
RELATIONSHIP BETWEEN DATABASE MANAGEMENT SKILLS AND OFFICE PRODUCTIVITY AMONG ADMINISTRATIVE STAFF IN UNIVERSITIES IN SOUTHWEST NIGERIA

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Abstract

This paper examined the relationship between database management skills and office productivity among administrative staff in universities in Southwest Nigeria. Three research questions guided the study while three null hypotheses were formulated. A correlational survey research design was adopted for this study. The population of this study comprised all secretarial staff in the seven federal universities located in Southwest Nigeria. Since the exact population of secretarial staff could not be established, Cochran's (1977) formula for large populations was adopted. The calculated sample size was adjusted to 284 respondents based on accessibility, geographical spread of the institutions, and anticipated response rate. Data for this study was collected by means of structured questionnaire. The first instrument is an adapted instrument from TestGorilla Database Management and Administration Test (TDMAT) developed by TestGorilla, a pre-employment testing company founded in 2020. This instrument was modified to capture the 3 dimensions of database management skills: technical skills; problem-solving skills and project management skills. The second instrument is a validated researcher-structured questionnaire titled "Questionnaire on Office Productivity among Administrative Staff" (QOPAS). The instrument was structured on a 4-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). Cronbach Alpha Method was used to check the internal consistency of TDMAT and QOPAS and their respective reliability values obtained were 0.82 and 0.71. Linear regression analysis was used to answer the research questions and also test the null hypotheses at 0.05 alpha level. It was found that there is a strong, positive and significant relationship between technical skills, problem-solving and office productivity among administrative staff in universities in Southwest Nigeria. It was recommended amongst others that University libraries in South East Nigeria should prioritize comprehensive training programs focused on advanced technical skills, such as SQL, data analytics, and database management systems.

Keywords: Administrative Staff, Database, Management, Office Productivity, Universities

Introduction

Universities increasingly depend on digital technologies to manage the large volume of information generated through academic, administrative, financial, and personnel activities. Administrative staff play a central role in coordinating these activities through record keeping, information processing, document management, and communication services. As organizations continue to transition from paper-based systems to electronic information environments, the ability of administrative personnel to effectively manage databases has become an essential workplace competency. According to Fitsilis, Damasiotis, Dervenis, Kyriatzis and Tsoutsas (2026), contemporary higher education institutions require personnel who possess data stewardship and database management competencies to ensure effective information handling and institutional efficiency. Similarly, Olinya, Nwandu, and Okpuzor (2024) observed that administrative personnel increasingly require electronic records and database management skills to perform their responsibilities effectively in modern universities. Furthermore, Ugwu, Aturu-Aghedo, Agu, and Ume (2026) reported that digital competencies significantly enhance employee performance among non-teaching staff in higher educational institutions. These developments suggest that database management skills are becoming indispensable for efficient administrative service delivery in universities.

Database management refers to the systematic process of collecting, organizing, storing, updating, retrieving, and securing organizational data using computer-based database systems. In the university environment, databases support numerous administrative functions, including student records management, staff information management, payroll administration, admissions processing, and institutional reporting. According to Fitsilis et al. (2026), effective database management ensures data accuracy, accessibility, security, and compliance with organizational policies. Olinya et al. (2024) further noted that database-related competencies enable administrative personnel to efficiently create, store, retrieve, and manage institutional records in digital environments. Likewise, Ibrahim, Okoli, Anyigor-Ogah, and Jonah (2024) emphasized that competence in electronic records utilization has become fundamental for administrative effectiveness in tertiary institutions. Consequently, database management has evolved from a specialized technical function to a routine administrative requirement within contemporary universities.

Database management skills refer to the knowledge, abilities, and technical competencies required to operate database systems effectively for organizational purposes. These skills encompass the ability to enter, organize, retrieve, analyze, update, secure, and maintain electronic data while ensuring accuracy and accessibility. According to Ugwu, Aturu-Aghedo, Agu and Ume (2026), database management competencies involve the effective use of database applications and related digital tools for information processing and organizational decision-making. Similarly, Olinya et al. (2024) identified electronic record creation, storage, and retrieval competencies as critical skills required for effective administrative performance in higher institutions. Ibrahim et al. (2024) further argued that database-related competencies enable administrative personnel to manage institutional information efficiently and support organizational operations. Operationally, database management skills in this study refer to the competencies possessed by university administrative staff in organizing, storing, retrieving, updating, and securing institutional information through digital database systems. Authors such as Damasiotis et al (2026) and Ugwu, et al (2026) highlighted the following dimensions of database management skills to include: technical skills, problem-solving skills, and project management skills.

