# EVALUATION OF THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON THE MANAGEMENT OF STATE TERTIARY INSTITUTIONS IN NIGER STATE, NIGERIA

**BY**

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# DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND CURRICULUM, FACULTY OF EDUCATION,

**AHMADU BELLO UNIVERSITY, ZARIA-NIGERIA**

# APRIL, 2021

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER (M.ED) IN EDUCATIONAL ADMINISTRATION AND PLANNING**

# DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND CURRICULUM, FACULTY OF EDUCATION,

**AHMADU BELLO UNIVERSITY, ZARIA-NIGERIA**

# APRIL, 2021

# DECLARATION

I, Salihu Abdullahi Ahmed hereby declare that this dissertation titled ―EVALUATION OF THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON THE MANAGEMENT OF STATE TERTIARY INSTITUTIONS IN NIGER STATE‖, Nigeria

was conducted by me in the Department of Educational Foundations and Curriculum, Ahmadu Bello University, Zaria - Nigeria. All the sourced information from the literature has been acknowledged in the text and the list of references provided. To the best of my knowledge, no aspect of this research was presented previously for another degree or diploma at this or any other institution.

# SALIHU Abdullahi Ahmed Date

# CERTIFICATION

This dissertation titled ―EVALUATION OF THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON THE MANAGEMENT OF STATE

TERTIARY INSTITUTIONS IN NIGER STATE‖, Nigeria by SALIHU Abdullahi Ahmed meets the regulations governing the award of the Degree of Masters in Educational Foundations and curriculum of Ahmadu Bello University, Zaria - Nigeria and is approved for its contribution to knowledge and literary presentation.

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# DEDICATION

I dedicate this research work to my parents (Malam Salihu Abdullahi and Malama Hassana), wife (Ramat), brothers and sisters for being there for me at all costs.

# ACKNOWLEDGEMENTS

The researcher sincerely expresses his profound gratitude to Almighty God for His favour, grace and mercy upon his life. The researcher is sincerely grateful to his supervisors Dr. F. A. Kera and Dr. M. I. Harbau for sparing their time to ensure that the researcher succeeds in his academic pursuit through their diligent guidance, corrections and suggestions which made this work a reality. My gratitude goes to Prof. B. A. Maina, Dr. M. M. Ibrahim, Dr. R. A. Ahmed, Malam Surajo Magaji, Late Dr. E. I. Makoju and Late Dr. A. H. Jega and all the non-academic staff of the Department of Educational Foundations and Curriculum, Faculty of Education, Ahmadu Bello University, Zaria - Nigeria.

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# LIST OF ABREVIATIONS

|  |  |
| --- | --- |
| ANOVA: | Analyses of Variance |
| CESAC: | Curriculum Evaluation Study and Adaptation Course |
| COE: | College of Education |
| DPRS: | Department of Planning, Research and Statistics |
| IBBU: | Ibrahim Badamasi Babangida University |
| ICT: | Information and Communication Technology |
| IT: | Information Technology |
| MOB: | Ministry of Education |
| NCE: | National Certificate on Education |
| NERDC: | Nigerian Education Research and Development Council |
| NGO: | Non-Governmental Organizations |
| NUC: | National Universities Commission |
| PPMC: | Pearson Product Moment Correlation |
| RD: | Research and Development |
| SPSS: | Statistical Package for Social Sciences |
| ST: | Science and Technology |

# OPERATIONAL DEFINITION OF TERMS

Communication: Means of sending or receiving information

Decision Making: The thought process of selecting a logical choice from the available options.

Educational Research: The systematic collection and analysis of data related to the field of education.

Evaluation: The Making of a judgment about amount, number or value of something

ICT: Technologies that provide access to information through telecommu nications

Impact: An effect on someone or something

Maintenance Culture: The act of maintaining or the state of being maintained to keep something to its original state

Management: The process of dealing with or controlling things or people

Record Keeping: The activity of organizing and storing all documents, files, invoices etc. of an organization

Tertiary Institutions: An institution that provides post-secondary education.

# ABSTRACT

This study evaluates the Impact of Information and Communication Technology on The Management of State Tertiary Institutions in Niger State, Nigeria. To guide the study, five

(5) objectives were formulated which include determine the impact of information and communication technology (ITC) on communication in tertiary institutions in Niger State, Nigeria, evaluate the impact of information and communication technology (ICT) on records keeping in tertiary institutions in Niger State, Nigeria, assess the impact of information and communication technology (ICT) on educational research in tertiary institutions in Niger State, Nigeria in line with stated objectives five (5) research questions, five (5) null hypotheses and five (5) basic assumptions were raised for the study. Relevant and related literatures and empirical study were reviewed. Descriptive research design was used for the study with the total population of 15,308 made up of 50 leaders of institutions, 8000 academic staffs and 7258 non-academic staffs. Purposive sampling technique was adopted for the study with the total number of 365. Self- developed questionnaire which comprised of fifty (50) structured item statements were modified on a five (5) point Likert scale which was used to collect data from the respondents. The instrument was validated by the researcher‘s supervisor. Plot study was conducted in two schools to ascertain reliability and reliability co-efficient of 0.82 was obtained. Data collected for this study was analyzed through frequency and simple percentage for demographic data, descriptive statistic was used to analyse the bio- data of the respondents, weighted mean otherwise called decision was used to answer the five (5) research questions; while one-way Analysis of Variance (ANOVA) Statistical tool was used to test the five (5) hypotheses postulated for this study at 0.5 level of significance.The findings of the study revealed that, ICT is very much in use and has facilitated Communication between the management; and other staff in the institution and also, through ICT records in higher institutions are not only properly kept but are effectively saved in retrievable gadgets for future use in Niger State. It is therefore concluded that, the advent of ICT has brought about communication exposure, through ICT the era of manual search for document, students‘ information and inadequacy of space for shelves and files have become a thing of the past in higher institutions in Niger State. The study therefore recommended that, more ICT facilities should be provided in the required quantity and quality in all higher institutions for adequate educational research; also, there is the need to train and retrain staff on proper record keeping, maintenance culture and also for proper decision making process through ICT, in all higher institutions in Niger State - Nigeria.

