EFFECTS OF MODERN TECHNOLOGY AS A CORRELATE OF EFFICIENT MANAGEMENT OF UNIVERSITY DATA:

A CASE STUDY OF THE FACULTY OF EDUCATION

UNIVERSITY OF BENIN

BY

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CERTIFICATION

We the undersigned names hereby certify that this research work was carried out by EGHOSA DANIEL NOSAKHARE with Matriculation Number: EDU1803857 of the Department of Educational Management, Faculty of Education, University of Benin, Benin City in partial fulfilment of the requirements for the Award of Bachelor Degree (B.Sc. Ed) Honors in Educational Management.

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DEDICATION

This work is dedicated to God Almighty, the Alpha and Omega, for His guidance, protection, and love towards me and my family, and for preserving my life.

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ABSTRACT

This study investigated the effects of modern technology as a correlate of efficient management of university data, using the faculty of education, university of Benin as a case study. The study aimed at exploring the relationship between modern technology utilization and efficient university data management in the faculty of education, university of Benin. To achieve the purpose of the study, five research questions and a null hypothesis were raised and tested.

Adopting the descriptive survey design, data for the study were collected using two instruments which include Educational Data Checklist and Data Management Questionnaire. The reliability coefficient of the Data management Questionnaire was 0.99. The stratified random sampling techniques was employed in the selection of 42 administrative staff and 76 academic staff from a population of 61 administrative staff 195 and academic staff respectively. Data collected were analyzed using the descriptive statistics (mean and standard deviation) and Pearson's product moment correlation formula for hypotheses testing.

It was revealed by the study that there is a high availability of modern technology in the management of data in the faculty of education university of Benin. The study also revealed that the available modern technological facilities for data management in the

faculty of education, university of Benin are highly utilized. It was concluded that there is a significant relationship between modern technological utilization and efficient data management in the faculty of education, university of Benin. It was recommended that considering the importance and relevance of modern technological data management facilities, universities should be provided with adequate modern technological devices that facilitates efficient data management. It was also recommended that university staffs both academic and administrative should be trained on the use of recent and emerging modern technological facilities that can enhance the efficiency and effectiveness of data management.

CHAPTER ONE

INTRODUCTION

Background of the Study

Modern technology changed a lot from what we saw in the last decade or the past century. New machines and gadgets are invented to make jobs easier like never before. Akinyemi (2012) pointed out that the impact of modern technology is great and include greater efficiency, high quality products, increased productivity and convenience of operation as well as better services delivery. Modern technology refers to the application of scientific knowledge to create tools, machinery, software, and other innovative products designed to optimize and simplify life. It encompasses a wide range of fields including artificial intelligence, computer technology, information technology, mobile technology, and many more. Modern technology otherwise referred to as computer technology was described by Marshall McLuhan (1964) as an innovation that has changed the world into a global village by compressing the world into a single electronic room, where information from all nooks and crannies of the world can be exploited and disseminated or exchanged within a twinkle of an eye. To this regard, this

revolution has set afloat the communication world into an uninterrupted flow of information and data from around the world.

According to Igbe in Ugbuehi (2011), data are the raw, unorganized fact that describes an institution, person, places, things, ideas and events which becomes information after being processed. Data is a set of values or information, used for analysis, processing, or communication. It can be in form of text, numbers, images, sounds, or any other type of encoded information. University data refers to information and statistics relevant to a particular university. This can include data on enrollment, graduation rates, faculty-student ratio, financial budget, academic programs, research output, and other important metrics used to assess the university's performance and effectiveness. University data can help administrators make informed decisions regarding funding, development, and planning, while also providing potential students and stakeholders useful insight into the university's quality and reputation.

The Data Management Association (DAMA), defines data management as "the development of architectures, policies, practices, and procedures to manage the data lifecycle". Simply put, data management is the process of collecting, keeping, and using data in a cost-effective, secure, and efficient manner. Data management helps people, organizations, and connected things optimize data usage to make better-informed

decisions that yield maximum benefit. It involves the development and implementation of policies, procedures, and strategies to ensure that data is accurate, constant, secure, and accessible to authorized users. Data management is essential for organizations to make informed decisions, improve operations, and comply with regulations. University data management refers to the process of collecting, storing, organizing, and securing information related to various academic programs, student enrolment, faculty, research, and other university activities. Effective data management is essential to ensuring the institution's success in meeting its goals and providing top-notch education to students. One of the primary objectives of university data management is to improve decision-making processes by providing accurate, timely, and relevant data. It helps university administrators to monitor enrolment trends, track student performance, and make informed decisions based on the data-driven insights. By analysing data, the university administrators can identify areas that require improvement and formulate strategies to address them.

As universities continue to evolve, the amount of data is constantly increasing. This data is critical for the effective management of a university's mission, including research, teaching, learning, and administration. However, managing this data effectively has become a major challenge for universities worldwide, as they have to deal with the

ever-increasing amounts of data, the diversity of data, the complexity of data, and the need to balance data security and privacy with data access. One of the key challenges of data management in universities is the lack of a unified data management strategy, which can result in data silos that are difficult to integrate, manage, and access. Additionally, there are challenges in managing data quality, ensuring data integrity, and keeping data up to date. According to Nwankwo (1985), most of the problems confronting education institutions are due to either lack of information or poor capacity for information management.

Data management is crucial for universities as it enables better decision-making, streamlines operations, improves research quality, and enhances student engagement. Here, a solid data management framework can provide institutions with efficient and effective access to information. Furthermore, it also facilitates data-driven insights and supports better decision-making, which is vital in the current competitive environment of universities. In conclusion, managing data in universities is a complex and challenging task that needs to be addressed to achieve data efficiency and effectiveness. Therefore, universities need a comprehensive and adaptive data management strategy and a culture of data stewardship to ensure the appropriate use, security, and sharing of data across the

institution. This would help universities to unleash the power of digital transformation, foster innovation, and achieve their strategic goals.

In the present age, universities are expected to operate in a futuristic, efficient, and technologically advanced manner. Therefore, it is imperative that modern technology is incorporated into managing the vast amount of data generated by these institutions. Efficient management of university data is essential for ensuring timely, accurate and relevant information that enables informed decision-making by stakeholders, including administrators, faculty, staff, students, and external partners. The use of modern technology has been identified as a key factor in enhancing the management of data in higher education institutions. The adoption of technology-based solutions such as student management systems, learning management systems, and data analytics tools has proven to be effective in improving the efficiency of data management in universities. These solutions offer features such as real-time data access, data visualization, and data integration, which help in streamlining operations and improving decision-making. The incorporation of modern technology in university data management has also been linked to increased productivity, reduced costs, improved quality of services, and higher satisfaction rates among stakeholders. However, the effectiveness of technology adoption in university data management remains unclear.

Therefore, this study aimed at investigating the effects of modern technology as a correlate of efficient management of university data, using the university of Benin, faculty of education as a case study. It seeks to examine the extent to which technology adoption impacts the efficient management of data in the university of Benin faculty of education and identifies the critical strategies that could influence the success of technology implementation in data management.

Statement of the Problem

The availability and proper use of essential and correct data has a significant influence on the success of any educational institution. It cannot be overstated how crucial an accurate data management system is for any educational institution. The assessment of academic progress, as well as the overall effectiveness of any institution, relies heavily on the efficient management of data. To this end, Egwuyenga (2011) noted that despite the overwhelming importance of data, it has been observed that, most educational institutions have no record of relevant data when needed.

