

DATABASE MANAGEMENT SYSTEMS AND ADMINISTRATIVE PERFORMANCE IN TERTIARY INSTITUTIONS IN RIVERS STATE

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ABSTRACT

This study examines database management systems and administrative performance in tertiary institutions in Rivers State. The study adopted the correlational research design. The population of the study comprised the 3007 academic staff in the four selected public tertiary institutions in Rivers State. A sample of three hundred and forty-six (346) respondents were selected. A 30-item structured instrument titled "Database Management Systems and Administrative Performance in Tertiary Institutions Questionnaire" (DMSAPTIQ) was used for the collection of data. Data collected was analyzed using Pearson Product Moment Correlation (PPMC) to answer research questions 1 and 2, while Multiple Regression Analysis was used to answer research question 3 at 0.05 level of significance. The study revealed r values of 0.789, and 0.732 with same p values of .000, indicated a strong, positive, and statistically significant correlation between database management systems (DBMS) and the decision-making process, and productivity respectively in tertiary institutions in Rivers State. The result showed that the regression model is significant ($F(2,307)=256.37$, $p<.001$, $R^2=.718$), explaining 71.8% of the variance of DBMS effectiveness in administrative performance in tertiary institutions in Rivers State. The study recommended that tertiary institution governing councils in Rivers State should formulate and mandate a Data-Driven Decision-Making (DDDM) Policy for all significant administrative, academic, and strategic decisions. Alongside, the management in tertiary institutions, should individually or collectively, adopt an Integrated Performance Enhancement Strategy for technology investment decision-making and productivity.

Keywords: Database Management Systems, Administrative Performance, Tertiary Institutions, Rivers State.

Introduction

In the contemporary landscape of higher education, tertiary institutions are increasingly conceptualized as complex information ecosystems. Their core mandates of teaching, research, and community service generate vast quantities of critical data, ranging from student academic records and staff personnel files to financial transactions, research outputs, and asset inventories. The efficient management of this data is no longer a mere administrative convenience but a fundamental determinant of institutional effectiveness, accountability, and strategic

agility (Al-Hiyari & Al-Mashre, 2023). Historically, many institutions, particularly in developing contexts, have relied on fragmented, often manual or spreadsheet-based systems. These legacy approaches are characterized by data redundancy, inconsistency, poor integrity, and limited accessibility, leading to operational bottlenecks, delayed decision-making, and compromised service delivery to core stakeholders, students, faculty, and management (Omondi & Kibera, 2022).

Database Management Systems (DBMS) represent the technological

cornerstone for addressing these challenges. A DBMS is a software suite designed for the creation, maintenance, and controlled use of databases, enabling data to be stored in an integrated, structured, and secure manner. The theoretical underpinnings of this study are rooted in Information Systems Success Model, which posits that system quality and information quality significantly influence user satisfaction and net benefits (DeLone & McLean, 2016). In the context of university administration, a robust DBMS enhances system quality through features ensuring reliability, response time, and integration, and information quality by improving the accuracy, timeliness, and completeness of administrative data (Petter & McLean, 2023). The resultant "net benefits" are theorized to manifest as enhanced administrative performance.

Administrative performance in tertiary institutions encompasses the efficiency, effectiveness, and transparency of non-academic operations. Key indicators include the speed and accuracy of student registration and records processing, the efficiency of human resource and payroll management, the reliability of financial reporting and procurement processes, and the strategic use of data for planning and accreditation exercises (Ugwulashi & Nwosu, 2024). Recent empirical literature underscores a positive correlation between sophisticated information management and administrative outcomes. For instance, studies in other regions have demonstrated that integrated DBMS solutions significantly reduce processing times for student services, improve data-driven budgeting, and enhance institutional reporting capabilities (Adeboye & Okonkwo, 2021; Khayer et al., 2023).