# CHAPTER ONE INTRODUCTION

# Background to the Study

All over the world, education has been recognized as a critical tool for effecting national development. In fact, education is a catalyst for social, economic and personal changes. One of the changes and innovations which the federal government of Nigeria adopted in her development efforts is the integration of information and communication technology into all levels of the education system.

The objectives of the federal government of Nigeria on Information Technology (NIT) as highlighted by Yusuf (2005) are: Making Information and Communication Technologies (ICT) mandatory at all levels of education, Developing ICTs curricula for primary, secondary and tertiary institutions. Provision of study grants and scholarship on ICT, Training the trainer scheme for National Youth Service Corps members. ICT capacity development at zonal, state and local levels. Information and Communication Technology is a concept that refers to as a computer based facilities used by organization personnel to record, transmit, generate, retrieve, impact knowledge and process information and communication needs (Asiyai, 2010).

ICT is any technology that students and teachers use to organize, create, manipulate, solve, find, draw, design, synthesize, share, collaborate, modify, analyze, evaluate and disseminate information. ICTs include internet, computer, hyper net software and hardware, network, data projector and other devices that convert information into digital forms. In this era of digitalization, the flow of information through the satellite and internet enhances rapid dissemination of knowledge ―which has become the most important factor in economic development in the 21st century‖ (Saint, Hartnett and Strasser, 2003), it becomes imperative for ICT to be applied to teaching and learning in schools across the universe.

ICT has been recognized as effective for use in the education industry as an effective delivery mechanism (Westera, and Sloep, 2001). They maintained that ICTs can provide an efficient delivery mechanism of educational services by supplementing conventional delivery mechanism. The emergence of ICTs has generated lots of changes and innovations in all sectors of the economy across the globe. As a result, of the impact of ICTs, the whole world has been transformed into a global village. According to Johnson (2007), the prevalence and rapid development of ICTs have transformed human society from information technology age into knowledge age.

As noted by Omeniyi, Agu, and Odimegwu. (2007), the education industry appears to be the major sector where ICT integration and effective application could extend massively to other areas of life. This assertion presupposes that educational institutions in Nigeria be technology-based with teachers and students being information and technology literates so as to facilitate effective application of ICTs to other areas of life. As a result of the use of information and communication technologies, distance education became acceptable worldwide as a standard alternative mode of education (Ojokheta and Adepoju, 2007). Most developed communities have invested largely in centralized media systems that enable information to be broadcast to their schools at one time. Schools in such communities have a common cabled computer and media network. Teachers monitor activities rather than directing, in order to encourage creativity in technology (Omeniyi, Agu and Odimegwu, 2007).

However, teaching approaches and pedagogy used in Tertiary Institutions are changing from the traditional Oxbridge model of master-learner or teacher centered approach to a learner centered approach of teaching, where the learner controls his or her learning (Reinhart, 2008). Learning environments of Tertiary Institutions in developed countries are often supported by ICTs and continue to evolve to include more active learning through

student participation but reverse in the case in developed as well as developing countries particularly, Nigeria. The focus here is on the quality and availability of ICT in the management of higher institutions of learning. ICT offer flexibility, engage and motivate learners and therefore encourage a learner centered approach to teaching. The use of ICT has evolved from the simple e-learning systems of the 1960s to the more collaborative learning using modern technologies where students are not just passive learners but also generators of knowledge (Omeniyi, Agu and Odimegwu, 2007).

# Statement of the Problem

It appears that, developing countries had been focusing on using ICT as a tool to develop the society. When we look at experiences gained in academic perspective, we will find that ICT is more than a tool, but a foundation which can be used to build futures; especially in the area of education. More so, one cannot deny the fact that every nation will continue to compete in a global economy that demands innovation.

ICT has a central role in maintaining the quality of higher education in Niger State and it serves as a basis for competitive advantage of the Tertiary Institutions. However, education is being considered as the driving force of economic and social developments in any country. Looking at this, it is necessary to find ways to make education of good quality, accessible and affordable to all, using the latest technology available.

There have been a number of factors impeding the wholesale uptake of ICT in education across all sectors. Some of these factors could be shortage of funds to support the purchase of the technology, inadequate training among established teaching practitioners, inadequate motivation and need among teachers to adopt ICT as teaching tools. However, it should be noted that in recent times, factors have emerged which have strengthened and encouraged moves to adopt ICT into classroom and learning settings. These have included a growing need to explore efficiencies in terms of program delivery, the opportunities for

flexible delivery provided by ICTs, the capacity of technology to provide support for customized educational programs to meet the needs of individual learners and the growing use of the Internet and www as tools for information access and communication.