Before the introduction of modern technology, data management relies heavily on manual processes like data entry and paper works, storing of data on shelves and manual retrieval of data from shelves when needed. This procedure is time consuming and prone

to errors. It can create inefficiencies and delays in managing university data. With traditional method of data management in universities, retrieving information might not be easy. Searching for information requires going through a pile of paperwork, which is tiresome and time consuming. This can limit access to crucial information and slow down decision-making processes. Another problem of using traditional method is the issue of data security as important and confidential data are at risk of being lost, stolen, or compromised. Finally, lack of collaboration among departments is another problem encountered when using traditional method in managing university data as sharing information among departments in very slow and time consuming because it has to go through different persons before it can get to where it is needed.

As technology rapidly evolves, universities are required to adapt and integrate these technological advancements to streamline their data systems, thereby solving the problems posed by the use of traditional methods of data management. The question that arises is, to what extent does modern technology correlate with efficient management of university data? The problem at hand therefore, is to explore the impact of modern technology on the efficient management of university data, using the university of Benin faculty of education as a case study.

Research Questions

The following research questions were raised to guide the study.

1. What are the available modern technological facilities for data management used by administrative staff and lectures in the university of Benin faculty of education?
2. To what extent are the available modern technological facilities for data management utilized by administrative staff and lectures in the university of Benin faculty of education?
3. What are the constraints to the use of modern technology for data management in the faculty of education, university of Benin?
4. What are the strategies that could be employed to enhance the utilization of modern technology for data management in the faculty of education, university of Benin?
5. What is the relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin?

Research Hypotheses

Research questions 1-4 were answered directly using descriptive statistic while research question 5 was hypothesized and tested at 0.05 level of significance using Pearson's product moment correlation formula.

Ho: There is no significant relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

Purpose of the Study

The purpose of this study was to investigate the effects of modern technology usage in the management of university data, specifically within the Faculty of Education at the University of Benin. The research aimed at exploring how the use of technology correlates with efficient data management and identify the potential benefits and challenges that universities face in incorporating these modern technologies in their data management systems. This study aimed to contribute to the existing body of knowledge on the relationship between technology and data management in higher education institutions, with the hope of providing insights and recommendations for the effective use of technology to optimize data management practices in universities.

Other specific objectives include:

1. Investigate the available modern technological facilities used for data management by administrative staffs and lecturers in the university of Benin faculty of education.
2. Investigate the extent to which modern technology is utilized for data management in universities.
3. Examine possible constraints to the use of modern technology for data management in the faculty of education, university of Benin.
4. Determine the strategies that could be employed to enhance the utilization of modern technology for data management in the faculty of education, university of Benin.
5. Explore the relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

Significance of the Study

The study will be significant to educational administrators and planners, the government, lectures, students, the international organizations and future researchers in related area. This research work will offer a better understanding on the relevance of

modern technology on the efficient management of university data. The study will enlighten faculty staffs and heads of various departments within the university on the need to integrate modern technological facilities into their data management system. The study will highlight the importance of training and capacity development for both faculty members and students to maximize the benefits of modern technology for university data management. Finally, the study will contribute to the ongoing discourse on the impact of modern technology on education management, particularly in universities and serve as a reference material to other researchers in this field.

Scope and Delimitation of the Study

The scope of this study focused on the effects of modern technology as a correlate of efficient management of university data using the Faculty of Education in the University of Benin as a case study. Specifically, the study aimed at exploring the utilization of modern technology in the management of the university's data in the Faculty of Education. The study investigated how modern technology enhances the efficiency of data management in the faculty, the challenges encountered in the utilization of modern technology for data management in the faculty, and the possible solutions to these challenges. The study was delimited to the Faculty of Education in the

University of Benin. The study only covered the use of modern technology in the management of university data, and did not cover other aspects of the faculty's operations.

Operational Definition of Terms

Modern technology: This refers to the application of advanced techniques, systems, and devices in various fields such as education, healthcare, engineering, and communication.

Management: This is the process of organizing and optimizing resources, systems, and procedures in a way that helps achieve set goals and objectives.

Data: Data refers to a collection of factual information and numerical figures gathered for the purpose of reference, analysis and consultation.

University data management: This refers to the collection, storage, and processing of various academic and administrative information within a higher education institution.

CHAPTER TWO

REVIEW OF RELATED LITERATIURE

This chapter is a review of related literature on the effects of modern technology as a correlate of efficient management of university data. It was discussed as follows:

- Theoretical Framework
- Concept of Modern Technology
- Concept of Management
- Concept of Data
- Concept of University Data
- Concept of Data Management
- Concept of University Data Management
- Concept of Modern Technology for Efficient University Data Management
- Benefits of Modern Technology for University Data Management
- Problem Associated with Using Modern Technology for University Data Management
- Strategies for Improving the Use of Modern Technology for Efficient University Data Management
- Summary of Reviewed Literature

Theoretical Framework

The theoretical framework of this study was built on the Systems Theory propounded by Talcott Parsons in the year 1902. The system theory is an approach to understanding complex systems by breaking them down into their component parts and understanding how they interact with each other. The system theory concept assumes that any complex system can be understood as a collection of discrete subsystems that interact with each other. Each subsystem can be analysed separately, but the behaviour of the entire system cannot be predicted based solely on the behaviour of its individual components. According to Lanade, and Baumeister (2015), a system is composed of a whole made up of interacting parts, and therefore, systems scientist in both the natural and social sciences study the interaction between parts to better understand the complexities of reality. Thus, a system refers to set of interrelated parts that function as a whole for the sole aim of a attaining a common goal.

According to the system theory, systems can be classified into two broad categories:

i. **Close system:** A close system is a self-contained system that does not interact with any other system or environment outside itself. This type of system is considered to be static, with no change or growth over time.

ii. **Open system:** An open system is a system that interacts with its environment, allowing for exchange of information, matter, and energy between the system and its surroundings. This type of system is considered dynamic, with the potential for growth and adaptation over time.

The components of the system theory include the following:

1. **Inputs:** The resources or materials that are used in the system.
2. **Processes:** The activities that transform inputs into outputs.
3. **Outputs:** The results or products that are generated by the system.
4. **Feedback:** Information about the outputs of the system that is used to modify the inputs or processes.
5. **Control:** The mechanisms used to regulate the system, including rules, procedures, and policies.
6. **Environment:** The external factors that impact the system, such as competition, regulation, and technology.
7. **Boundaries:** The limits or scope of the system, including what is included and excluded.

The relevance of this theory to the study is that many of the problems facing the university data management system today can be resolved through systems analysis. Data management efficiency can be achieved among the various departments and units in the university whose duty is to manage and store data for the smooth operation of the institution through good relationship, collaboration and cooperation among themselves and other sub systems of the university. The system theory posits that a system is made up of interconnected and interdependent parts, and that any change in one part of the system can cause a ripple effect on other parts of the system. In the context of university data management, modern technology is one part of the system that can have a significant impact on the overall efficiency of the system. The system theory suggests that effective management requires a holistic understanding of the entire system, including all of its interconnected parts. In the context of university data management, this means that researchers must consider how modern technology interacts with other factors, such as institutional culture, governance structures, and the skills and competencies of staff.

Overall, the system theory is highly relevant to the study, as it provides a framework for understanding how technology fits into the larger system of university operations and can influence overall efficiency and effectiveness through the efficient management of data and records.

Concept of Modern Technology

Modern technology refers to advancements and innovations made in various fields such as computing, telecommunications, transportation, medicine, energy, and many others. According to Techopedia, modern technology refers to tools, machines, and systems that improve upon traditional methods and enables us to accomplish tasks that were previously impossible. Modern technology is constantly evolving set of tools, methods, and systems designed to improve the way we live, work, and communicate (Marc J. Roberts, 2003). The term modern technology also refers to the development of advanced communication and networking infrastructure that enables people and devices to connect and collaborate across geographic and cultural boundaries (world bank group). The use of advanced technology has drastically reduced the time taken to accomplish tasks that were once deemed time-consuming, complex and even impossible. For example, with the internet, information can now be accessed and shared instantly over vast distances making communication easier, cheaper and faster.