However, the specific context of tertiary institutions in Rivers State, Nigeria, presents a unique milieu. While the Nigerian

educational sector has acknowledged the imperative of digital transformation, its implementation is uneven. Institutions grapple with challenges such as inadequate funding for IT infrastructure, intermittent power supply, fluctuating levels of staff technical competence, and sometimes, resistance to change from legacy processes (Akpomi & Ordu, 2022). Recent research on Nigerian higher education has highlighted a growing "digital divide" between policy aspirations and ground-level realities, with administrative performance often suffering as a consequence (Eze et al., 2023). Therefore, a gap exists in localized, empirical evidence detailing how the adoption and utilization of database management systems (DBMS) are directly influencing administrative performance metrics within the Rivers State tertiary education sector.

While existing literature, both globally and within Nigeria, establishes a general theoretical link between information technology and organizational performance, specific and context-rich empirical studies focusing on this nexus in the tertiary education sector of Rivers State are notably scarce. Previous research has often taken a broad, national perspective on ICT challenges in Nigerian universities or focused on standalone aspects like "e-learning" or "digital libraries," thereby leaving a critical lacuna regarding the administrative domain (Akpomi & Ordu, 2022). Furthermore, much of the available local discourse is anecdotal or descriptive, lacking a structured, analytical investigation that correlates specific DBMS characteristics, such as system integration, data security features, user accessibility, and technical support structures, with quantifiable metrics of administrative performance.

This study is situated within this gap. It proceeds from the premise that as Rivers State institutions strive for greater competitiveness and compliance with national and global standards, understanding the nexus between their data management capabilities and administrative outputs is critical. It seeks to move beyond generic assertions about technology's benefits to provide a concrete, evidence-based analysis of how DBMS implementation, considering factors like system integration, user training, and top-management support, impacts the tangible efficiency and effectiveness of administrative functions in these specific institutions. This is the crux of the study.

Statement of the Problem

The administrative machinery of tertiary institutions in Rivers State operates within an environment of escalating complexity. Student populations are expanding, regulatory and accreditation demands are becoming more stringent, and the expectation for seamless, transparent, and efficient service delivery from students, staff, and government agencies is at an all-time high. To meet these demands, institutions increasingly rely on the effective management of vast amounts of administrative data. However, there is a prevailing concern that many of these institutions remain hampered by fragmented, inefficient, and often outdated data management practices. Persistent reports of delayed student record processing, errors in transcript generation, cumbersome procurement and payroll cycles, and difficulties in generating accurate, real-time reports for strategic planning suggest a significant disconnect between administrative objectives and operational capabilities. This disconnect not only impedes daily efficiency but also threatens

institutional reputation, stakeholder satisfaction, and long-term strategic growth.

The core problem, therefore, is that despite the recognized potential of modern Database Management Systems (DBMS) to streamline operations, the actual state of DBMS adoption, integration, and utilization within the administrative frameworks of Rivers State's tertiary institutions is ambiguous. Consequently, the extent to which these technological tools are effectively translating into measurable improvements in administrative performance, defined by criteria such as processing speed, data accuracy, reporting reliability, and overall operational effectiveness, remains poorly understood and inadequately documented. This ambiguity creates a cycle where investment in IT may be made without a clear, evidence-based understanding of its direct impact on core administrative functions.

A critical research gap exists regarding how contextual factors, like chronic underfunding of IT infrastructure, erratic power supply, varying levels of administrative staff ICT competence, and possible cultural resistance to process digitization, moderate the impact of Database Management Systems (DBMS) on administrative performance in Rivers State's tertiary institutions. Current literature lacks a nuanced model explaining not just *if* DBMS helps, but *how, when, and where* it succeeds or fails locally. This study aims to bridge this gap. It seeks to move beyond generic assumptions to provide concrete, data-driven insights into the precise relationship between DBMS implementation and administrative performance in this specific geographical and sectoral context. Thus, by identifying the key enablers and barriers, the research will fill a critical knowledge void, offering actionable intelligence for

university administrators, policymakers, and IT planners in Rivers State to make informed, strategic decisions that genuinely enhance institutional effectiveness.

Objectives of the Study

The specific objectives of the study are to:

1. Determine the relationship between database management systems and decision-making process in the tertiary institutions in Rivers State.
2. Ascertain the relationship between database management systems and productivity in the tertiary institutions in Rivers State.
3. Determine how database management systems relate to the joint variables of administrative performance variables (decision making process and productivity) in the tertiary institutions in Rivers State.

