	1
	Sig. (2-tailed)	.000	
	N	284	284

Source: Field survey, 2025

Result in Table 11 shows the relationship between artificial intelligence and employee engagement in public service with r value of .567 and significant value of 0.000. This is an implication that there is perfect linear relationship between artificial intelligence and employee engagement in tertiary education service.

Table 10: ANOVA Analysis on the Relationship between Artificial Intelligence and Employee Engagement in Tertiary Education Service

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	2.682	2	1.341	6.059	.003
Within Groups	62.196	281	.221		
Total	**64.878**	**283**			

Source: Field survey, 2025

Table 10 shows that the ANOVA result was significant with value of .003 and is below the alpha value of 0.05. The result implies that there is a statistically significant relationship between artificial intelligence and employee engagement in tertiary education service.

Table 11: ANOVA Analysis on the Relationship between Artificial Intelligence and the Productivity of Tertiary Education Workers

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	12.980	2	6.490	9.406	.000
Within Groups	193.894	281	.690		
Total	206.874	283			

Source: Field survey, 2025

Table 11 shows that the ANOVA result was significant with value of .000 and is below the alpha value of 0.05. The result implies that there is a statistically significant relationship between artificial intelligence and the productivity of tertiary education workers.

Table 12: t-test Result of University Administrators and Staff of Benue State Civil Service on the Factors Militating against Efficient Use of Artificial Intelligence in Tertiary Education Service

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	2.680	.103	.853	282	.395	.06361	.07461	-.08326	.21048
Equal variances not assumed			.813	141.105	.417	.06361	.07820	-.09098	.21820

Source: Field survey, 2024

Result presented in Table 12 reveals a p-value is .395 with 382 degree of freedom. This implies that there is no difference in mean values of university administrators and staff of Benue state civil service on the factors militating against efficient use of artificial intelligence in tertiary education service is statistically significant at 0.05 level.

Discussion of Findings

The result of finding shows no significant difference between the mean responses of university administrators and staff of Benue state civil service on the impact of artificial intelligence

on administrative balance in tertiary education service. The finding affirms the report of Reis, Amorim, Cohen and Rodrigues (2020) who assert that artificial intelligence-based technologies can be put in use in human services to help organizations alleviating considerable administrative burden and free up time for more critical responsibilities by improving decision-making, and creating cheaper and faster delivery services.

The finding also revealed no significant difference between the mean responses of university administrators and staff of Benue state civil servants on the impact of artificial intelligence on service quality in tertiary education sector. The finding relates that of Mulyana (2023) who concluded that artificial intelligence helps: government performance increases effectively and efficiently; fast bureaucratic processes will reduce costs and time; assisting the government in meeting community needs in the service sector, and public satisfaction with community services has increased.

The study found significant relationship between artificial intelligence and efficiency of public service. The finding collaborates that of Rahiman, Suvarna, Abhishek and Dinesh (2024) who found out that the application of artificial intelligence also in tertiary education service delivery aids governmental bodies in forecasting and better decision-making, improving communication between the citizens and government, public service personalization, and administrative burden reduction. These may help to improve the quality of public service and create public value. The artificial intelligence-based technology is useful used in areas such as process automation, knowledge management, predictive analysis, conversational agents, resource allocation and assistants, fraud and threat detection, and supporting expert tasks**.**

The finding of the study revealed significant relationship between artificial intelligence and good service culture of tertiary education sector workers. Finding agrees with (2024) who reported that artificial intelligence assures reduction in human error; decision-making; zero risks; availability; digital assistance; new inventions; unbiased decisions; automate repetitive tasks; daily applications; AI in risky situations; medical applications; enhanced efficiency and productivity; enhanced safety and fraud detection; improving human workflows; enhanced customer experience; smarter surveillance; bias and fairness; cost effective; increase in workforce productivity; personalization; easily handles big data; and problem-solving.

Result of the study revealed significant relationship between artificial intelligence and employee engagement in tertiary education service. Finding agrees with Kanade (2022) who posited that artificial intelligence (AI) enables the imitation of mimic human capabilities using varieties of technologies that enable machines to sense, comprehend, plan, act, and even learn with human-like levels of intelligence. AI systems perceive environments, recognize objects, contribute to decision making, solve complex problems, learn from past experiences, and imitate patterns. These abilities are combined to accomplish tasks like driving a car or recognizing faces to unlock device screens.
Finding of the study revealed significant relationship between artificial intelligence and the productivity of tertiary education workers. The finding is not different from that of Rahiman, Suvarna, Abhishek and Dinesh (2024) who opined that the adoption, employment, and usage of AI impact good quality of public service. AI eliminates corruption risks and enhances overall efficiency and transparency in public service delivery mechanisms.

The result of finding revealed significant difference between the mean responses of university male and female administrators on the factors militating against efficient use of artificial intelligence in tertiary education service. The finding confirms the report of Reagan, (2018) who noted that the challenges affecting use of AI are complex algorithms, human interface; decline of investment; software malfunction; and cultural and religious barriers.

Conclusion

AI is useful in the administration of tertiary education service. The technology is efficient in the performance of difficult task in e-government administrative activities. The study found out that AI ensures administrative balance; service quality; efficiency of tertiary education service; good service culture; employee engagement; and productivity of public servants. However, there are factors militating against efficient use of artificial intelligence in tertiary education service. The study concludes that artificial intelligence can serves as a useful instrument in the administration of tertiary education service in Benue State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. To ensure smooth administrative balance in the tertiary education service, AI should be adopted for in all sectors of the public service
2. Since the service quality depends heavily on the technology advancement, AI should be used for administrative tasks
3. All administrators of tertiary education service in Benue state should adopt the use of AI for efficiency of activities and tasks performed
4. The tertiary education sector in Benue state should adopt use of artificial intelligence as it enhances service culture of the sector
5. To ensure employee engagement in the tertiary education sector, the government should introduce the use of artificial intelligence for administrative duties
6. The artificial intelligence as an instrument for productivity of tertiary education workers should be fully adopted by the tertiary education sector
7. The administrators should ensure that the complex algorithms, human interface as well as software malfunction; the cultural and religious barriers affecting effective use of artificial intelligence should be severely tackled.

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