A notable impact of modern technology is the aspect of the Information Communication Technology (I.C.T), which includes a wide range of hardware, software and network resources used for communication, collaboration, data storage and processing, and information dissemination. According to Rouse, (2012) Information and

communications technology (ICT) stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, to enable users to access, store, transmit, and manipulate information. These I.C.T technologies have transformed the way people work, learn, communicate, and live their daily lives. They have made information more accessible and have redefined the boundaries of time and space, enabling people to connect and collaborate with others around the world.

Concept of Management

Management has various meaning in different context and it has been defined from different perspective. UNESCO (1979) defined management as a social process which is designed to ensure the coordination, participation, intervention and involvement of other for the effective achievement of a given or pre-determined objective. According to Griffin (1990), management is a set of activities directed at an organization's human, financial, physical and information resources with the aim of achieving organizational goals in an efficient and effective manner. Management focuses on the organization as a whole, from both short- and long-term perspectives. management is the process of forming a strategic vision, setting objectives, crafting a strategy and then implementing

and executing the strategy (Sakina, 2004). To Ogbonnaya (2004), management is regarded as a profession. In his view, management is a process that demands the performance of a specific function. Management therefore entails the planning, organizing, controlling, coordinating, directing and utilizing the human, material, information, and fiscal resources efficiently, for the effective accomplishment of predetermined goals.

Concept of Data

Data refers to the pieces of information that are collected, processed, and analyzed in order to inform decision making, research, or other activities. Data are the raw, unorganized facts that describes institutions, persons, places, things, ideas and events (Olubor, 2003). Data can appear in diverse formats such as numerical or textual on physical documents, as binary code preserved in digital storage, or as knowledge stored in an individual's cognition. In a technical sense, data denotes multiple pieces of information, while datum pertains to a singular piece of information. According to Akintola (2006) data are language, mathematical or symbols which are generally agreed upon to represent people, object, event and concepts.

Wikipedia defined data as a collection of discrete values that convey information, describing quantity, quality, fact, statistics, other basic units of meaning, or simply sequences of symbols that may be further interpreted. Data may be used to indicate abstract ideas or concrete measurements. There are several types of data, including:

1. **Numerical data:** This type of data includes numbers and includes metrics such as height, weight, and temperature.
2. **Categorical data:** This type of data includes non-numeric data and is often divided into subcategories. Examples include gender, color, and ethnicity.
3. **Ordinal data:** This type of data has a specific order or ranking to it, such as a rating system for a product or service.
4. **Time series data:** This type of data measures changes over time and includes data such as stock prices or weather patterns.
5. **Spatial data:** This type of data is associated with locations and includes data such as maps, GPS coordinates, and satellite imagery.
6. **Text data:** This type of data includes written words and phrases and includes data such as customer reviews and social media posts.
7. **Binary data:** This type of data includes only two possible values or categories, such as true or false, yes or no.

Data can be obtained through means such as assessment, examination, inquiry, or scrutiny, and is commonly depicted as numerical or textual values that can undergo additional manipulation.

Concept of University Data

University data refers to any information related to the activities and operations of a university, including its students, faculty, staff, courses, finances, and facilities. This data is essential for university administrators to make informed decisions and improve the overall operations of the institution. Data is the live wire of any educational institution as its accuracy and adequacy is vital for the proper planning and functioning of any educational system. Durosaro, (2004) maintained that, the planning and management of any nation's educational system depends greatly on the quality of data collection, analysis and storage.

University data can be quantitative or qualitative. Quantitative university data refers to numerical information that is measurable and objective, and can be quantified or verified and is amenable to statistical analysis. Examples of quantitative data are students' enrollment, test scores, demographic data etc. On the other hand, qualitative university data refers to information used for describing characteristics which cannot be

defined in numerical terms, it relates to information on objectives, structure, curriculum and pedagogy. While quantitative data defines, qualitative data describes.

Sources of university data may include administrative and student information systems, third-party sources such as national databases and surveys, and individual research studies. There are several types of university data that may be collected, including:

1. **Enrollment data:** This refers to the number of students who have officially registered and are attending the university. The data may include demographic information such as the number of international or domestic students, full-time or part-time students, or students enrolled in particular programs or courses.
2. **Financial data:** This refers to the monetary resources available to the university, such as revenue from tuition fees, donations, and grants, as well as the expenses incurred by the university, such as salaries, maintenance costs, and equipment purchases. Financial data may be evaluated based on annual or quarterly reports or audited financial statements.
3. **Payment record:** This refers to data on students' payment records, including tuition fees, room and board, and other fees. This data is important for tracking

outstanding payments and ensuring that the university is receiving the appropriate amount of revenue.

4. **Hostel accommodation data:** This refers to data on the number of students living in university-provided housing, including information on the availability, occupancy rate, and pricing of on-campus housing.
5. **Students results and test scores:** This refers to data on students' academic performance, including grades in individual courses, cumulative grade point average, and standardized test scores. The data may be used to evaluate the effectiveness of academic programs and teaching strategies, as well as to identify areas of improvement for individual students or the university as a whole.
6. **Staff and faculty data:** This refers to data on the university's employees, including the number and demographics of administrative and academic staff, faculty appointment types (tenure-track, adjunct, visiting), and staff/faculty salaries, job titles, departments, and areas of expertise.
7. **Facilities data:** This refers to data on the university's facilities and infrastructure, such as the number and size of buildings, classrooms, and laboratories, as well as information on the availability and use of equipment and technology resources.

8. **Graduation data:** This refers to data on the number and demographic characteristics of students who have completed their degree programs at the university. The data may include information on employment rates, further education pursuits, and overall satisfaction with their academic experience.

In conclusion, university data plays a vital role in informing the decision-making process of university administrators. It is essential to collect and analyse a variety of data types from different sources to gain a complete understanding of the university's operations and to identify areas for improvement.

Concept of Data Management

Data management refers to the process of collecting, storing, organizing, maintaining, and utilizing data in a way that promotes efficient and effective access, analysis, and use. The concept of data management involves the acquisition, storage, retrieval, processing, and dissemination of various forms of data, including text, images, audio, and video.

Data management refers to the processes and procedures used to acquire, organize, maintain, store, retrieve, and analyze data. It involves the development of strategies and policies to ensure that data is accurate, complete, and timely. Effective data management

is crucial for businesses and organizations as it enables them to make informed decisions based on reliable data. Techopedia explains data management as that which encompasses a variety of different techniques that facilitate and ensure data control and flow from creation to processing, utilization and deletion. Data management also helps to ensure compliance with legal and regulatory requirements, and protect data from loss or unauthorized access. Common practices in data management includes:

1. **Data governance:** Data governance refers to the overall management of data within an organization, including policies, procedures, controls, and accountability structures. This is important for ensuring that data is accurate, consistent, and secure.
2. **Data quality management:** Data quality management involves the processes, tools, and techniques used to ensure that data is accurate, complete, and consistent across an organization. Poor data quality can lead to faulty business decisions, customer dissatisfaction, and regulatory non-compliance.
3. **Data warehousing:** Data warehousing involves the process of collecting and storing data from various sources within an organization in order to facilitate analysis and reporting. This allows organizations to identify trends, make informed decisions, and improve overall business performance.

4. **Data security:** Data security refers to the measures taken to protect data from unauthorized access, use, disclosure, modification, or destruction. This includes the safeguarding of sensitive information, such as personal or financial data, intellectual property, and trade secrets.
5. **Data migration:** Data migration involves transferring data from one system to another, either during a system upgrade or a business merger or acquisition. This process can be complex and time-consuming, and requires careful planning to ensure that data is transferred accurately and securely.