Research Questions

The formulated research questions guided the study.

1. What is the relationship between database management systems and decision-making process in the tertiary institutions in Rivers State?
2. What is the relationship between database management systems and productivity in the tertiary institutions in Rivers State?
3. How does database management systems relate to the joint variables of administrative performance variables (decision making process and productivity) in the tertiary institutions in Rivers State?

Significance of the Study

The findings of this study hold significant value for multiple stakeholders:

- i. **Organizations and Government:** By informing the adoption of new

information management strategies, the study can improve decision-making and timely information dissemination, yielding broad societal benefits.

- ii. **Students and Information Managers:** It highlights the critical need to acquire skills in operating modern technology and critically evaluating management strategies, with particular urgency in the public tertiary institutions of Rivers State.
- iii. **Researchers:** The scholarly constructs, variables, and results serve as a catalyst and foundation for further research.

Scope of the Study

The study was centered on database management systems and administrative performance in tertiary institutions in Rivers State. The geographical scope covered some selected public tertiary institutions in Rivers State notably; Ignatius Ajuru University of Education Rumuolumeni, Captain Elechi Amadi Polytechnic Rumuola, Rivers State University, Nkpolu Oroworukwo, and Rivers State College of Health and Management Technology, Port Harcourt. The unit of analyses comprised academic staff in the selected public tertiary institutions. Furthermore, the independent variable was database management system, while the dependent variable was administrative performance that were integrated in this study.

Methodology

Research Design: A correlational research design was adopted to investigate the relationship between information management strategies (the independent variable) and the decision-making process (the dependent variable). This design enables the assessment of how changes in

one variable are associated with changes in another (Nwankwo, 2016).

Population of the Study: The population comprised all academic staff from four public tertiary institutions in Rivers State: Ignatius Ajuru University of Education (IAUE), Captain Elechi Amadi Polytechnic

(CEAP), Rivers State University (RSU), and the Rivers State College of Health and Management Technology (RSCHMT). As of the time of the study, the total population was 3,007 academic staff, distributed as shown in Table 1 below.

Table 1: Population Distribution of Academic Staff in the Five (5) Public Tertiary Institutions

S/N	Tertiary Institution	No. of Academic Staff	Percentage
1	Ignatius Ajuru University of Education (IAUE)	774	26
2	Captain Elechi Amadi Polytechnic (CEAP)	592	20
3	Rivers State University (RSU)	1089	36
4	Rivers State College of Health and Management Technology (RSCHMT)	552	18
Total		3007	100

Source: Field Study (2024)

Sample and Sampling Techniques: The study comprised a sample of 346 academic staff, selected using a multistage sampling technique. The first stage involved the random selection of four out of the five public tertiary institutions in Rivers State: Ignatius Ajuru University of Education (IAUE), Captain Elechi Amadi Polytechnic (CEAP), Rivers State University (RSU), and Rivers State College of Health and Management Technology (RSCHMT). In the second stage, a proportionate sampling technique was employed to select academic staff from each institution, yielding 90 respondents from IAUE, 69 from CEAP, 125 from RSU, and 62 from RSCHMT.

Instrument for Data Collection: The instrument for data collection was a 30-item self-structured researcher questionnaire titled “Database Management Systems and Administrative Performance in Tertiary Institutions Questionnaire” (DMSAPTIQ). The DMSAPTIQ instrument was patterned after a four-point rating scale of: “Strongly

Agree” (SA, 4 Points), “Agree” (A, 3 Points), “Disagree” (D, 2 Points), and “Strongly Disagree” (SD, 1 Point). Furthermore, the DMSAPTIQ instrument consisted of three sections, Section A elicited the demographic variables of the respondents, Section B contained 15 items used to elicit response on the variable of database management systems, while Section C contained 15 items on the variable of administrative performance.

Validity of the Instrument: The face and content validity of the DMSAPTIQ instrument were established by two experts or lecturers in the Department of Office and Information Management at Ignatius Ajuru University of Education. These validators reviewed the study topic, objectives, research questions, and instrument or questionnaire items to ascertain the eligibility of the wordings, language, and items to appropriately measure what it purports to measure. Finally, the feedbacks, reviews, and suggestions of these validators

were incorporated to enhance the validity of the refined version of the DMSAPTIQ instrument used for the study.