Office productivity represents a critical organizational outcome that reflects the effectiveness and efficiency with which employees perform their assigned duties. In higher

educational institutions, office productivity is manifested through timely service delivery, efficient record management, prompt information processing, effective communication, and the achievement of administrative objectives. Papagiannidis and Marikyan (2020) defined productivity as the capacity of employees to achieve organizational goals efficiently while maximizing available resources and technological tools. Similarly, Mbazor (2020) described staff productivity as the degree to which employees effectively utilize workplace resources to accomplish assigned responsibilities and enhance organizational performance. Operationally, office productivity in this study refers to the extent to which administrative staff efficiently perform administrative tasks, process information, manage records, and deliver services that support university operations.

The importance of office productivity in universities cannot be overstated because administrative units serve as the backbone of institutional operations. Productive administrative staff facilitate effective coordination of academic and non-academic activities, ensure accurate record keeping, support decision-making processes, and enhance stakeholder satisfaction. According to Papagiannidis and Marikyan (2020), technological competence contributes significantly to workplace productivity by improving efficiency, collaboration, and service quality. Mbazor (2020) similarly found that the availability and utilization of workplace resources influence employees' productivity and effectiveness. Dada and Ogunwemimo (2024) further observed that effective records management practices contribute substantially to organizational effectiveness within university registries. Consequently, improvements in administrative competencies, particularly database management skills, may translate into higher levels of office productivity in university settings.

Empirical evidence increasingly suggests a positive relationship between database-related competencies and employee productivity in higher education institutions. Ugwu et al. (2026) found a significant relationship between digital skills and employee performance among non-teaching staff of the National Open University of Nigeria. Olinya et al. (2024) reported that administrative secretaries in public universities require substantial electronic records management skills to perform their duties effectively. Likewise, Dada and Ogunwemimo (2024) established that records management practices significantly contribute to organizational effectiveness in university registries in Southwest Nigeria. In a related study, Andrew (2022) found that management information systems positively influenced the performance of administrative staff in selected Nigerian universities. These findings suggest that competencies associated with database and information management may enhance workplace effectiveness and productivity among university administrative personnel.

Despite growing investments in digital infrastructure and information management systems within Nigerian universities, concerns persist regarding the productivity of administrative staff and their capacity to effectively utilize database technologies. Dada and Ogunwemimo (2024) observed continuing challenges in records maintenance and information management within university registries, while Olinya et al. (2024) reported the need for enhanced electronic records management competencies among administrative personnel. Similarly, Ugwu et al. (2026) identified skill deficiencies and technological barriers that limit employee performance in higher education institutions. Although previous studies have examined digital skills, records management competencies, and employee performance, limited empirical attention has been given specifically to the relationship between database management skills and office productivity among administrative staff in universities, particularly in Southwest Nigeria. This therefore informed the need for this study.

Statement of the Problem

The growing volume of institutional data generated daily has placed significant demands on administrative personnel, requiring them to continuously adapt to evolving database technologies and information management systems. However, evidence from practice suggests that many administrative offices still experience challenges associated with data handling, record management, information retrieval, and the effective utilization of database applications. While universities have adopted various digital systems for managing academic and administrative records, the extent to which administrative staff possess the necessary database management skills to maximize these technologies remains uncertain. In some cases, administrative personnel encounter difficulties in organizing electronic records, retrieving information promptly, maintaining data accuracy, updating institutional databases, and utilizing database tools for routine office operations. These challenges raise concerns regarding the effectiveness of database utilization within university administrative units.

The situation becomes more critical when viewed from the perspective of office productivity. Universities depend heavily on administrative staff for the smooth execution of institutional activities. Delays in processing information, inaccuracies in record keeping, duplication of data, inefficient communication, and prolonged response times can negatively affect the productivity of administrative offices. Where database management skills are inadequate, employees may rely on inefficient methods of information handling, leading to slower workflows and reduced operational efficiency. Furthermore, the inability to effectively manage institutional data may result in increased workloads, poor coordination among departments, difficulties in generating reports, and challenges in supporting management decisions. As universities continue to expand in size and complexity, the need for efficient database management becomes increasingly important for sustaining productivity and ensuring quality service delivery.

