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Technological Resources Management and Lecturers' Sustainable Academic Productivity in Rivers State University

John Amaoge Wordu, PhD
Chika Uriri, PhD
Department of Educational Management, Faculty of Education
Rivers State University
08037512872 / 07068622354
John.wordu2@ust.edu.ng chikauriri@gmail.com

Abstract

The study examined technological resources management and lecturers' sustainable academic productivity in Rivers State University. Three research questions were posed and three hypotheses were formulated to guide this study. The research design adopted for the study is a correlational design. The population comprised all the 2152 lecturers in Rivers State University. The sample size consisted of 191 selected using Simple random sampling technique. The instrument for data collection was a questionnaire tagged "Technological Resources Management and Lecturers' Sustainable Academic Productivity Questionnaire". The reliability of the instrument was established using Cronbach Alpha method. Reliability coefficients of 0.89 were obtained of the instrument which showed the instrument was reliable. The data collected for the study were analyzed using Pearson Product Moment Correlation (PPMC). Research questions were answered based on the value and direction of the correlation coefficient while Hypotheses were tested for significance of relationship at 0.05 level of significance. Based on the findings, it was concluded that technological resources such as digital resources management, cyber security management and data analytics enhances lecturers' productivity in Rivers State Universities. Based on the conclusion, the study recommend that management of universities should provide digital resources that is accessible to all lecturers and through this unit carry out periodic check on academic staff performance in teaching.
Keywords: Technological Resources, Management, Lecturers', Sustainable Academic Productivity, University

Introduction

Educational institutions play a crucial role in shaping individuals and society by empowering people with the necessary skills, knowledge, and competencies for personal development and active participation in socio-political activities. Tertiary education is essential for advancing research, innovation, and technological development. Tertiary educational institutions are at the epic centre of intellectual exploration and innovation that directly influence the quality of human and capital development available to drive economic progress. To achieve educational

objectives, tertiary institution lecturers must effectively utilize educational resources optimally if educational objectives must be achieved. Educational resources include all physical and digital materials that support the teaching, learning and research process. Technological resources consist of computers, digital learning materials, platforms, projectors, internet connectivity and other digital resources that are pivotal in facilitating interactive learning, promoting research, and enabling a modernized educational environment that aligns with global standards. Educational technology consists of digital resources and applications that help deliver learning materials and support the learning process (Cheung & Slavin, 2013). Educational resources become an indispensable tool that significantly enhance academic productivity.

Technological resources in education comprise a diverse array of digital tools and platforms that significantly enhance students' learning outcomes as well as lecturer's productivity. The key components in technological resources include; learning management systems, interactive software, and online collaboration tools, which facilitate personalized learning and improved engagement. The integration of artificial intelligence and big data allows for tailored educational experiences, promoting critical thinking and knowledge retention (Adeshina, 2024; Guo, 2022). Undoubtedly, the array of technological resources calls for the need for optimal management for optimum results. This brings to the fore the need for effective management of digital resources in educational institutions for optimal results. Management entails the coordination of technological resources to foster the teaching and learning process. It encompasses planning, organizing and coordinating resources to enjoy a seamless teaching, learning and attainment of educational goals. Technological resource management involves the effective utilization of ICT tools to enhance teaching and learning, ensuring accessibility, and fostering value reorientation for sustainable academic productivity (Ogwuche & Elaigwu, 2022). Interestingly, the integration of digital devices, software and AI tools has reshaped the educational landscape, making learning more accessible,

interactive and productive. The integration of information communication technology in education has played crucial roles in improving teaching methodologies, fostering an interactive learning environment and in the process improving productivity (Adewale & Oluwaseyi, 2024: Lawel-Adebowale & Oyekunle, 2021). So, the attainment of productivity involves strategic planning, resource allocation and continuous evaluation.

Educational academic productivity relates to the institutional ability to achieve desired learning outcomes efficiently, with the available resources. Edo & Egwurugwu (2023), opined that academic productivity in education can be measured through the capacity of lecturers to complete the course outlines before the end of the semesters, authorship of textbooks, articles in international and national journals, quality paper presentations at conferences, workshops and proper use of modern instructional resources. It also consists of the ability to create knowledge and disseminate it within the sphere of influence.