However, despite the relevance or positive impacts of Information and Communication Technology (ICT) on management of educational institutions, it appears there are still obstacles connected with the application of ICT in the institutions of higher learning particularly in Niger State, Nigeria. Some of these obstacles includes inadequate training and retraining, poor maintenance culture, the misuse of internet facilities, erratic power supply, poor communication channel, poor record keeping of documents, unskilled staff, lack of proper use of ICT facilities in decision making process, shortage of ICT facility supply, wear and tear with and most of the staff in the institutions have little or no knowledge of how to use ICT to carryout researches. This is what prompted this study.

# Objectives of the Study

The objectives of this research are to:

1. Determine the impact of information and communication technology on communication in the management of tertiary institutions in Niger State, Nigeria;
2. evaluate the impact of information and communication technology on records keeping in the management of tertiary institutions in Niger State, Nigeria;
3. assess the impact of information and communication technology on educational research in the management of tertiary institutions in Niger State, Nigeria;
4. determine the impact of information and communication technology on decision making in the management of state tertiary institutions in Niger State, Nigeria; and
5. determine the impact of information and communication technology facilities on maintenance culture the management of tertiary institutions in Niger State, Nigeria.

# Research Questions

This research work seeks to ask the following questions:

* + 1. Is there any impact of Information and communication technology (ICT) on communication in the management of tertiary institutions in Niger State, Nigeria?
    2. Does Information and communication technology (ICT) impact on record keeping in the management of tertiary institutions in Niger State, Nigeria?
    3. Is there any impact of information and communication technology (ICT) on educational research in the management of tertiary institutions in Niger State, Nigeria?
    4. What impact does information and communication technology (ICT) have on decision making in the management of tertiary institutions in Niger State, Nigeria?
    5. What impact does information and communication technology (ICT) facilities have on maintenance culture in the management of tertiary institutions in Niger State, Nigeria?

# Research Hypotheses

The following hypotheses are postulated for the purpose of this study:

***Ho1***: There is no significant difference in the opinions of managers of tertiary institutions, academic and non-academic staff on the impact of information and communication technology (ICT) on communication in the management of tertiary institutions in Niger State, Nigeria.

***Ho2***: There is no significant difference in the opinions of stakeholders on the impact of information and communication technology (ICT) on record keeping in the management of tertiary institutions in Niger State, Nigeria.

***Ho3***: There is no significant difference in the opinions of stakeholders on the impact of information and communication technology (ICT) on educational research in the management of tertiary institutions in Niger State, Nigeria.

***Ho4***: There is no significant difference in the opinions of stakeholders on the impact of information and communication technology (ICT) on decision making in the management of tertiary institutions in Niger State, Nigeria.

***Ho5***: There is no significant difference in the opinions of stakeholders on the impact of information and communication technology (ICT) facilities on maintenance culture in the management of tertiary institutions in Niger State, Nigeria.

# Basic Assumptions

The following are basic assumptions about this research study:

* + 1. Whenever there is adequate provision of information and communication technology (ICT), effective communication will be enhanced in tertiary institutions in Niger State, Nigeria.
    2. If there is sufficient and qualitative information and communication technology (ICT) in tertiary institutions, there will be effective records keeping in Niger State, Nigeria.
    3. Effective information and communication technology (ICT) will promote effective educational research in the management of tertiary institutions in Niger State, Nigeria.
    4. Whenever there is availability of information and communication technology (ICT), decision making will be effective enhanced in the management of tertiary institutions in Niger State, Nigeria.
    5. If there are trained personnel and adequate information and communication technology (ICT) facilities, maintenance culture will be enhanced in the management Tertiary institutions in Niger State, Nigeria.

# Significance of the Study

This is important in a number of ways to many people. The findings of this study will be beneficial to the managers of Tertiary Institutions, Academic and non-Academic staff as well as students and researchers in the various institutions in Niger State, Nigeria. The information from the findings of this study will be useful to the managers on functions, importance and value of ICT and why they should be adopted in the management of their institutions.

Furthermore, this research work is significant to supervisors in education, educational planners, curriculum experts and/or developers as well as all other stakeholders in education sector. It will assist stakeholders in education to perform their duties and roles more effectively and sufficiently towards achieving the stated goals of tertiary institutions particularly in Niger State. It will again serve as basis for budgeting and procurement of ICT facilities in tertiary institutions in Niger State.

# Scope of the Study

The study titled evaluation of the impact of information and communication technology on the management of tertiary institutions in Niger State, Nigeria. The Study covered all the State Public Tertiary Institutions in Niger State which includes; all the institutional Managers, Academic and Non-academic staff. Nevertheless, the research work does not include Federal and Private Tertiary Institutions situated within and outside the Niger State, Nigeria.

# CHAPTER TWO

**REVIEW OF RELATED LITERATURE**

# Introduction

This chapter is on the review of related literature. It focused on the conceptual and theoretical framework of the study. Related empirical studies were also reviewed.