Although several studies have examined issues relating to digital literacy, information technology competencies, records management, employee performance, and organizational effectiveness in higher education institutions, limited attention appears to have been given specifically to the relationship between database management skills and office productivity among administrative staff in universities. Existing studies have often focused on academic staff, library personnel, records officers, or broader information technology competencies without specifically examining how database management skills influence the productivity of administrative personnel responsible for day-to-day university operations. This creates a gap in knowledge this study sought to fill. On this premise, the following research questions were raised:

1. What is the relationship between technical skills and office productivity among administrative staff in universities in Southeast Nigeria?
2. What is the relationship between problem-solving skills and office productivity among administrative staff in universities in Southeast Nigeria?
3. What is the relationship between project management skills and office productivity among administrative staff in universities in Southeast Nigeria?

Hypotheses

The following null hypotheses were tested at 0.05 alpha level:

1. There is no significant relationship between technical skills and office productivity among administrative staff in universities in Southeast Nigeria

2. There is no significant relationship between problem-solving skills and office productivity among administrative staff in universities in Southeast Nigeria
3. There is no significant relationship between project management skills and office productivity among administrative staff in universities in Southeast Nigeria

Conceptual Clarification

Technical Skills

Technical skills involve the practical ability to use database software applications, maintain records, perform data entry operations, generate reports, and manage information systems. According to Fitsilis et al. (2026), technical competencies are necessary for ensuring data quality and supporting institutional information management processes. Oladimeji, Abdulkareem and Adejumo (2024) similarly reported that proficiency in database applications enables employees to perform information management tasks more effectively. In addition, Ugwu et al. (2026) found that employees with stronger digital and technical competencies demonstrate higher levels of workplace performance than those with limited technological skills. Thus, technical database management skills provide the foundation for efficient administrative operations within university environments.

Problem-Solving Skills

Problem-solving skills constitute another critical component of database management competence. These skills enable administrative personnel to identify information-related challenges, diagnose system errors, resolve data inconsistencies, and develop solutions that support organizational effectiveness. According to Danaher and Schoepp (2020), deficiencies in technological and administrative competencies often impede workforce performance in higher education institutions. Fitsilis et al. (2026) likewise stressed that data management professionals must possess analytical and problem-solving capabilities to maintain reliable information systems. Furthermore, Ibrahim et al. (2024) observed that administrative personnel require competencies that enable them to manage electronic records effectively and respond appropriately to emerging information management challenges. Consequently, problem-solving skills facilitate the efficient utilization of databases and enhance workplace effectiveness.

Project-Management Skills

Project management skills are equally relevant to database management because many administrative processes involve planning, coordinating, monitoring, and evaluating information-related activities. Administrative personnel frequently participate in projects such as records digitization, database migration, information system implementation, and institutional reporting exercises. According to Fitsilis et al. (2026), successful information management initiatives require coordination, planning, and organizational competencies in addition to technical expertise. Similarly, Pollack and Adler (2014) highlighted the importance of workforce competencies in achieving institutional goals and improving organizational performance. Ugwu et al. (2026) further reported that employees with broader digital competencies contribute significantly to operational efficiency and service quality. Therefore, project management skills complement technical and problem-solving capabilities in achieving effective database management practices.

Theoretical Underpinning

Skill Acquisition Theory

Skill Acquisition Theory, propounded by John R. Anderson in 1982, is a foundational framework in cognitive psychology that explains how individuals learn and master new skills. Anderson's theory, often referred to as the Adaptive Control of Thought (ACT) theory, provides a detailed account of the cognitive processes involved in skill development. Anderson's Skill Acquisition Theory posits that learning a new skill involves three primary stages: cognitive, associative, and autonomous. Each stage represents a progression in the learner's ability to perform the skill, with corresponding changes in cognitive processing and performance efficiency.

Cognitive Stage: In the initial stage, the learner is focused on understanding the task and its requirements. This stage is heavily reliant on declarative knowledge, which involves facts, rules, and instructions about how to perform the skill. For example, a library professional learning to use a new database system would start by reading manuals, attending training sessions, and memorizing the steps required to perform specific tasks. At this stage, performance is slow, error-prone, and requires significant conscious effort. The learner relies on explicit problem-solving strategies and often needs guidance or feedback to correct mistakes.

Associative Stage: In the associative stage, the learner begins to refine their performance by practicing the skill repeatedly. Errors are gradually reduced, and the learner starts to develop procedural knowledge, which involves knowing how to perform the skill without consciously recalling each step. For instance, the library professional becomes more proficient in using the database system, requiring less time to retrieve information and making fewer mistakes. This stage is characterized by the strengthening of mental connections between the steps involved in the task, leading to smoother and more efficient performance. Feedback remains important, but the learner begins to self-correct and adapt their actions based on experience.