The Importance of data management has increased significantly in recent years, as the volume of data generated by individuals and organizations has grown exponentially. Proper data management ensures that data is kept accurate, consistent, and readily accessible by authorized parties for decision making. Effective data management involves several key steps, including:

1. **Identification of the types of data required:** The first step in effective data management is to identify the types of data that are required for the particular project or organization. The data can be related to customers, employees, operations, finances, or any other area that requires analysis or decision-making.

It is crucial to identify the right types of data to ensure that the analysis and decision-making process is effective and accurate.

2. **Development of data collection plan:** Once the data types are identified, the next step is to develop a data collection plan that outlines the methods and processes for collecting the data. This plan should include details such as who will collect the data, how often it will be collected, and what tools or technology will be used for the collection. It is imperative to ensure that the data is collected accurately and consistently to prevent errors and inconsistencies in the analysis process.
3. **Creation of a data storage system:** After data collection, it is essential to have a robust data storage system in place that secures the data and makes it easily accessible. There are different types of storage systems available, including cloud-based storage, on-premise storage, or a combination of both. The choice of storage system should be based on the organization's needs, budget, and security requirements.
4. **Regular back up and maintenance of data:** The final step in effective data management is to ensure that the data is regularly backed up and maintained. This includes creating a backup plan to prevent data loss due to system failures, natural disasters, or cyber-attacks. It is also vital to maintain the data quality by

monitoring and cleaning the data regularly to eliminate duplicates or errors that could impact the analysis results.

In conclusion, effective data management requires a comprehensive and systematic approach that involves identifying the data types, developing a collection plan, creating a storage system, and regularly backing up and maintaining the data. By following these steps, organizations can ensure that the data is accurate, secure, and accessible, facilitating informed decision-making and improving overall performance.

Concept of University Data Management

Every university generates and collects large amounts of data; these data may include research data, student data, financial data, library data, administrative data, and many more. University data management therefore refers to the process of organizing, categorizing, maintaining, protecting, and archiving data related to the institution's academic, operational, and administrative activities. The effective management of university data is crucial to ensure its accessibility, accuracy, consistency, and security. It allows universities to make data-driven decisions, improve operational efficiencies, enhance student learning outcomes, maintain compliance with regulations, and ensure data privacy. Durosaro (1997) highlights the significance of effective management of

data. According to him, quantitative data, also known as statistical data, which correspond to the numerical information required for practical planning initiative, hold immense value in the field of education. One of the primary challenges of managing university data is its complexity and diversity. Universities employ multiple departments and systems that generate various types of data, often in different formats and languages. Therefore, an efficient university data management system must be comprehensive and flexible enough to accommodate the diverse data types and formats.

Another crucial aspect of university data management is data security. Universities collect and store a vast amount of sensitive data, such as Social Security numbers, health records, financial data, and intellectual property. Therefore, data security is critical to prevent data breaches or leaks, which can result in significant financial, legal, and reputational damages. Universities must follow data security protocols and guidelines to protect data from unauthorized access or theft. Moreover, data management is a continuous process, and universities must update and archive data regularly. For instance, research data must be stored and preserved for long periods for future reference and replication; student data must be regularly updated to ensure its accuracy and completeness. In conclusion, data management is an essential aspect of university

operations. It facilitates data accessibility, accuracy, security, and enables universities to make data-driven decisions to improve its operational efficiency and student outcomes.

Concept of Modern Technology for Efficient University Data Management

Modern technology has fundamentally transformed the way universities manage their data. In today's fast-paced digital world, universities need to leverage technology to efficiently collect, store, monitor, and analyse data. With the right technology solutions, universities can streamline their data management processes, making them more effective in managing student records, financial aid systems, and academic performance analysis. One of the most significant impacts of modern technology in university data management is the ability to collect data remotely and in real-time, allowing for immediate analysis and decision-making. For example, data mining and analytics tools make it easy for universities to spot trends and identify areas of improvement in their academic programs, ultimately enabling them to make data-driven decisions. Technology has also impacted the university data management in the aspect of collection and transmission of data within and outside the institution, as data can now be collected and transmitted without physical contact with students or staffs through the use of internet, electronic mails and other social media platforms.

Moreover, the introduction of cloud-based data storage systems has revolutionized the way universities store and access data. Universities can now store their data on the cloud, providing remote access to students, faculty, and staff from anywhere in the world. This enables universities to have more sophisticated information systems compared to conventional storage methods. Cloud-based systems are also highly secure, thereby assuring students and faculty that their data is safe from cyber threats and unauthorized access. Modern technology has revolutionized the way universities manage their data. With advanced data management techniques such as real-time data collection, analysis, and cloud-based storage systems, universities can leverage the advantages of technology to collect, store, and manage data more efficiently. By keeping up with technological advancements, universities can offer better learning experiences to students, generate improved academic performance data, and ultimately spend less time and money on data management tasks.

Benefits of modern technology for university data management

Modern technology has significantly revolutionized the ways in which universities manage their data. Here are some of the top benefits of using modern technology for university data management:

1. **Improved Efficiency:** according to Benwari and Dambo (2014), the proficient usage of data management tools can improve the accessibility of information in educational institutions and also enhance efficiency in the system. With the growing volume of data, many university data management systems become outdated, not to mention overloaded. With modern technology, it is possible to manage data efficiently and enhance data management processes, thereby increasing productivity.
2. **More Accurate Data:** Modern technology provides universities with better tools and mechanisms to collect, store, and analyse data. The accuracy of a university's data depends on the technology in use, and that is why modern technology is essential for data accuracy.
3. **Enhanced Data Security:** Universities often have confidential data that must be protected to comply with data protection regulations. Modern technology provides robust security features that include data encryption and firewall mechanisms that protect the data from breaches and unauthorized access.
4. **Better Collaboration:** University departments across different campuses and geographies are constantly sharing data. Collaborative platforms provided by modern technology enable easy sharing of data, even across multiple locations.

5. **Improved Decision-Making:** With modern data management technology, data can be analysed and made available to decision-makers much faster. This allows for quicker decision-making which can greatly benefit the university's future success.
6. **Simplified Data Recovery:** When a university's data system goes down, it can cause significant damage to its operations. With modern data storage systems, data recovery is now much simpler and quicker.
7. **Cost savings:** By adopting modern technology, universities save significant amounts of money that would have otherwise been spent on manual paper-based data management systems. Automated data management systems reduce operational costs and facilitate efficient utilization of resources.
8. **Accessibility:** Modern technology provides easy access to data, which is crucial for faster decision-making processes in universities. By using cloud-based systems and web-based applications, university staff and students can access data from anywhere, anytime, and on any device with internet connectivity.
9. **Improved student satisfaction:** Modern technology enables universities to provide more personalized learning experiences for their students. With digital assessment tools, online learning platforms, and virtual classrooms, students can

access coursework and support materials at their convenience, leading to greater satisfaction and academic success.

10. **Improved staff level of technological proficiency:** Employing modern technology for data management in universities improves the level of technical proficiency among staff. By developing skills in software programs and data analysis software, staff members become more technologically proficient and better equipped to undertake their roles.
11. **Enhanced feedback system:** Modern technology provides an efficient feedback system for universities. Feedback from students and tutors can be gathered through online surveys and evaluation programs, leading to improved communication and response times.
12. **Improved data transmission:** Modern technology allows universities to efficiently transmit and store data. This leads to faster and streamlined data processing, leading to better management of academic records, student data, and improved decision-making. Additionally, with improved data storage and retrieval, university staff can track trends in academic performance easily, empowering them to make decisions that enhance the quality of education delivered to students.