* 1. Conceptual Framework
     1. Concept of Information and communication Technology
     2. Concept of Management
     3. Concept of Communication
     4. Concept of Record Keeping
     5. Concept of Decision Making
  2. Theoretical Framework
  3. Impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions
  4. Impact of Information and Communication Technology (ICT) on records keeping in Tertiary Institutions
  5. Impact of Information and Communication Technology (ICT) on Educational research in Tertiary Institutions
  6. Impact of Information and Communication Technology (ICT) on Decision Making in Tertiary Institutions
  7. Impact of Information and Communication Technology (ICT) Facilities on Maintenance Culture Tertiary Institutions
  8. Empirical Studies
  9. Summary

# Conceptual Framework

The conceptual Framework of this study consists of the concepts such as; Information and Communication Technology, Management, Communication, Record Keeping, Educational Research and Decision Making.

# Concept of Information and Communication Technology (ICT)

Gill (2008) asserts that ICT is a diverse set of technological tools and resources used to communicate and to create, disseminate, store and manage information. Information and communication technology refers to as a computer based facilities used by organization personnel to record, transmit, generate, retrieve, impact knowledge and process information and communication needs (Asiyai, 2010). Steve and Diepreye, (2009) defined ICT as an eclectic application of computing, communication, telecommunication and satellite technology. Benamati and Serva (2007), ICT is a form of technology that is used to transmit, store, create, share or exchange information. Laukkanen (2007) views ICT as, a generic term referring to technologies which are used for collecting, storing, editing and passing information in various forms.

# Concept of Management

Management is an act or process of utilizing and maintaining both human and material resources in order to achieve the organizational goals. Management is the key process in every organization‘s efforts to gain and sustain a competitive advantage and it is essential for small, medium and large scale organizations (Agwu, Atuma, Aigbiremolen and yoha, 2014). Analoui and Karami (2003) stressed that management is a field that deals with the intended and emergent initiatives taken by general managers on behalf of owners, involving utilization of resources, to enhance the performance of organizations in their external environments. It involves the specification of an organization‘s mission, vision and objectives and development of policies and plans (Cooper, 1979 in Agwu, Atuma,

Aigbiremolen, and Iyoha, 2014). The author stressed that resources are allocated to institutions or organization to implement these policies and plans.

# Concept of Communication

Communication may be defined as the process of exchanging ideas among people. Barnlund (2008) explains that communication is the exchange process in which the parties send and receive messages simultaneously. Keyton (2011) sees communication as the process of transmitting information and common understanding from one person to another. It is, therefore, the process of sharing emotions, thoughts and information between two or more parties and thus, uncovering common meanings (Karakutuk, 2011). Hoben, Varley and Cox (2007) consider communication as a whole concept comprising of speech and verbal symbols thereby constituting an exchange process

# Concept of Record Keeping

This is the act of keeping documents for future reference or use. Records are important document that are kept mostly in formal organization for future purpose. These records can serve the basis for decision making. Tijani (2013), a record is any stored information, regardless of media or characteristics, made or received by an organization that is evidence of its operations and has value requiring its retention for a specific period of time. He further opined that, most common organizational records include correspondences like letters, memoranda, reports, forms or books.

Geoffrey (2007) refers to records as evidence, information and persistent representations of activities. Records are any recorded information, regardless of form or medium received and maintained by an agency, institution or organization, or individual in pursuance of its legal obligations or in the transaction of business of any kind (Ifedili and Agbaire, 2011). That is to say, record refers to data or information or documented materials that are needed for effective management and administration of a formal organization.

# Concept of Educational Research

Research is a systematic process of inquiring about a nature. According to Postlethwait (2005), research is the orderly investigation of a subject matter for the purpose of adding to knowledge. Research can be considered as to reappraise or to look into carefully (Okoli, 2003). According to Leedy (1997), research is the systematic process of collecting and analyzing information (data) in order to increase our understanding of the phenomenon with which we are concerned or interested.

# Concept of Decision Making

Decision-making is synonymous with management (Benson, 2013).To Benson (2013), decision-making is synonymous with management. Pamela, Stephen and Patricia, (2001) viewed decision-making as the process through which managers identify and resolve problems and capitalize on opportunities. Decision-making is the process of identifying and solving problems; problem identification as well as finding solution to problems (Richard, 2013).

# Theoretical Framework

* + 1. **Systems Theory**

This research is guided by systems theory as propounded by Barnard and Ludwig, (1958). They view an organization as a social system of symbolically inter-dependent parts. That is, it can be seen as a structure with interdependent parts, each having a supra system which constitutes its environment. The basic ideal in a system is that the parts of anything are so related and dependent that the interaction of part affects the whole. The educational system as an organization is a social system with the schools as sub-system of the educational system.

For the system and subsystem to survive, it must be open with its unit of interdependent parts, characteristics, activities that contribute to and receive from the whole.

That is, they have the capacity to relate to and exchange matter with their environment, unlike a closed system which do not. For instance, when the institutional leaders are confronted by parental demands for new course, not only the leaders are affected but the teaching, non-teaching staff and students are affected. The tertiary institutions as an organization can be seen as an arrangement of inter-dependent parts, each having a particular function to perform; when any of these parts fail to function effectively, the entire system experiences a setback. Thus, goals and machinery to be achieved are provided in the institutions for examples, funds, staff and ICT facilities have to be available to ensure the actualization of the goals. This theory is related to this work because; there is a system and sub-system that makes a system, each system has to perform actively so that the organization can achieve its objectives effectively. Therefore, in this study, the stakeholders have to work hand in hand to facilitate the achievement of the set goals through the use of ICT in all the institution in Niger State.

# Impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions

Communication in school settings refers to dissemination of information, opinions and/or ideas in order to enhance better understanding among the staff and the students which will in the same vein help towards achieving the goals for which the institution was established. School directors are expected to have a comprehensive knowledge of humanities, impressive communication skills, and leadership personalities (Açıkalın, 1998, as cited in Habaci, *et al* 2013; 269). It is the responsibility of directors to participate in communication, motivate people, discourage gossip, respect varied views, and make use of different communication tools (Şişman, 2012: 191).

Communication in schools is to maintain school culture and prepare tasks (Keyton, 2011). Students learn through similar tools. Communication is particularly important for

directors, who must understand the notion of communication because communication constitutes the main core of interpersonal relationships, organizational processes, and the structures of the school (Hoy and Miskel, 1998). Fred, 2010 in Keyton (2011) states that, building a relationship between school administrators and other school stakeholders requires effective communication.

# Types of Communication

Sherri (2003) identified the following types of communication:

1. Interpersonal Communication
2. Non-verbal Communication
3. Written Communication
4. Oral Communication.
5. **Interpersonal Communication:** Interpersonal communication can be described in a variety of ways but in the context of management, it is a communication between small groups of individuals, typically in a face-to-face setting, where participants engage in a minimally restricted dialogue with each other. Sherri (2003) opines that the reason for

―minimally restricted‖ is because individuals who engage in interpersonal communication share some level of familiarity with each other, making them more likely to self-disclose information, or provide more intimate details than one would with a stranger.

1. **Non-verbal Communication:** Majority of what you communicate to people on a daily basis is done without words at all (Sherri, 2003). The author went further to say that, this is also true for managers and that simply, nonverbal communication is anything besides words, such as gestures, actions, facial expressions, body language and other aspects of your physical appearance, that, when seen, communicate something.
2. **Written Communication:** Managers spend most of their time communicating with their subordinates and upper managers in a face-to-face setting, they also spend a good deal of

time writing memos, letters, e-mails and reports. Written communication refers to messages that are transmitted to receivers in writing (Sherri, 2003).

1. **Oral Communication:** This is the type of communication that normally takes place

among people through the use of sounds and/or words. To Sherri (2003), it is the most common means of sharing information, ideas or thought among people in both formal and informal organization.

# Channels of Communication

Communication has the following five channels:

1. **Source:** A source who explains the message properly and effectively has reliability, moral values, skills in emphasis, and education. The source is the starting point, a person who has thoughts, ideas, and messages to convey (Guruz and Eginli, 2008: 9).
2. **Message:** The message is the meaningful unit that is passed between source and receiver.

Each message is expected to have meaning, which the source seeks to convey. Nevertheless, the receiver is not necessarily able to understand the same meaning as the source (Kaya, 2010). This difference in understanding signifies an unsuccessful transmission of the message, which necessitates a negotiation of meaning to some extent.

1. **Channel:** This refers to the ways and techniques which carry the message to the receiver according to the objectives of the source in the process of communication (Ergin, 2008; 69). The channel can be sometimes gestures, mimicking, vocalizations, facial expressions, or words. It could also be a book (written form), a scenario, the Internet, or mass medium.
2. **Receiver:** The receiver is a person or group of persons who analyse the messages received from source through biological and psycho-social as responds to these messages orally or non-orally (Sherri, 2003).
3. **Feedback:** Feedback is defined as the perception and response of the receiver in relation to the message sent by the source (Hoy and Miskel, 1998). After the receiver accepts a message

from the source and analyses it, he or she gives feedback. The extent to which the transmitted message is understood or not understood is demonstrated in the feedback. Accordingly, the process of feedback has great value in effective communication.

# Challenges of Communication in Formal Institutions

Ibrahim (2013) identified the followings challenges of communication:

1. **Prejudice:** This refers to hatred without any base by or between a speaker and a listener.

The hatred can hinder effective process of communication in any form of organization.

1. **Misunderstanding of the Objective of Communication:** When the objective of communication is not clearly understood, communication cannot be effective. This is to say, the objective should be clearly stated and free of ambiguity.
2. **Lack of Confidence in the Source:** This is a situation where a listener does not have confidence in the speaker which affects effective communication in any formal organization.
3. **Not providing Needs of the Receiver:** Effective communication can only take place when the speakers consider the listener‘s or receiver‘s need. That is, a situation whereby the needs of receiver are not adequately consider will affect effective communication in an organization.
4. **Difference between Social Capitals:** Also, differences in social status will tend to limit or put a barrier to effective communication among people or in an organization.
5. **High Level of Anxiety:** Nervous or worries about some unknown or uncertainty in the future tend to affect effective communication process.
6. **Lack of Love and Respect:** This refers to the mode in which there is no regards, sense of belongings, affection and respect will put a barrier to effective communication process.
7. **Errors in Speech and Diction:** With regards to this, lack clarity in choice words and pronunciation will affect effective process of communication.
8. **Wrong Choice of Words:** When words are not used appropriate, there will a problem in the understanding of whatever being communicated.
9. **Physical and Psychological Situation of Source:** The physical appearance and mental (psychological) positioning of the source is always a determinant to an effective communication.
10. **Not Listening Effectively:** Lack of effective listening skills on the part of receiver can affect affective communication process.
11. **Not Determining the Aim of the Communication:** When the aim of communication is not determining effective communication cannot take place in an organization or among people.
12. **Not Preparing the Communicational Setting Properly:** This has to do with the arrangement of process and/or the place in which the communication will take place. That is, when the place is not in order or properly put in place or arranged, it will greatly affect effective communication in any given organization.
13. **Factors Related to Role and Status:** The issue of superiority and inferiority is also a factor affecting effective communication in an organization or among group of people.