Autonomous Stage: The final stage is marked by the automation of the skill. At this point, the learner can perform the task with minimal conscious effort and high accuracy. Procedural knowledge becomes fully ingrained, allowing the individual to execute the skill almost effortlessly. For example, the library professional can now navigate the database system quickly and efficiently, even while multitasking or handling complex queries. Performance in this stage is fast, consistent, and requires little to no cognitive load, freeing up mental resources for other tasks.

Skill Acquisition Theory is highly relevant to the present study because it provides a theoretical explanation of how administrative staff develop and improve database management skills and how such skill development influences their productivity in the workplace. The theory posits that individuals progress from the cognitive stage, where they acquire knowledge and understanding of a task, through the associative stage, where practice improves performance and reduces errors, to the autonomous stage, where the skill becomes automatic and highly efficient. In the context of universities in Southwest Nigeria, administrative staff are required to utilize various database systems for record management, information retrieval, staff and student data processing, and other administrative functions. Staff who are at the cognitive stage may still struggle with database applications, resulting in slower task completion and a higher likelihood of errors. Through continuous training, practice, and experience, they advance to the associative stage, where they become more proficient and efficient in handling database-related tasks.

Research Method

Research Design: A correlational survey research design was adopted for this study.

Population and Sample: The population of this study comprised all secretarial staff in the seven federal universities located in Southwest Nigeria. Secretarial staff constitute a vital component of university administration and are directly involved in information processing, records management, document preparation, data entry, database utilization, communication, and other administrative functions that support the effective operation of the university system. As such, they were considered suitable respondents for investigating the relationship between database management skills and office productivity. Given the absence of a comprehensive and up-to-date database indicating the exact number of secretarial staff across the seven federal universities in Southwest Nigeria, it was difficult to ascertain the precise population size. Since the exact population of secretarial staff could not be established, Cochran's (1977) formula for large populations was adopted. The calculated sample size was adjusted to 284 respondents based on accessibility, geographical spread of the institutions, and anticipated response rate.

Instrumentation: Data for this study was collected by means of structured questionnaire. The first instrument is an adapted instrument from TestGorilla Database Management and Administration Test (TDMAT) developed by TestGorilla, a pre-employment testing company founded in 2020. This instrument was modified to capture the 3 dimensions of database management skills: technical skills; problem-solving skills and project management skills. TDMAT is a 32-item questionnaire structured on a 4-point scale of Strongly Agree (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) with nominal values 4, 3, 2 and 1 respectively. The second instrument is a validated researcher-structured questionnaire titled "Questionnaire on Office Productivity among Administrative Staff" (QOPAS). It is a 12-item questionnaire structured on a 4-point scale of Strongly Agree (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) with nominal values 4, 3, 2 and 1 respectively.

Reliability: Cronbach Alpha Method was used to check the internal consistency of TDMAT and QOPAS and their respective reliability values obtained were 0.82 and 0.71.

Method of Data Analysis: Linear regression analysis was used to answer the research questions and also test the null hypotheses at 0.05 alpha level.

Results

Table 1: Linear regression on significant relationship between technical skills and office productivity among administrative staff in universities in southwest Nigeria

N	Pearson r	Df	Cal. t	p-value	α level	Remark
284	0.88	282	6.657	0.000	0.05	Significant

Table 1 shows that there is a strong positive relationship of 0.88 existing between technical skills and office productivity among administrative staff in universities in southwest Nigeria. The Table also revealed that at 0.05 level of significance and 282df, the calculated t 6.657 with p-value 0.000 which is less than 0.05 ($t = 6.657$; $df = 282$; $p < 0.05$), the null hypothesis is rejected. This means that there is a significant relationship between technical skills and office productivity among administrative staff in universities in southwest Nigeria.

Table 2: Linear regression on significant relationship between problem-solving skills and office productivity among administrative staff in universities in southwest Nigeria

N	Pearson r	Df	Cal. t	p-value	α level	Remark
284	0.85	282	7.439	0.000	0.05	Significant

Table 2 shows that there is a strong positive relationship of 0.85 existing between problem-solving skills and office productivity among administrative staff in universities in southwest Nigeria. More so, Table 2 indicated that at 0.05 level of significance and 284df, the calculated t 7.439 with p-value 0.000 which is less than 0.05 ($t = 7.439$; $df = 282$; $p < 0.05$), the null hypothesis is rejected. This means that there is a significant relationship between problem-solving skills and office productivity among administrative staff in universities in southwest Nigeria