Sustainability, in this context, implies the continuous use and development of these resources in a manner that ensures long-term benefits to the academic institution. Consequently, to achieve educational sustainability and academic productivity, there should be an effective implementation of the ICT policy (Mathew, 2022). Integration of technological resources has provided a vista of opportunities in the educational sphere for the development of the educational process. Some of the various technological resources, such as learning management systems (LMS), educational software, smart classrooms, and research databases, directly impact academic productivity by fostering collaboration, enhancing research, and improving instructional delivery. The role of management in this scenario is crucial, as it ensures these technologies are accessible, maintained, and aligned with the institution's goals to achieve sustainable academic productivity.

Technological resource management plays a crucial role in shaping the allocation of research funding for sustainable academic projects. By leveraging on data analytics and technology, educational institutions can better understand their

research landscape, identify strengths and weaknesses, and allocate resources more effectively. This in no small measure enhances funding and efficiency and promotes sustainability in research practice. Also, in the same context, the management of network and internet services in tertiary education institutions significantly influences lecturers' workload and job satisfaction. Shittu (2012), opined that the use of ICT promote teaching effectiveness and students' engagement, contributing positively to job satisfactions. The management of technological resources facilitates access to resources and teaching methods, increases efficiency and provides an online platform that enable collaboration among lecturers, which streamline research and publication (Abba, 2017: Eze & Nwanbam, 2019).

The integration of technology into educational systems has streamlined administrative processes, optimized resource allocation, and personalized learning experiences, enhancing education quality and productivity. (Ajuwon, 2024). Technology has provided leverage to enhance educational resource management and improve teaching and learning outcomes through various innovative approaches. For example, QR codes, streamline resource tracking, enhance accessibility, utilize notifications for improved management, ultimately boosting teaching and learning outcomes (Teves, 2024). In general, technology research management facilitates the flow of knowledge, improves communication, and fosters effective collaborative processes, thereby promoting innovative and effective knowledge-sharing among researchers (Hegan, 2022). The management of digital resources is vital in enhancing productivity and competitiveness. By effective utilization of digital technologies, institutions can improve academic performance, facilitates access to information, and foster a more engaging learning environment (Yesuf & Song: Ogunbodede & Oribhabor, 2022). In the realm of technological resources, cyber security is an area of great significance. In a knowledge-driven world, the impact of cyber security on maintaining academic productivity cannot be overstated. Effective management of cyber security is essential for safeguarding research data, students' sensitive information, and intellectual property, as well as

ensuring the security of online collaboration tools for both faculty and students. Effective cyber security measures are essential for fostering a secure digital environment, building trust among stakeholders (Farouk. 2024), and fostering trust in digital technologies within the academic setting, enabling sustainable productivity by protecting sensitive data and maintaining institutional integrity (Ukwuoma, Williams & choji, 2022). Consequently, effective cyber security management will build trust and confidence among scholars.

It is important to emphasize that technology resource management significantly enhances teacher job satisfaction by addressing critical factors such as leadership support, organizational commitment, and professional development. Carnicer (2022) suggests that effective management strategies can improve faculty performance and satisfaction. Studies have demonstrated that supportive leadership and reduced administrative workload positively influence job satisfaction. There is no denying the fact that the surge of technology and integration into pedagogical content has enhanced teaching, learning, and research. It has paved the way for different platforms, personalized learning, effective communication, and collaboration among teachers and students. It is enlightening to note that the advanced economy has not only integrated technological resources into the educational system but has effectively managed the resources for the attainment of educational goals, remain competitive and have global relevance. The less advanced economy, Nigeria inclusive is still hindered by the paucity of funds, corruption and maladministration. Leading to poor infrastructure development and expertise in technological development. This led to various studies on technology integration, management of technology and various challenges and the importance of integrating technology in tertiary education. Despite the importance of technological resources in academic productivity, there is a dearth of research on technological resource management and its impact on lecturer's sustainable academic productivity in Rivers State University. This study aims to bridge this gap by exploring

technological resources management and lecturer's sustainable academic productivity in Rivers State University.

Purpose of the Study

The main purpose of this study was to examine the relationship between technological resources management and lecturers' sustainable academic productivity in Rivers State Universities. Specifically, the objectives of the study are to:

1. find out the relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University.
2. ascertain the relationship between cyber security management and lecturers' sustainable academic productivity in Rivers State University.
3. determine the relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University.

Research Questions

The study seeks to provide answers to the following research questions.

1. What is the relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University?
2. What is the relationship between cyber security management and lecturers' sustainable academic productivity in Rivers State University?
3. What is the relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University?

Hypotheses

Ho_1: There is no significant relationship between digital resource management and lecturers' sustainable academic productivity in Rivers State University

Ho_2: There is no significant relationship between cyber security management and lecturers' sustainable academic productivity in Rivers State University.