# Impact of Information and Communication Technology (ICT) on records keeping in Tertiary Institutions

School records are important documents kept for effective school running. Olagboye (2004) refers to school records as books, documents, diskettes and files in which are embodied information on what goes on in school (e.g. social, academic and non-academic activities, important events etc.), the school plant as well as other relevant information focusing on the growth and development of the school. Record keeping occupies a strategic position in the efficient and effective management of the university system (Ebele, 2009).

She still opined that, records are central in the administration of institutions of learning because it documents the planning and implementation of appropriate course of services allowing proper monitoring of work.

# Importance of Records in Schools

Adepoju (1998) and Ojelade (1998) cited in Olagboye (2004) listed some general reasons or importance of keeping school records which includes the fact that school records tell the history of the school and are useful historical sources.

1. Tells the history of the school and are useful historical sources.
2. Facilitate continuity in the administration of a school
3. Facilitate and enhance the provision of effective guidance and counseling services for students in the social, academic career domains.
4. Provide information needed on ex-students by higher and other related institutions and employers of labour for admission or placement.
5. Provide data needed for planning and decision making by school heads, ministries of education and related educational authorities
6. Provide information for the school community, the general public employers as well as educational and social science researchers for the advancement of knowledge
7. Enable institutional managers to collate information on students and staff for decision making by higher authorities, the law courts, security agencies and other related government agencies when occasion demands
8. Provide a mechanism such as the school timetable for the productive management of time and coordination of school work and activities.
9. Serve as data bank on which both the institutional leaders and staff and even students can draw on.

# ICT and Record Keeping in Tertiary Institutions

The benefits of ICT in tertiary institutions cannot be overemphasized; it increases productivity, efficiency and communication. ICT has a vital role to play in record keeping in tertiary institutions. It is now recognized as an important utility. Vera and Goni (2007) described information technology as the mechanical and electronic device that is capable of producing, manipulating, transmitting, storing words, numbers, pictures, as well as numerical information through a micro-electronic base with combination of computers telecommunication, that means it comprised the supply side, that is computer hardware and software and the demand or user side, that is information's application.

Records are information about an event or series of events that is written down or stored in computer, film and many others so that it can be looked at in the future (Longman Dictionary of contemporary English in Adesua and Adu, 2009). Record keeping is a vital aspect of school management in all educational institutions of learning and in all countries of the world. It is an important aspect of school administration. Ikudayisi, Adesua and Arotiba, (2003) are of the view that even educational laws require that every institution should keep certain school records.

There are records kept in schools right from the pre-primary level to the tertiary level. These records ranges from register of admission, attendance register, log book, weekly diaries, visitor's book, staff confidential report file, meeting‘s minutes book, staff time table, a copy of national policy on education/education law, stock book, examination progress sheet records, cash book, record or inventory book, transcripts and many others (Adesua and Adu, 2009). The progress of any student is of paramount importance within the school system. It is in fact a main function for which the school exists. While keeping records of student's performance and progress, the educational administrator is able to determine the schools'

progress. One vital record an institution cannot do without at the pre-primary to secondary level is the examination progress sheet record. This record is used to keep details of student's academic performance.

However, at the tertiary level, most especially the College of Education, this type of record is popularly known as the master marks sheets otherwise known as the MMS (Adesua and Adu, 2009). This forms the basis for issuing transcripts. A transcript is a record that contains the scores of students in each course undertaken in each semester, throughout a student's course of study in the institution. The Longman English Dictionary describes a transcript as an exact written or printed copy of something. An official document of a College or University that has a list of a student's classes and results they received. ICT has come to replace the cumbersome nature and stress involved during the preparation of result up to the transcript level.

# Types of Records in Tertiary Institutions

Nakpodia (2011) writes that records in tertiary institutions are classified as follows:

1. **Reference Records:** Policy records which must be possessed by a school which contains Government policies, decisions of governing council, and procedures on funding and moral codes.
2. **Administrative Records:** Includes records of great visits, events, annual enrolment of students and records of personnel that have served and still serving in an organization.
3. **Academic Records:** Include records of curriculum issues, facilities and equipment for teaching and learning guidelines for the introduction of new academic programmes and students‘ academic records. Others include Official Correspondence and Financial Management Records. Anho (2006:45-61) classified students‘ records services in the purposes they serve.
4. **Register of Admission/Matriculation Register:** This shows the list of students enrolled each year for each Course, Department, and Faculty. It contains Admission/Matriculation number, Surname, and other relevant Personal information on the student. It also contains the oath of allegiance and obedience to the University authority and the promise to refrain from any act of violence or any action aimed at disrupting the Universities (Nakpodia, 2011in Daramola, 1995).
5. **Cumulative Records:** These contain the progress report of each student, the scholastic performances and conduct for each course for each session or semester. Transcript and Result are forms of the cumulative records.
6. **Permanent Records:** These include student course registration form/card which contains personal data and courses student entered for in each semester/session. Convocation Brochure which is issued at every convocation ceremony contains list of all graduated students; indicating their grades/class of degrees, faculties and departments for the session(s) the convocation is serving.
7. **Convocation Album:** The photograph of all graduating students, showing names, faculties/departments and years of graduation are entered. References are usually made to it by employers, and institution or persons.
8. **Student Disciplinary Entry Book (Log):** It is an historic/legal document kept by each University to record various offences committed by students, the nature of punishment recommended and approved by the University authority, Senate or Council, the date the offence was committed, the date of commencement of punishment, date of expiration of punishment if any, name of person who tried the offender, among others are kept.