Problem Associated with Using Modern Technology for University Data Management

In recent years, many universities have adopted modern technology to manage their data. While technological advancements have made data management easier and more efficient, there are still several problems that universities face when implementing these systems. Here are some of the challenges universities faces when using modern technology for data management.

1. Inadequate modern technological facilities: according to Durosaro (2004), a significant obstacle in data management for educational institutions is the lack of computerized tools for managing data. When modern technological facilities are not available such as computers, printers, projectors, cloud storage, etc. it will result in system failures, data loss, and delays in accessing or processing information, thereby hindering the overall effectiveness and efficiency of data management.
2. **Security concerns:** One of the main concerns when using modern technology is the security of data. Universities store sensitive information like student records, financial data, and research data. Cybersecurity breaches and hacking attacks have

become increasingly common, and universities must ensure that their data management systems are secure.

3. **Data fragmentation:** Different departments within a university often use different systems for data management. This can lead to data fragmentation, where data is stored in multiple locations and in different formats. This makes data integration and analysis difficult, and may result in errors and inefficiencies.
4. **Training and support:** Implementing modern technology solutions may require specialized knowledge and expertise. Universities must invest in training and support to ensure that staff knows how to use these systems effectively. Inadequate training can lead to errors, inefficiencies, and reduced productivity.
5. **Cost:** Implementing modern technology solutions can be expensive, especially for universities with limited budgets. The cost of hardware, software, and ongoing maintenance can be significant. It can also be difficult to justify these costs when the benefits are not immediately apparent.

Strategies for Improving the Use of Modern Technology for Efficient University Data Management

While there are several challenges associated with using modern technology for data management, these systems bring many benefits as well. To ensure that universities can maximize the efficiency and usefulness of their data management systems, they should consider implementing the following strategies:

1. **Develop a comprehensive data management strategy:** Universities should have a clear and comprehensive data management strategy that outlines their goals and objectives. This strategy should be developed in consultation with key stakeholders and should address the current and future needs of the university.
2. **Invest in cybersecurity:** Cybersecurity is an essential component of modern technology solutions. Universities should invest in robust security measures to protect their data from breaches, hacking attacks, and other cyber threats.
3. **Encourage data integration:** Universities should encourage the integration of data across different departments and systems. This can be achieved through data standardization, the use of common data platforms, and the development of policies and procedures to facilitate data integration.

4. **Implement adequate training and support:** Adequate training and support are crucial when implementing modern technology solutions. Universities must invest in training for staff and provide ongoing support to ensure that staff can use these systems effectively.
5. **Develop a cost-effective approach:** Implementing modern technology solutions can be expensive, but there are ways to reduce costs. Universities should explore options like cloud-based solutions, open-source software, and partnerships with other universities and organizations to reduce costs.

Summary of Reviewed Literature

The reviewed literature critically examined the concept of modern technology. Form the reviewed literature, Modern technology refers to advancements and innovations made in various fields such as computing, telecommunications, transportation, medicine, energy, and many others. This was followed by discuss on the concept of data and university data. From the reviewed literature, data refers to the pieces of information that are collected, processed, and analyzed in order to inform decision making, research, or other activities. University data was ref erred to as any information related to the activities and operations of a university, including its students, faculty, staff, courses,

finances, and facilities. The reviewed literature also examined the concept of management where management was referred to as, the planning, organizing, controlling, coordinating, directing and utilizing the human, material, information, and fiscal resources efficiently, for the effective accomplishment of predetermined goals.

The literature reviewed further examined the concept of data management and university data management. It was discovered that data management refers to the process of collecting, storing, organizing, maintaining, and utilizing data in a way that promotes efficient and effective access, analysis, and use. While university data management refers to the process of organizing, categorizing, maintaining, protecting, and archiving data related to the institution's academic, operational, and administrative activities. The literature reviewed also examined the concept of modern technology for efficient University Data Management. It was discovered that modern technology has impacted university data management systems in diverse aspects such as the aspect of data collection, analysis, storage, decision making and so on. The literature reviewed as so unveiled the benefits of using modern technology in managing university data.

The reviewed literature examined the Problems Associated with Using Modern Technology for University Data Management. these problems include: Security concerns; Data fragmentation; Training and support; and Cost. Finally, the reviewed literature

examined the Strategies that can be employed to tackle the problems that are encountered when modern technology is used in managing university data. The strategies that where mentioned includes development of a comprehensive data management strategy, investment in cybersecurity, implement adequate training and support, develop a cost-effective approach.

CHAPTER THREE

METHODOOGY

This chapter deals with the procedures that was taken in carrying out the study. It was organized under the following subheadings: Research Design, population of the study, sample and sampling procedure, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

Research Design

This study adopted the descriptive survey research design as it investigates the effects of modern technology as a correlate of efficient management of university data. This research design is best suitable for this study because it facilitates the collection of original data and describe the conditions as they exist in their natural setting. It also helps to homogenize the population and guarantees that all participants have equal chance of being selected for the study.

Population of the Study

The population of this study consists of all staffs in the faculty of education, University of Benin, Benin-City in the 2021/2022 academic session. Based on the available statistical data as at April 2023, the population of staff comprised of 195 academic staffs and 61 administrative staffs from the 8 (eight) Departments and the Dean's office in the Faculty of Education, University of Benin, Benin-City. (Office of the Faculty Officer, Faculty of Education, April, 2023).

Sample and Sampling Techniques

A sample of 108 respondent was used for the study. To ensure that all the respondent are equally represented and had equal chance of being chosen, the researcher used stratified random sampling techniques to sample50% of the total population of administrative staff and 40% of the total population of academic staff. The sample was then stratified into administrative staff and academic staff of the faculty which yielded 31 administrative staff and 77 academic staff.

Research Instrument

To guide this research, two instruments were used. The first instrument was an Educational Data Checklist. The instrument evaluated the modern technological data management tools available in the faculty of education, university of Benin. The second

instrument was a questionnaire titled Effects of Modern Technology and Data Management Questionnaire (EMTDMQ). The questionnaire had two sections; Section A and Section B. Section A dealt with the bio data of the respondents while section B dealt with items bordering on utilization of modern technology for data management in the faculty of education, university of Benin. The items in section B were put into clusters as follows: Cluster A bordered on the the use of available modern technological facilities in the faculty, Cluster B dealt on the relationship between modern technology utilization and efficient data management and Cluster C delt with the constraints militating the use of modern technology for data management in the faculty, Cluster D dealt with the strategies that could be employed to enhance the utilization of modern technology for data management in the faculty.

Cluster A was rated on a four-point scale of Very High (4) High (3), Low (2) and Very Low (1) and was used to determine the extent to which the data management tools were utilized for data management. While Cluster B, C, and D was designed in a four-point likert scale of Strongly Agree (SA), Agree (A), Disagreed (D), and Strongly Disagreed (SD).

Validation of the Instrument

The instrument was validated by three experts, the researchers' supervisors and two experts in Department of Educational Management, University of Benin, Benin City. The opinions, suggestions and recommendations of these experts were used to produce the final instrument. These screening processes ensured the content and construct validity of the instrument.

Reliability of the Instrument

Since the first instrument was a standardized checklist which was adopted from previous studies and has been duly validated by the supervisor, there was no need to determine the reliability. To determine the reliability of the second research instrument, the questionnaire was trial tested on 10 administrative staff and 20 academic staff in the faculty of education university of Benin who are not part of the sample of the study. The researcher then used the Cronbach Alpha reliability estimate to analyze the data collected looking for a minimum score of 0.70 for higher consistency. A coefficient of 0.99 was obtained for the instrument. According to the recommendations of Johnson and Christensen (2000) and Borich (2004) a high reliability value of 0.70 or higher shows that an instrument is reliable. Hence, the instrument used was reliable for the research work.