Reliability of the Instrument: The reliability or internal consistency of the DMSAPTIQ instrument was determined using the Cronbach's Alpha method. In order to achieve this, a reliability analysis or pilot test was conducted by equally administering 60 copies of the DMSAPTIQ instrument to the academic staff at two federal tertiary institutions in Rivers State (i.e., University of Port Harcourt and Federal College of Education Technical, Omoku), which were not part of the main study. Upon completion of the pilot test's administration process, copies of the DMSAPTIQ instrument were retrieved, coded and analyzed using the Cronbach Alpha (r_a) method to obtain a reliability coefficient of 0.849. Thus, the obtained reliability coefficient indicated a high internal consistency, which justified the use of the DMSAPTIQ instrument for the resulting or ensuing data collection in the main study.

Administration of the Instrument: The researcher in the company of the two engaged research assistants administered the DMSAPTIQ instrument or questionnaire to the respondents in the selected public

tertiary institutions, using the face-to-face direct delivery method or technique. Thus, out of the 346 copies of the DMSAPTIQ instrument that was distributed to the respondents in the selected public tertiary institutions in Rivers State, only 310 copies of the DMSAPTIQ instrument were properly filled or completed and retrieved, representing approximately a 90% response rate. Thus, the 310 validly retrieved copies of the DMSAPTIQ instrument were used for final data analysis.

Method of Data Analysis: The collected data from the administered DMSAPTIQ instrument were scored, tabulated, coded, and analyzed using Pearson Product Moment Correlation (PPMC) to answer questions 1 and 2, while Multiple Regression Analysis (MRA) was used to answer research question 3 at 0.05 level of significance. All analysis were carried out using the Statistical Package for Social Science (SPSS) Version 25.

Results

Research Question One: What is the relationship between database management systems and decision-making process in the tertiary institutions in Rivers State?

Table 2: Summary of Pearson Product Moment Correlation on Database Management Systems and Decision-Making Process in the tertiary institutions in Rivers State

Variable	Mean	Std. Dev.	N	r	p-value	Decision
Database Management Systems	3.85	0.72	310	-	-	Strong Relationship
Decision-Making Process	3.92	0.68	310	0.789	0.000	Strong Relationship

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

Decision Rule: *VS (Very Strong)* $r = 0.800-1.00$, *S (Strong)* $r = 0.600-0.799$, *M (Moderate)* $r = 0.400-0.599$ while *W (Weak)* $r = \leq 0.399$

Source: SPSS Output, 2024.

The analysis in Table 2 reveals a strong, positive, and statistically significant correlation between Database Management Systems (DBMS) and the decision-making process in tertiary institutions in Rivers State ($r = .789$, $p < .01$). This indicates that improved DBMS implementation is strongly associated with enhanced decision-making in the institutions. The result in Table 2 further means or implies that in the surveyed tertiary institutions in Rivers State, higher levels of DBMS implementation or effectiveness are consistently associated with more robust and presumably more data-

driven decision-making practices. Thus, the strong correlation implies DBMS are vital for evidence-based leadership in tertiary institutions. Administrators must prioritize investment in these systems to improve the speed, accuracy, and strategic quality of institutional decisions in tertiary institutions in Rivers State.

Research Question Two: What is the relationship between database management systems and productivity in the tertiary institutions in Rivers State?

Table 3: Summary of Pearson Product Moment Correlation on Database Management Systems and Productivity in the tertiary institutions in Rivers State

Variable	Mean	Std. Dev.	N	r	p-value	Decision
Database Management Systems (DBMS)	3.85	0.72	310	-	-	Strong Relationship
Productivity	4.05	0.65	310	0.732	0.000	Strong Relationship

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

Decision Rule: *VS (Very Strong)* $r = 0.800-1.00$, *S (Strong)* $r = 0.600-0.799$, *M (Moderate)* $r = 0.400-0.599$ while *W (Weak)* $r = \leq 0.399$

Source: SPSS Output, 2024.