# ICT and Changing Views on Record Keeping

Keakopa (2003) opines that the increased use of ICT in government administration has impacted on record keeping systems in Botswana. The new technological environment is making the present records management and archives administration moribund. In fact, Botswana which is one of the fastest developing countries in the world has embarked on drastic national reforms to encourage the growth of the ICT industry. If Botswana is achieving growth rapidly in record keeping through the use of ICT, the use of ICT should not be ignored if Nigeria wants to catch up with the rest of the world (Adesua and Adu, 2009).

Record keeping has depended on the traditional life- cycle approach. This approach emphasizes on paper-based systems and looks at the records only from creation to disposition. However, with the increased use of new technologies in government administration, the nature of records is slowly changing as more records are now generated electronically. This has evolved the life cycle approach by factoring in the conception stage in the records continuum. A computer set is the best example of ICT in education Wakjissa and Nwanshak (2007) are of the view that student records, assessment and programme evaluation is an activity that describes the students‘ progress in relation to specified goals.

Both writers however believe that computer supports these activities by storing, generation reports of students‘ test items it scores and analyses student responses and reports of students‘ test performance, grades and other evaluative data (Adesua and Adu, 2009). Although, more records are now produced in electronic form, paper continues to be the main medium of transmission and information storage. They went on to say that, organizations have to operate with information in both paper and electronic systems. Whatever system is used, organizations need records in their day-to-day operations, for decision making and accountability, educational organizations inclusive.

However, the benefits of using the ICT to compute, store and manage students

‗records according to Chien (1999) are:

1. Saves time and reduces error.
2. Automatically weights and calculates course grades.
3. Presents total absences and tar dies next to student‗s name.
4. Prints varied reports on score, attendance, assignment lists, and seating charts.
5. Some have confidential online grade book options for students.
6. Are easily exportable to the web or other applications – cross platform compatibility.
7. Are capable of storing information for up to ten classes with 50 students each, some can do more.
8. It has neater storage of past records, savable to disc or CD.

# Challenges of Using ICT Facilities in Record Keeping

Application and services of Information and Communication Technology (ICT) are integral to any meaningful development in the education sector in all respects including record keeping. Thus the efficiency of employing ICT systems in record keeping may be seemingly difficult if the basic challenges of ICT are not addressed. Oshodin and Idehen, (2007), identified poor installation of ICT related facilities, irregular electricity/power supply and poor maintenance culture, as problems facing ICT usage. Other problems facing the use of ICT in record keeping as adapted from Emetaron (2001), Ibadin (2001), Osundina (2007), Otakhor (2007) and Ogunlade (2008) are as follows:

1. **Lack of Basic and Adequate Infrastructures/Resources:** The non-existence of basic and adequate physical facilities such as accommodation space for computers with internet connectivity, electric generators and adequate furniture pose great problems in the usage of ICT for record keeping.
2. **Lack of ICT Technicians and Personnel:** There is shortage of expertise that can handle the installation, operation and maintenance of ICT facilities. These areas are essential to the application of ICT to record keeping and management.
3. **Inadequate Funding/Financial Crisis:** Information and Communication Technology (ICT) facilities are not within the reach of the average Nigerian due to the high cost of acquiring them. This is posing a barrier to easy restricted individuals‘ access of these facilities for record keeping purposes. Financial resources form a key to the successful implementation and integration of ICT in record keeping and management. The current level of funding of tertiary institutions by their owners and the decrease in budgetary allocation to the education sector is a major area of constraint to the provision of ICT facilities for record keeping and management.
4. **Lack of Basic Education and ICT Skills:** This may pose a problem to record keeping since many academic and non-academic staff who ought to be using ICT facilities are not computer literate and, therefore, fail to maximally enjoy the benefits offered by ICT in record keeping and management. Also, many of the academic and non- academic staff have conservative attitudes and still maintain their old ways of doing things and resist change.
5. **Unstable Power Supply:** Interruption of ICT facilities by electricity and computers network failure during record keeping.

# Impact of Information and Communication Technology (ICT) on Educational Research in Tertiary Institutions

According to Olagbewo (2006) educational research is an organized inquiring that aims at providing information for solving identified problems. Educational research is a systematic procedure for making an attempt through investigation in order to proffer solution to educational problems. Therefore, research is needed in order to arrive at objective conclusions on issues bothering educational institutions. Thus, the use of data to quantify statements and very assumptions with empirical evidence becomes imperative.

Educational research can be implied when research activities are geared towards unraveling educational problems or bringing about improvement in teaching and learning. Olagbewo (2006) described educational research as those activities or processes which allow one to systematically test and/or obtain a body of information, data or knowledge about teaching/ learning or conditions which affect teaching and learning. This means that research in education is a systematic attempt to define and investigate pertinent problems involved in teaching and learning.