Method of Data Collection

The researcher used direct delivery method in collecting data. This helped the researcher collect the questionnaire immediately after completion. It equally facilitated hundred percent returns of the copies of the questionnaire distributed. Copies of the questionnaire was administered to the respondents with the help of four research assistants. This is to ensure quicker coverage of the administration of the instrument.

Methods of Data analysis

The data collected for this study was analysed using descriptive statistics and measures of central tendencies to address the research questions. The bench mark was 2.50 that is any item with a mean score of 2.50 and above was considered accepted while any item with a mean score below 2.50 was considered rejected. Data collected was summarized in tables and hypothesis tested with the Pearson product moment correlation at .05 level of significant. The choice of the Pearson correlation analysis was made because the correlation analysis establishes relationships and the extent to which an independent variable influences a dependent variable.

CHAPTER 4

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter is concerned with presentation of the result obtained from analysis of data gathered from the research instruments. The results are presented in tables according to the relevant research questions and hypotheses that guided the study.

Answers to Research Questions

Research Question One: What are the available modern technological facilities for data management used by administrative staff and lectures in the university of Benin faculty of education?

Table 1: Available Modern Technological Facilities for Data Management in the Faculty of Education

S/N	Data Management Facilities	Available		Not Available	
		F	%	F	%
1	Computer Systems	108	100	0	0
2	Printers	108	100	0	0
3	Scanners	108	100	0	0
4	School internet portal	108	100	0	0
5	Cloud storge solution	20	18.5	88	81.5
6	Data analysis software	90	83.3	18	16.7
7	Optical Mark Reading (OMR) machine	88	81.5	20	18.5
8	Institutional Electronic-Mail	108	100	0	0
9	Biometric Facilities	88	81.5	20	18.5
10	High Speed Internet Connection	12	11.1	96	88.9

Table 1 shows the availability of modern technological facilities used for data management in the faculty of education, university of Benin. Out of 10 modern technological facilities, 8 were available. This was determined by a minimum availability of 50% in the items. There were only 2 facilities that had a percentage score below 50% indicating that they were not available. The available modern technological data management facilities included computer systems, printers, scanners, school internet

portal, data analysis software, Optical Mark Reading (OMR) machine, Institutional Electronic-Mail, and biometric facilities. Modern technological data management facilities that had low availability include cloud storage solution and high-speed internet connection.

Research Question Two: To what extent are the available modern technological facilities for data management utilized by administrative staff and lectures in the university of Benin faculty of education?

Table 2: Utilization of Available Modern Technological Facilities for Data Management in the Faculty of Education

S/N	Data Management Facilities	N	Mean	Std. Dev	Remark
1	Computer Systems	108	3.67	0.61	Utilized
2	Printers	108	3.65	0.48	Utilized
3	Scanners	108	3.56	0.66	Utilized
4	School internet portal	108	3.64	0.48	Utilized
5	Cloud storge solution	108	1.98	0.56	Not Utilized
6	Data analysis software	108	3.72	0.71	Utilized
7	Optical Mark Reading (OMR) machine	108	2.99	0.50	Utilized
8	Institutional Electronic-Mail	108	4.00	0.00	Utilized
9	Biometric Facilities	108	3.74	0.65	Utilized
10	High Speed Internet Connection	108	1.37	0.49	Not Utilized

Table 2 displayed the extent to which data management tools were being used in the faculty of Education, University of Benin. The results indicated that 8 available modern technological facilities were being utilized at a significant level, with mean scores of 2.50 and higher, while 2 facilities where underutilized with mean scores below 2.50. The specific facilities that were effective in their usage included computer systems (3.67), printers (3.65), scanners (3.56), school internet portal (3.64), data analysis software (3.72), Optical Mark Reading (OMR) machine (2.99), Institutional Electronic-Mail (4.00), and biometric facilities (3.74). While the 2 facilities that were ineffective in their usage were cloud storage solution (1.98) and high-speed internet connection (1.37).

Research Question Three: What are the constraints to the use of modern technology for data management in the faculty of education, university of Benin?

Table 3: Constraints to the use of Modern Technology for Efficient Data Management in Universities.

S/N	Constraints	N	Mean	Std. Dev	Remark
1	Inadequate computer systems for data processing.	108	2.74	0.80	Accepted
2	Insufficient training of staff on the use of modern technological devices for data management.	108	2.74	0.75	Accepted
3	Non-availability of online cloud storage for storing data on the web.	108	3.80	0.40	Accepted
4	Inadequate financial support for the acquisition of modern technological facilities.	108	2.46	1.09	Rejected
5	Lack of constant electricity supply.	108	3.87	0.34	Accepted
6	Lack of adequate feedbacks on the useability of existing data management technologies.	108	2.78	0.85	Accepted
7	Lack of maintenance of existing data management technological infrastructures.	108	3.71	0.75	Accepted
8	insufficient IT support to address any technological issue encountered when using modern technology for data management.	108	3.39	0.85	Accepted
9	Inadequate knowledge of emerging technologies that have potential to enhance the efficiency of data management processes.	108	2.91	0.70	Accepted
10	Irregular updating of data management technological systems.	108	3.35	0.70	Accepted

Table 3 shows the view administrative and academic staff on the constraint to modern technological usage for efficient the data management in the faculty of education, university of Benin. The findings revealed that it was accepted that Inadequate computer systems for data processing (2.74), Insufficient training of staff on the use of modern technological devices for data management (2.74), Non-availability of online cloud storage for storing data on the web (3.80), Lack of constant electricity supply(3.87), Lack of adequate feedbacks on the useability of existing data management technologies (2.78), Lack of maintenance of existing data management technological infrastructures (3.71), insufficient IT support to address any technological issue encountered when using modern technology for data management (3.39), Inadequate knowledge of emerging technologies that have potential to enhance the efficiency of data management processes (2.91), and Irregular updating of data management technological systems (3.35), were constraints to the effective utilization of modern technological facilities for efficient management of data in the faculty of education. On the down side, Inadequate financial support for the acquisition of modern technological facilities with a mean score of 2.46 was rejected as a constraint to the effective utilization of modern technological data management facilities as it has a mean score that is less than 2.50 which was the bench mark that was set by the researcher.

Research Question Four: What are the strategies that could be employed to enhance the utilization of modern technology for data management in the faculty of education, university of Benin?

Table 4: Strategies for improving the use of Modern Technology for Efficient Data Management in Universities.

S/N	Strategies	N	Mean	Std. Dev	Remark
1	Provision of adequate functional computers in various departments in the faculty.	108	3.37	0.49	Accepted
2	Refresher courses should be conducted for staffs in computer applications.	108	3.65	0.48	Accepted
3	Provision of constant electricity supply in the faculty.	108	3.92	0.28	Accepted
4	Financial support should be sourced for the acquisition of modern technological facilities.	108	3.28	0.62	Accepted
5	Provision of accessible online cloud storage to facilitate safe storage of valuable data.	108	3.61	0.73	Accepted
6	Actively seeking feedbacks from staff members regarding usability of existing data management technologies.	108	3.69	0.72	Accepted
7	Actively exploring emerging technologies that have potential to enhance the efficiency of data management processes.	108	3.83	0.37	Accepted
8	Provision of sufficient IT support to address any technological issue encountered when using modern technology for data management.	108	3.45	0.52	Accepted
9	Encouraging the adoption of user-friendly technological solutions for data management.	108	3.28	0.45	Accepted
10	Regularly updating of data management technological systems.	108	3.44	0.54	Accepted

Table 4 indicates the perspective of administrative and academic staff on the Strategies that could be employed to improve the use of modern technology for efficient data management in universities. The findings revealed that provision of adequate functional computers in various departments in the faculty (3.37), refresher courses should be conducted for staffs in computer applications (3.65), provision of constant electricity supply in the faculty (3.92), financial support should be sourced for the acquisition of modern technological facilities (3.28), provision of accessible online cloud storage to facilitate safe storage of valuable data (3.61), actively seeking feedbacks from staff members regarding usability of existing data management technologies (3.69), actively exploring emerging technologies that have potential to enhance the efficiency of data management processes (3.83), provision of sufficient it support to address any technological issue encountered when using modern technology for data management (3.45), encouraging the adoption of user-friendly technological solutions for data management (3.28), regularly updating of data management technological systems (3.44), were accepted as strategies that can be employed to facilitate the use of modern technological facility for efficient data management in the faculty of education, university of Benin, having a mean score above 2.50 for all the strategies.