Table 3 indicated that a strong, positive, and statistically significant relationship between Database Management Systems and productivity ($r = .732$, $p < .01$). This suggests that effective use of DBMS is strongly linked to higher levels of productivity in the tertiary institutions. Table 3 similarly reveals a strong, positive, and significant correlation ($r = .732$, $p < .001$) between DBMS and productivity. This finding suggests that the adoption and effective use of DBMS are closely linked to enhanced operational output and efficiency within the administrative functions of these institutions. Thus, this finding implies

DBMS are critical operational assets. To boost efficiency and output, institutions should focus on integrating and optimizing database systems to automate workflows and reduce administrative bottlenecks in tertiary institutions productivity in Rivers State.

Research Question Three: How does database management systems relate to the joint variables of administrative performance variables (decision making process and productivity) in the tertiary institutions in Rivers State?

Table 4: Multiple Regression Analysis on how database management systems relate to the joint variables of administrative performance variables (decision making process and productivity) in the tertiary institutions in Rivers State

Model	R	R ²	Adj. R ²	Std. Error	R ² Change	F Change	df1	df2	Sig. F Change
1	0.847	0.718	0.715	0.421	.718	256.37	2	307	.000
Predictors	Unstd. B	Std. Error	Std. Beta	t	p-value	Decision			
(Constant)	0.512	0.187	-	2.738	.007	Significant			
Decision-Making	0.462	0.058	.463	7.966	< .001	Significant			
Productivity	0.398	0.062	.381	6.419	< .001	Significant			

Dependent Variable: Administrative Performance

Source: SPSS Output, 2024.

Table 4 presents the results of a multiple regression analysis where both decision-making and productivity were entered as joint predictors (independent variables) of DBMS (the dependent variable). The model is highly significant ($F = 256.37$, $p < .001$) and accounts for a substantial 71.8% (Adjusted $R^2 = .715$) of the variance in DBMS effectiveness. The standardized coefficients (Beta) show that both predictors make significant unique contributions: the decision-making process ($\beta = .463$, $p < .001$) has a slightly stronger relative influence than productivity ($\beta = .381$, $p < .001$). This confirms that DBMS is simultaneously and independently related to both key dimensions of administrative performance. The model implies DBMS is a foundational, dual-purpose technology. Strategic technology planning must concurrently target decision-support capabilities and process automation to achieve comprehensive administrative performance gains.

The regression model in Table 4, is significant ($F=256.37$, $p<.01$), with DBMS explaining 71.8% of the variance in administrative performance. Both decision-making ($\beta=.463$, $p<.01$) and productivity ($\beta=.381$, $p<.01$) are significant positive predictors, with decision-making having a

stronger relative influence. Additionally, the significant model ($F(2,307)=256.37$, $p<.001$, $R^2=.718$) demonstrates that the joint predictors explain 71.8% of DBMS effectiveness. Both decision-making ($\beta=.463$, $p<.001$) and productivity ($\beta=.381$, $p<.001$) are significant unique contributors, with decision-making exerting a stronger relative influence. Thus, the model implies that enhancing administrative performance is best achieved by strategically investing in DBMS to primarily elevate data-driven decision-making, while simultaneously leveraging its power to automate and streamline core productive workflows.

Finally, the findings (i.e., Tables 2-4) imply that strategic investment in database management systems (DBMS) is crucial for enhancing both decision-making quality and operational productivity in tertiary institutions in Rivers State. Hence, it behooves or rests on administrators of tertiary institutions to pragmatically, timely, and effectively prioritize DBMS development as a core strategy for comprehensive administrative performance improvement and institutional effectiveness in Rivers State.

Discussion of Findings

The result in Table 2 revealed that the strong, positive, and significant

correlation ($r = .786$, $p < .001$) between Database Management Systems (DBMS) and the decision-making process in Rivers State's tertiary institutions aligns with evolving research on digital transformation in Nigerian higher education. This finding empirically supports the argument by Okon and Effiong (2024) that the strategic integration of information systems is critical for mitigating information chaos and enhancing managerial agility in Nigerian universities. The result corroborates the view that DBMS provide the structured data infrastructure necessary for moving from ad-hoc, experience-based decisions to systematic, evidence-based governance. As noted in a study on administrative challenges in South-South Nigeria, a lack of integrated data systems often leads to delayed and inconsistent decisions (Ejeka & Wodi, 2023). Therefore, the robust correlation here suggests that where DBMS are effectively implemented, they significantly elevate the quality and reliability of administrative decision-making by providing timely and accurate information, a key success factor highlighted in indigenous studies on educational management.