Ho_3: There is no significant relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University.

Methodology

The research design adopted for the study is a correlational design. The study was conducted in Rivers State. The population of this study was 2152 lecturers in Rivers State University. The sample size for this study was 191 lecturers in Rivers State University Simple random sampling technique was adopted in selecting 9% of the population as the sample. The instrument for data collection was a questionnaire tagged "Technological Resources Management and Lecturers' Sustainable Academic Productivity Questionnaire" (TRMLSAPQ). The questionnaire consist of two parts (I and II) Part I had two sections. Section A collected demographic data of respondents while section B contained statement items on Technological Resources Management. However, Part II of the instrument contained statement items structured to elicit data on Lecturers' Sustainable Academic Productivity. The questionnaire were structured on four point rating scale, weighted as Very High Extent (4 Points), High Extent (3 Points), Low Extent (2 Points), Very Low Extent (1 point)**.** The face and content validity of the instrument was determined by an expert in Measurement and Evaluation in the Faculty of Education, Rivers State University. The test of internal consistency was carried out using Cronbach Alpha method to establish the reliability of the instrument. The instrument was administered to 10 lecturers in University of Port Harcourt, which is outside the study area. The responses of the respondents were analyzed using Cronbach Alpha statistics. Reliability coefficients of 0.89 were obtained of the instrument which showed the instrument was reliable. 191 copies of questionnaire were administered to the lecturers and were retrieved and valid for use in the study. This represents 100% retrieval rate. The data collected for the study were analyzed using Pearson Product Moment Correlation Coefficient (PPMCC). Research questions were answered based on the value and direction of the correlation coefficient while Hypotheses were tested for significance of relationship at 0.05 level of significance. This was further tested by transforming the coefficient of correlation (r) to (t) in order to establish the significance or otherwise of the r – value.

Results

Research Question One: What is the relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University?

Table 1: Relationship between Digital Resources Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum X \sum Y$	rcal	Rcrit	Remarks
Digital Resources Management (X)	191	767.13	2307.33				
				2753.07	0.83	0.195	High positive
Lecturers' Academic Productivity (Y)	191	1108.04	3228.06				

The analyses from Table 1 reveals a correlation value of r = 0.83. This value is high and positive, thus indicating that there is a high and positive relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University. The relationship here being positive indicates a proportional increase of both technological resources management and lecturers' sustainable academic productivity in Rivers State University.

Research Question Two: What is the relationship between cybersecurity management and lecturers' sustainable academic productivity in Rivers State University?

Table 2: Relationship between Cyber security Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum X \sum Y$	rcal	Rcrit	Remarks
Cyber security Management (X)	191	836.04	2741.08				
				2907.07	0.80	0.195	High positive
Lecturers' Academic Productivity (Y)	191	1108.04	3228.06				

The analyses from Table 2 reveals a correlation value of r = 0.80. This value is high and positive, thus indicating that there is a high and positive relationship between cyber security management and lecturers' sustainable academic

productivity in Rivers State University. The relationship here being positive indicates a proportional increase of both technological resources management and lecturers' sustainable academic productivity in Rivers State University.

Research Question Three: What is the relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University?

Table 3: Relationship between Data Analytics Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum X \sum Y$	rcal	Rcrit	Remarks
Data Analytics Management (X)	191	819.11	2104.01				
				2311.32	0.79	0.195	Moderate positive
Lecturers' Academic Productivity (Y)	191	1108.04	3228.06				

The analyses from Table 3 reveals a correlation value of r = 0.79. This value is moderate and positive, thus indicating that there is a moderate and positive relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University. The relationship here being positive indicates a proportional increase of both technological resources management and lecturers' sustainable academic productivity in Rivers State University.

Hypotheses

Hypothesis One: There is no significant relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University.

Table 4: Pearson Correlation Summary Analysis between Digital Resources Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum X \sum Y$	Df	A	r_{cal}	r_{crit}	t_{cal}	t_{crit}	RMKS
Digital Resources Management (X)	191	767.13	2307.33								
				2753.07	189	0.05	0.83	0.195	30.13	1.96	Sig. Reject H_0
Lecturers' Academic Productivity (Y)	191	1108.04	3228.06								

Result from Table 4 revealed that the sum and sum of squares for digital resources management are 767.13 and 2307.33 while that of lecturers academic productivity are 1108.04 and 3228.06 respectively. The sum of product of scores on the two variables is 2753.07. The correlation coefficient is 0.83 which is greater than the critical value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. Therefore, the null hypothesis of no significant relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University is rejected. This implies that there is a significant relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University.