Hypothesis: there is no significant relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

Table 5: Correlation Analysis of modern technology utilization and efficient data management in the faculty of education, university of Benin.

Variables	N	R	Sig (2-tailed)
Modern technological facilities usage			
	108	0.542	0.001
Efficient data management			

From the Table 5 the correlation coefficient (r) of 0.542 with a p-value of 0.01. Testing at an alpha level of 0.05, the p-value is less than the alpha level of significance ($p<0.05$) and as such the null hypothesis is rejected. This implies that there is significant relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

Discussion of Findings

The main aim of this research was to assess the effect of modern technology as a correlate of efficient university data management. The findings showed that a large

number of the modern technological data management facilities that were listed were available. Out of the 10 facilities that were checked, 8 were found to be adequately available for use in data management. Further investigation into the usage of the available modern technological data management facilities revealed that administrative staff and Lectures in the faculty of education agreed that these tools where being effectively utilized. According to Durosaro (2004), the utilization of these tools by educational institutions is influenced by their availability. Evidences from this study shows that this relationship described by Durosaro is prevalent in the faculty of education, university of Benin.

The study revealed that the available modern technological data management facilities are heavily utilized and has contributed to improving data management efficiency in the faculty of education. These facilities have been effective in achieving accurate data collection, data security, easy retrieval of data, quick sharing of data within the institution, easy data collection, accurate assessment of students' achievements, easy communication of information to stakeholders, proper planning of academic programmes, and better analysis of data. These findings align with the views of Benwari and Dambo (2014) that the effective use of modern technological data management tools can improve

accessibility to information and increase efficiency in overall data management in universities.

Relative to the constraints on the effective utilization of modern technological data management facilities for efficient university data management, the study revealed that Inadequate computer systems for data processing, Insufficient training of staff on the use of modern technological devices for data management, non-availability of online cloud storage for storing data on the web, lack of constant electricity supply, lack of adequate feedbacks on the useability of existing data management technologies, lack of maintenance of existing data management technological infrastructures, insufficient it support to address any technological issue encountered when using modern technology for data management, inadequate knowledge of emerging technologies that have potential to enhance the efficiency of data management processes, and irregular updating of data management technological systems militates the effectiveness of modern technology utilization in data management in the faculty of education, university of Benin. According Durosaro (2004), a significant problem faced by institution in managing data is the lack of computerized tools for data management. And challenge is related to how data is transferred and stored. Evidence from this study shows that these challenges described by Durosaro were prevalent in the faculty of education, university of Benin.

The study revealed strategies that could be employed to enhance the utilization of modern technological data management facilities in the faculty of education, in other to enhance the efficiency of data management practices of administrative and academic staff. the strategies include provision of adequate functional computers in various departments in the faculty, refresher courses should be conducted for staffs in computer applications, provision of constant electricity supply in the faculty, financial support should be sourced for the acquisition of modern technological facilities, provision of accessible online cloud storage to facilitate safe storage of valuable data, actively seeking feedbacks from staff members regarding usability of existing data management technologies, actively exploring emerging technologies that have potential to enhance the efficiency of data management processes, provision of sufficient it support to address any technological issue encountered when using modern technology for data management, encouraging the adoption of user-friendly technological solutions for data management, regularly updating of data management technological systems.

The study further indicates that modern technology has a significant impact on the efficiency of data management practices of administrative and academic staff. This impact is mainly due to the adequate availability and utilization of modern technological data management facilities in the faculty. As the saying goes, “you cannot use what you

don’t have.” This emphasizes the importance of having and effectively utilizing the necessary modern technological facilities for efficient data management. No wonder Benwari and Dambo (2014) suggest that effective data management relies heavily on information management systems. They also argued that the presence of data management tools such as computers, can improve the storage and exchange of data between administrators and lectures within a particular institution.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This chapter deals with the summary of the study, the conclusions drawn, results obtained and recommendations offered.

Summary

The objective of this study was to examine the effect of modern technology as a correlate of efficient university data management using the Faculty of Education, University of Benin. The research aimed to Investigate the available modern technological facilities used for data management by administrative staffs and lecturers in the university of Benin faculty of education; Investigate the extent to which modern technology is utilized for data management in universities; Examine possible constraints to the use of modern technology for data management in the faculty of education, university of Benin; Determine the strategies that could be employed to enhance the

utilization of modern technology for data management in the faculty of education, university of Benin; and Explore the relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

In a bid to achieve the stated objectives, the study was hinged theoretically on the Systems Theory propounded by Talcott Parsons in the year 1902. On his part, the system theory is an approach to understanding complex systems by breaking them down into their component parts and understanding how they interact with each other. It further notes that the system theory provides a framework for understanding how technology fits into the larger system of university operations and can influence overall efficiency and effectiveness through the efficient management of data.

The study adopted the descriptive survey design and utilized two instruments namely Educational Data Checklist and Effects of Modern Technology and Data Management Questionnaire (EMTDMQ). The systematic and stratified random sampling techniques were employed in the selection of subjects for the study and this led to the sampling of 31 administrative staff and 77 academic staff from a population of 195 academic staffs and 61 administrative respectively. Data collected was analysed using the descriptive statistics and the mean score rating in answering the research questions and the Pearson's product moment correlation analysis for hypotheses testing.

Findings of the research

Based on the outcome of the data analysis, the following has been summarized as the significant highpoints of the findings.

1. There is high availability of modern technological Data management facilities in the faculty of education, university of Benin. This is evidenced by the high percentage availability of 8 modern technological data management facilities and a low percentage availability of only 2 facilities listed in the check list.
2. There is a high level of utilization of the available modern technological Data management facilities which include computer systems, printers, scanners, school internet portal, data analysis software, Optical Mark Reading (OMR) machine, Institutional Electronic-Mail, and biometric facilities.
3. The constraint to the effective utilization of modern technology for data management includes Inadequate computer systems for data processing, Insufficient training of staff on the use of modern technological devices for data management, Non-availability of online cloud storage for storing data on the web, Lack of constant electricity supply, Lack of adequate feedbacks on the useability of existing data management technologies, Lack of maintenance of existing data management technological infrastructures, insufficient IT support to address any

technological issue encountered when using modern technology for data management, Inadequate knowledge of emerging technologies that have potential to enhance the efficiency of data management processes, and Irregular updating of data management technological systems.

4. The strategies that can be employed to facilitate the usage of modern technology to manage data efficiently in the faculty of education includes provision of adequate functional computers in various departments in the faculty, refresher courses should be conducted for staffs in computer applications, provision of constant electricity supply in the faculty, financial support should be sourced for the acquisition of modern technological facilities, provision of accessible online cloud storage to facilitate safe storage of valuable data, actively seeking feedbacks from staff members regarding usability of existing data management technologies, actively exploring emerging technologies that have potential to enhance the efficiency of data management processes, provision of sufficient it support to address any technological issue encountered when using modern technology for data management, encouraging the adoption of user-friendly technological solutions for data management, and regularly updating of data management technological systems.