Furthermore, the strong, positive correlation ($r = .786$, $p < .001$) between DBMS and the decision-making process in tertiary institutions in Rivers State (Table 2), strongly aligns with contemporary literature on data-driven management. Recent studies underscore that modern DBMS transform raw data into accessible, high-quality information, which is the cornerstone of evidence-based practice (Sharda et al., 2021). This finding supports the view that institutional leaders are no longer reliant on intuition or fragmented reports; instead, integrated databases provide a "single source of truth" that enhances the speed, accuracy, and confidence of administrative decisions

(Almeida & Calistru, 2022). The strength of the correlation suggests that in Rivers State's tertiary institutions, DBMS are effectively reducing information asymmetry and uncertainty, key barriers to effective decision-making identified by Khan et al. (2023).

The result in Table 3 revealed that the significant positive relationship ($r = .732$, $p < .001$) between DBMS and institutional productivity reflects findings from Nigerian literature on administrative efficiency. This correlation can be interpreted through the lens of process optimization and resource management. Adeyemi and Oguntimehin (2022), in their study on ICT adoption in Nigerian tertiary institutions, found that automation of core administrative processes directly reduces manual labor, minimizes errors, and accelerates service delivery—key dimensions of productivity. The result indicates that DBMS in Rivers State institutions are likely streamlining operations such as student registration, personnel records, and financial management, thereby freeing human resources for more strategic tasks and reducing operational bottlenecks. This echoes the work of Nwankwo and Eze (2023), who emphasized that technology-mediated workflows are essential for Nigerian institutions to cope with expanding enrollments and limited resources, ultimately leading to measurable gains in administrative output and institutional throughput.

Furthermore, the result in Table 3 indicated that the significant correlation between DBMS and productivity ($r = .732$, $p < .001$) corroborates established information systems theory on technology's role in operational efficiency. This result can be explained through the lens of task-technology fit and process automation. A

well-implemented DBMS automates routine data-handling tasks, such as student records management, payroll, and inventory tracking, that were previously manual and time-consuming (García et al., 2022). This automation directly frees human resources for higher-value tasks, reducing errors and processing times, thereby boosting institutional throughput. Furthermore, as Parnell (2023) notes, reliable and instantaneous data access minimizes downtime and delays in administrative workflows, creating a more agile and responsive organizational environment, which is a direct contributor to measured productivity gains.

The multiple regression analysis in Table 4, provides the most comprehensive insight, revealing that DBMS explains a substantial 71.8% of the variance in administrative performance through its joint relationship with decision-making and productivity. This powerful model ($F = 256.37$, $p < .001$) underscores DBMS as a foundational, multi-functional technology rather than a tool with isolated benefits. The significant unique contributions of both decision-making ($\beta = .463$, $p < .001$) and productivity ($\beta = .381$, $p < .001$) validate an integrated model of administrative performance championed by indigenous scholars. Akinfolarin and Ige (2024) argue that effective educational administration in Nigeria requires a dual focus on "strategic intelligence" (enhanced decision-making) and "operational excellence" (improved productivity). The slightly higher beta weight for decision-making suggests that in the complex Nigerian tertiary education context, often characterized by dynamic policy environments and stakeholder pressures, the informational and analytical power of DBMS to support strategic choices is marginally more critical for overall performance. This finding aligns with Uko

and Isangedighi (2023), who posited that while efficiency is vital, the capacity for informed, agile decision-making is the ultimate differentiator for institutional leadership in the face of contemporary challenges.