Hypothesis Two: There is no significant relationship between cyber security management and lecturers' sustainable academic productivity in Rivers State University.

Table 5: Pearson Correlation Summary Analysis between Cyber security Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum XY$	Df	A	r_{cal}	r_{crit}	t_{cal}	t_{crit}	RMKS
Cyber security management (X)	191	836.04	2741.08								
				2907.07	189	0.05	0.80	0.195	23.51	1.96	Sig. Reject H_0
Lecturers' Academic Productivity (Y)	191	1108.04	3228.06								

Result from Table 5 revealed that the sum and sum of squares for between cyber security management in Rivers State are 836.04 and 2741.08 while that of lecturers' sustainable academic productivity are 1108.04 and 3228.06 respectively. The sum of product of scores on the two variables is 2907.07. The correlation coefficient is 0.80 which is greater than the critical value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. Therefore, the null hypothesis of no significant relationship between cyber security management and lecturers'

sustainable academic productivity in Rivers State Universities is rejected. This implies that there is a significant relationship between cyber security management and lecturers' sustainable academic productivity in Rivers State University.

Hypothesis Three: There is no significant relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University.

Table 6: Pearson Correlation Summary Analysis Data Analytics Management and Lecturers' Sustainable Academic Productivity in Rivers State University.

Variable	N	$\sum X \sum Y$	$\sum X^2 \sum Y^2$	$\sum XY$	Df	A	r_{cal}	r_{crit}	t_{cal}	t_{crit}	RMKS
data analytics management (X)	390	819.11	2104.01								
				2311.32	388	0.05	0.79	0.195	23.14	1.96	Sig. Reject H_0
Lecturers' Academic Productivity (Y)	390	1108.04	3228.06								

Source: *Researcher's Field Result, 2025*

Result from Table 6 revealed that the sum and sum of squares for between data analytics management in Rivers State are 819.11 and 2104.01 while that of lecturers' sustainable academic productivity are 1108.04 and 3228.06 respectively. The sum of product of scores on the two variables is 2311.32. The correlation coefficient is 0.79 which is greater than the critical value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. Therefore, the null hypothesis of no significant relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State Universities is rejected. This implies that there is a significant relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University.

Discussion of Findings

The finding of the study for research question one revealed that there is high and positive relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University. A proportional

positive increase of both digital resources management and lecturers' sustainable academic productivity was observed. The corresponding hypothesis one revealed that that there is a significant relationship between digital resources management and lecturers' sustainable academic productivity in Rivers State University. The analysis in table 1.4 for hypothesis one revealed a correlation coefficient of 0.83 which is greater than the critical table value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. This finding is supported by the findings of Samuel (2012) who affirmed between digital resources improve lecturers' academic productivity. The findings of the study for research question two revealed that there is a high and positive relationship between cyber security and lectures sustainable academic productivity in Rivers State University. The corresponding hypothesis two also revealed that there is a significant relationship between cyber security and lectures sustainable academic productivity in Rivers State University. Table 1.5 for hypothesis two showed a correlation coefficient of 0.80 which is greater than the critical value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. Therefore, the null hypothesis of no significant relationship between cyber security and lectures sustainable academic productivity in Rivers State University is rejected. The finding of the study for research question one revealed that there is high and positive relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University. A proportional positive increase of both data analytics management and lecturers' sustainable academic productivity was observed. The corresponding hypothesis three revealed that that there is a significant relationship between data analytics management and lecturers' sustainable academic productivity in Rivers State University. The analysis in table 1.6 for hypothesis three revealed a correlation coefficient of 0.79 which is greater than the critical table value of r (0.195) at 189 degrees of freedom under 0.05 level of significance. This finding is supported by the findings of wisdom (2012) who is of the view that data analytics as technological resource enhances lecturers' academic productivity.

Conclusion

Based on the findings, it was concluded that there is a positive relationship between the type and management of technological resources adopted by Rivers State Universities. Technological resources such as digital resources management, cyber security management and data analytics enhances lecturers' understanding of their subject matter, equips them with the right instructional materials, right places to assess information for teaching and also ensures consistency and academic productivity in Rivers State Universities.

Recommendations

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

1. Management of universities should provide digital resources that is accessible to all lecturers and through this unit carry out periodic check on academic staff performance in teaching.
2. The management of the universities should work with the various heads of departments of various departments in their schools to ensure these heads periodically update the data base of the department as well as the university.
3. The management of the university and the information and Communication Technology of the university should ensure cybersecurity and the safety of data in the university datebase

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