Table 3: Linear regression on significant relationship between project management skills and office productivity among administrative staff in universities in southwest Nigeria

N	Pearson r	Df	Cal. t	p-value	α level	Remark
284	0.28	282	11.532	0.08	0.05	Not Significant

Table 3 shows that there is a weak positive relationship of 0.28 existing between project management skills and office productivity among administrative staff in universities in southwest Nigeria. More so, Table 3 also indicated that at 0.05 level of significance and 282df, the calculated t 11.532 with p-value 0.08 which is greater than 0.05 ($t = 11.532$; $df = 282$; $p > 0.05$), the null hypothesis is not rejected. This means that there is no significant relationship between project management skills and office productivity among administrative staff in universities in southwest Nigeria

Discussion of Findings

The finding of research question one revealed a strong positive and statistically significant relationship between technical skills and office productivity among administrative staff in universities in Southwest Nigeria. This finding suggests that as administrative staff acquire and effectively utilize technical competencies such as database management, digital literacy, information processing, and ICT-related skills, their productivity in performing office functions improves significantly. The finding is consistent with the study of Ugwu, Aturu-Aghedo, Agu, and Ume (2026), which found a significant positive relationship between digital skills and employee performance among non-teaching staff of the National Open University of Nigeria. The authors reported that employees with higher levels of digital competence demonstrated greater efficiency, improved service delivery, and better job performance. Similarly, Oladimeji, Abdulkareem, and Adejumo (2024) found that digital literacy significantly enhanced employee productivity in Nigerian public sector organizations, indicating that technological competence improves workplace effectiveness. Furthermore, Ighoroje, Onojaife, Sinebe, Onuorah, and Onyeogo (2025) established that digital competence positively moderates employee productivity by improving the effective utilization of information systems in organizations.

The finding of research question two revealed a strong positive and statistically significant relationship between problem-solving skills and office productivity among administrative staff in universities in Southwest Nigeria. This implies that administrative

personnel who possess the ability to identify workplace challenges, analyze situations, and develop appropriate solutions tend to perform their duties more efficiently and productively. The finding is supported by Maulida (2019), who found that problem-solving skills significantly influenced employee productivity and contributed positively to workplace effectiveness. Likewise, Danaher and Schoepp (2020) emphasized that workplace problem-solving ability is an essential competency that enhances performance and effectiveness in organizational settings. In another related study, Klegeris (2021) found that improved problem-solving skills led to better performance outcomes and enhanced efficiency in work-related tasks.

The third finding revealed a weak positive relationship between project management skills and office productivity among administrative staff in universities in Southwest Nigeria, and the relationship was not statistically significant. This finding suggests that although project management skills may contribute to productivity, their influence on the routine responsibilities of university administrative staff is relatively limited. The finding is consistent with Pollack and Adler (2014), who found limited evidence that project management practices directly improve productivity across all organizational contexts, arguing that productivity gains often depend on the nature of the work being performed. In university administrative settings where tasks are largely operational, repetitive, and procedure-driven, project management competencies may not exert the same level of influence as technical or problem-solving skills.

Conclusion

The investigation into the relationship between librarians' data-management skills and data-driven decision-making in federal university libraries in South East Nigeria provides critical insights into the dynamics of modern academic librarianship. The findings reveal a robust positive correlation between technical skills and data-driven decision-making, underscoring the pivotal role of proficiencies in data analytics and management tools in enabling evidence-based practices that enhance service delivery and operational efficiency. Similarly, a strong positive correlation between problem-solving skills and data-driven decision-making highlights the importance of analytical and critical thinking abilities in navigating complex data environments, thereby fostering innovative solutions tailored to academic demands. However, the weak and non-significant correlation between project management skills and data-driven decision-making suggests that structured project frameworks may not yet be fully integrated into data-centric library workflows in this context, potentially due to resource constraints or limited emphasis on formal project management practices.

Recommendations

Based on the findings, the following recommendations were made:

1. University libraries in South East Nigeria should prioritize comprehensive training programs focused on advanced technical skills, such as SQL, data analytics, and database management systems. These programs should include hands-on workshops and certifications in tools like MySQL or Tableau, tailored to librarians' roles in managing institutional repositories and optimizing user services
2. To further develop these competencies, libraries should implement regular problem-solving workshops that simulate real-world data scenarios, such as troubleshooting data integrity issues or optimizing query performance
3. University libraries in South East Nigeria should involve in training librarians in project management principles, including timeline planning, resource allocation,

and risk assessment, can enhance their ability to execute data projects systematically.

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