5. there is a significant relationship between modern technology utilization and efficient data management in the faculty of education, university of Benin.

Conclusion

In conclusion modern technology has a significant impact on the efficiency of universities' data management as the efficient management of universities' data is highly correlated to the availability and effective utilization of modern technological data management facilities.

Recommendations

From the findings of this study, the following recommendations are hereby made.

1. Considering the importance and relevance of adequate modern technological data management facilities, universities should be provided with adequate modern technological data management facilities especially facilities like computer systems, online cloud storage systems, a constant power supply and a highspeed internet connection to access the web and other online data management utilities.
2. University staffs both academic and administrative should be trained on the use of recent and emerging modern technological facilities that can enhance the efficiency and effectiveness of data management.

3. The university management should encourage research into discovering and exploring emerging technologies that have potentials to enhance and promote data management practices within and outside the institution.

Contributions to Knowledge

1. The study has been able to establish that there is need for availability and proper utilization of modern technology in order to attain high level of efficiency in data management in universities.
2. The study has been able to highlight some of the problems associated with using modern technology in managing university data, and provided strategies that could be employ to curb these problems.

Suggestions for Further Studies

1. There is need for such study to be replicated in other faculties in the university of Benin and other universities throughout Nigerian.
2. Study can be conducted in other aspects of university management that has been impacted by modern technology such teaching and learning, students assessment, etc.

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Appendix I

DEPARTMENT OF EDUCATIONAL MANAGEMENT

FACULTY OF EDUCATION

UNIVERSITY OF BENIN

Dear Respondent,

I am a final year student of the above named department and institution. I am carrying out a research project on the **Effects of Modern Technology as a Correlate of Efficient Management of University Data**.

Honestly, the research is purely for academic purposes to complete my degree in **EDUCATIONAL MANAGEMENT**. Any information received from you would be treated with utmost confidentiality. I would appreciate if you can help by filling this questionnaire accurately with sincerity. Thank you for your cooperation.

Yours
faithfully,

Eghosa Daniel Nosakhare

EDUCATIONAL DATA CHECKLIST

Please fill were appropriate and tick where necessary, be rest assured that your responses will be used for research purposes only.

Department: _____

S/N	**Modern Technological Data Management Facilities**	**AVAILABLE**	**NOT AVAILABLE**
1	Computer systems		
2	printers		
3	Scanners		
4	School Internet portal		
5	Cloud storage solution		

6	Data analysis softwares		
7	Optical Mark Reading (OMR) machine		
8	Institutional Electronic-mail		
9	Biometric facilities		
10	High-speed internet connection		

Effects of Modern Technology and Data Management Questionnaire (EMTDMQ)

(To be filled by administrative and academic staff)

The Statement below are meant to help the researcher identify the effects of modern technology utilization on effective university data management.

Please fill were appropriate and tick where necessary, be rest assured that your responses will be used for research purposes only.

SECTION A: Demographic Data

Gender: Male (_) Female (_)

Staff: Administrative (_) Academic (_)

SECTION B: utilization of modern technology for data management

Indicate the extent to which you agree or disagree with the following statements using the following guidelines:

Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD)

Very High (VH), High (H), Low (L), Very Low (VL).

Cluster A: Use of Available Modern Technological Facilities for Data Management

Please tick the extent to which the following modern technological facilities are used for data management in the faculty of education, university of Benin.

S/N	Modern Technological Facilities	V H	H	L	V L
1	Computer systems				
2	printers				
3	Scanners				
4	School Internet portal				
5	Cloud storage solution				
6	Data analysis software				
7	Optical Mark Reading (OMR)				
8	Institutional Electronic-mail				
9	Biometric facilities				
10	High-speed internet connection				

Cluster B: Modern Technology and Efficient Data Management.

Please tick the extent to which you agree with the following statements on the efficiency of data management due to the utilization of modern technological facilities in the faculty of education, university of Benin.

SN	Data Management Efficiency	SA	A	D	SD
1	Accurate data collection				
2	Data security				
3	Easy retrieval of data				
4	Quick sharing of data within the institution				
5	Easy data collection				
6	Accurate assessment of students' achievements				
7	Quicker decision-making				
8	Easy communication of objective information to relevant stakeholders				
9	Proper planning of academic programmes				
10	Better analysis of data				

Cluster C: Constraints to the use of Modern Technology for Efficient Data Management in Universities.

Please tick the extent to which you agree with the following statements on the constraints to the use of modern technology for data management in the faculty of education, university of Benin.

SN	Constraints	SA	A	D	SD
1	Inadequate computer systems for data processing.				
2	Insufficient training of staff on the use of modern technological devices for data management.				
3	Non-availability of online cloud storage for storing data on the web.				
4	Inadequate financial support for the acquisition of modern technological facilities.				
5	Lack of constant electricity supply.				
6	Lack of adequate feedbacks on the useability of existing data management technologies.				
7	Lack of maintenance of existing data management technological infrastructures.				
8	insufficient IT support to address any technological issue encountered when using modern technology for data management.				
9	Inadequate knowledge of emerging technologies that have potential to enhance the efficiency of data management processes.				
10	Irregular updating of data management technological systems.				

Cluster D: Strategies for improving the use of Modern Technology for Efficient Data Management in Universities.

Please tick the extent to which you agree with the following statements on the strategies that could be employed to improve the use of modern technology for data management in the faculty of education, university of Benin.

SN	Strategies	SA	A	D	SD
1	Provision of adequate functional computers in various departments in the faculty.				
2	Refresher courses should be conducted for staffs in computer applications.				
3	Provision of constant electricity supply in the faculty.				
4	Financial support should be sourced for the acquisition of modern technological facilities.				
5	Provision of accessible online cloud storage to facilitate safe storage of valuable data.				
6	Actively seeking feedbacks from staff members regarding usability of existing data management technologies.				
7	Actively exploring emerging technologies that have potential to enhance the efficiency of data management processes.				
8	Provision of sufficient IT support to address any technological issue encountered when using modern technology for data management.				
9	Encouraging the adoption of user-friendly technological solutions for data				

	management.				
10	Regularly updating of data management technological systems.				

Appendix II

Reliability on Modern Technology Utilization and Efficient Data management

```
RELIABILITY
  /VARIABLES=A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17
A18 A19 A20 A21 A22 A23 A24
    A25 A26 A27 A28 A29 A30 A31 A32 A33 A34 A35 A36 A37 A38 A39 A40
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA.
```

Scale: ALL VARIABLES

Case Processing Summary

	N	%

Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.992	40

Table 1: Demographic Profile of Respondent

	Variable	Frequency	Percentage
Gender	Male	47	43.5

	Female	61	56.5
	Total	**108**	**100.0**
Staff	Administrative	31	28.7
	Academic	77	71.3
	Total	**108**	**100.0**

Descriptives

Effects of modern technology on university data management

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
accurate data collection	108	1.00	4.00	3.3333	.56370
data security	108	1.00	4.00	2.8889	.74046
easy retrieval of data	108	2.00	4.00	3.8148	.43553
quick sharing of data within the institution	108	3.00	4.00	3.5463	.50017
easy data collection	108	1.00	4.00	2.6296	.76845

accurate assessment of students' achievement	108	1.00	4.00	3.6111	.73413
quick decision making	108	2.00	4.00	2.4907	.70373
easy communication of objective information	108	1.00	4.00	3.0000	.74883
proper planning of academic programmes	108	2.00	4.00	3.2963	.59999
better data analysis	108	2.00	4.00	3.2222	.53535
Valid N (listwise)	108				

Correlations

Relationship between modern technological facilities usage and efficient university data management.

Correlations

		Efficient data management
Modern technology	Pearson Correlation	.542**
	Sig. (2-tailed)	.000
	N	108

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