Furthermore, the multiple regression analysis (Table 4) provides a more nuanced and powerful insight, revealing that DBMS collectively explains 71.8% of the variance in administrative performance through its relationship with decision-making and productivity. The significance of the overall model ($F = 256.37$, $p < .001$) confirms that DBMS is a foundational technology that underpins a modern administrative ecosystem, rather than a tool with isolated benefits. The significant beta weights for both decision-making ($\beta = .463$) and productivity ($\beta = .381$) indicate that these two variables are not only correlated with DBMS but also provide *unique* explanatory power. This aligns with the integrated view proposed by McLean and DeLone (2023), who argue that the net benefits of information systems manifest simultaneously in improved decision quality ("doing the right things") and enhanced operational efficiency ("doing things right"). The slightly higher beta for decision-making suggests that in the context of tertiary education management, the informational and strategic value of DBMS may be marginally more critical for overall administrative performance than its pure efficiency gains, a point emphasized in recent studies on strategic IT in higher education (Okon & Effiong, 2024).

Conclusion

In conclusion, this study provides robust empirical evidence on the pivotal role of Database Management Systems (DBMS) in enhancing administrative performance within tertiary institutions in Rivers State. The findings from the correlation analyses in

Tables 2 and 3 reveal strong, statistically significant relationships, demonstrating that DBMS are independently and positively associated with both the quality of the decision-making process ($r = .786$) and institutional productivity ($r = .732$). These results affirm that DBMS serve as critical technological infrastructure, enabling more informed, evidence-based decisions while simultaneously driving operational efficiency through automation and improved data access.

The multiple regression analysis in Table 4 offers a more sophisticated synthesis of these relationships. It confirms that DBMS, through its joint association with decision-making and productivity, is a foundational driver of overall administrative effectiveness, accounting for 71.8% of its variance. The significant beta weights for both predictors indicate they provide unique explanatory power, with the decision-making process exhibiting a slightly stronger relative influence. This integrated model underscores that DBMS is not a tool with singular benefits but a core strategic asset that simultaneously enhances managerial intelligence and operational throughput. Thus, for tertiary institutions in Rivers State, strategic, targeted investment in and optimization of DBMS is not merely an IT concern but a vital imperative for achieving comprehensive administrative excellence and institutional competitiveness.

Conclusively, this study confirms DBMS are a critical strategic asset in Rivers State's tertiary institutions. They strongly enhance both decision-making ($r=.786$) and productivity ($r=.732$), jointly explaining 71.8% of administrative performance. Strategic investment in DBMS is therefore essential for comprehensive institutional excellence. Instructively, the study deduces that strategic investment in DBMS is imperative, as it simultaneously and

powerfully enhances both decision-making and operational productivity, forming the cornerstone of administrative excellence in tertiary institutions.

Recommendations

Based on the results of findings, the following are recommendations for future implementation.

1. Tertiary institution governing councils in Rivers State should formulate and mandate a Data-Driven Decision-Making (DDDM) Policy. This policy must require that all significant administrative, academic, and strategic decisions be substantiated by reports and analytics generated directly from the institutional DBMS, moving governance from intuition-based to evidence-based practices.
2. The state's Ministry of Higher Education, in partnership with institutional management, should establish a DBMS-Enabled Process Audit and Automation Fund. This fund would support periodic audits of key administrative workflows (e.g., student records, payroll, procurement) to identify bottlenecks, with grants specifically allocated for re-engineering and automating these processes to directly boost institutional throughput.
3. The management in tertiary institutions, individually or collectively, adopt an Integrated Performance Enhancement Strategy for technology investment. This strategy should explicitly budget for and prioritize DBMS modules and training that concurrently serve dual purposes: Advanced Analytics and Business Intelligence (for decision-making) and Robust Process Automation (for productivity), recognizing that maximizing administrative performance requires synergistic development of both capabilities.

Contribution to Knowledge

1. This study contributes to the Technology-Organization-Environment (TOE) framework by quantifying how a specific technological context (DBMS) directly influences a core organizational process (decision-making) in the unique Nigerian higher education setting.
2. The moves beyond generic claims of "improved efficiency" to contribute a context-specific metric of association, demonstrating that DBMS investment is a key predictor of operational output, thereby enriching the discourse on educational productivity and ICT ROI in developing economies.
3. The regression model makes a significant methodological and theoretical contribution by demonstrating that decision-making and productivity are not just correlated with DBMS but are its significant and distinct joint predictors, collectively explaining 71.8% of administrative performance variance.

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