# Types of Educational Research

Educational research can be classified into different types. These classifications may depend on the goals, methods of investigation, kind of evidence and analysis used. These classifications are:

1. **On the Basis of Goal Typology:** This type of educational research is classified based on the goals of the particular investigation and the use to be made of it, and then there is basic research and applied research.
   1. **Basic Research:** This is a type of research, otherwise called pure research which is concerned with obtaining empirical data that can be used to formulate, expand or evaluate theory. Its main aim is to extend the frontiers of knowledge with no regards to the practical application. Olagbewo (2006) it investigates relationships between methods, personal characteristics, environmental variables and learning efficiency in order to develop, illustrate, test and expand theories of learning. It is not oriented in design or purpose towards the solution of practical problems. But the findings of such studies may be applied to practical problems that have social values.
   2. **Applied Research:** This is the application of theories and principles from basic research to solve educational problems. It is a research performed in relation to actual problems which occur in the field and under the conditions in which they are found in practice. Olagbewo

(2006) it is aimed at solving immediate practical problems. The findings help educators to make rational practical decisions about specific problems. Applied research can be divided into three sub-categories:

1. **Action Research:** This is undertaken by educational practitioners in order to solve their practical local problems. It is aimed at developing new skills, finding new answers or approaches to solve problems of current concern. It is practical and directly relevant to an actual life situation. It is empirical and relies on actual observation and realistic information, or data rather than subjective opinions or past experiences.
2. **Evaluation Research:** This is used to assess educational programs in order to improve their efficiency by making necessary revisions or modifications. For instance, a systemic evaluation of the practice of some programs in the school system may necessitate modifications in the requirements and policies of the education ministry. Again, the change over from one system of education to another may have been based on systemic evaluation. Example, the change from 6-5-4 to 6-3-3-4 and from 6-3-3-4 to 9-3-4 system may have been based on the evaluation research by practitioners.
3. **Research and Development:** According to Anaekwe (2002) this is concerned with developing and testing curricula, methods and materials to ensure maximum efficiency of educational products and practices. The trial testing in schools of the curriculum materials by the former Curriculum Evaluation Study and Adaptation Course (CESAC) which is now part of the Nigerian Education Research and Development Council, (NERDC) is an example.
4. **On the Basis of Method of Investigation Typology:** Classifying educational research based on the methods of investigation used, the following types of educational research may be distinguished:
5. **Experimental Research:** In this type of research, independent variables are manipulated to observe the effects on the dependent variables. It serves to determine possible outcomes given certain conditions. There are two groups – experimental or treatment group and the control group. The experimental group receives the treatment while the control group may not receive any treatment. The difference is noted and used.
6. **Ex-Post Facto Research:** Have you noticed a research study in which the researcher attempts to conduct experimental study in which he is not able to directly manipulate the independent variables? In fact, randomization is not possible. The subjects may be grouped on the basis of some naturally occurring characteristics. Anaekwe (2002), such variables like sex, race, intelligence, aptitude, creativity, personality, socio- economic status, etc. cannot be directly manipulated. Sometimes, this type of research is referred to as causal comparative studies.
7. **Descriptive Research:** This is concerned with either description and interpretation of existing relationships, attitudes, practices, processes, trends, etc. or the comparison of variables. It does not make attempts to manipulate variables. It may be divided into many categories. Prominent among them are:
8. **Surveys:** In this type of research, a number of data-gathering psychometric tools and procedures are used. These include questionnaires, tests, checklists, rating scales, score cards, inventories, interviews, etc. Anaekwe (2002), the study can be used to ascertain the nature of a phenomenon from a relatively large number of cases. When you study the entire target population, the survey is called census. Most of the times,

the entire population is too large to be handled. In this case, you have to use appropriate sampling technique to obtain a truly representative sample.

Anaekwe (2002) affirmed that representativeness of sample is critical to survey research, in order to make reliable inferences about the target population.

1. **Documentary Analysis:** In this type, documents and records are examined for relevant information. Official gazettes, minutes of meetings, reports of panels and blueprints can be examined. Content analysis of curriculum materials and classroom lessons can be included as documentary analysis.
2. **Case Study:** You may decide to investigate a detailed account of individuals or aggregations of individual cases may be treated as units under this type of study. In other words, you may decide to study a phenomenon in one school, association, organization, agency, one student, teacher, administrator, etc. in order to solve specific problems through in-depth study (Anaekwe, 2002).
3. **Historical Research:** This is a past oriented research; which involves the location, documentation, evaluation and interpretation of available evidence in order to understand past events. Understanding past events may lead you to greater understanding of present and future events. It may also prevent future pitfalls, or even suggest hypotheses which should be used for the solution of existing problems. Olagbewo (2006), its focus may be on social concerns, educational practices, educational institutions or the educators themselves. In historical research, evidence from relics, artifacts, documents, records, oral accounts etc. are usually relied on. If you are undertaking a historical research in education, then your evidence may be sought from attendance registers, certificates, report cards, inventories, manuscripts, equipment, records of news talk, etc.

There are two main sources of research information in a historical study. These are primary source and secondary source. When evidence comes from direct source such as original documents, photographs, eye-witness accounts, it is called primary source but when a non-observer mediates between the original evidence and the investigator as in books, research reviews, newspapers or stories by non-participants, it is called secondary source. As a researcher, you should always determine the authenticity of the evidence you use (Olagbewo, 2006).

# On the Basis of the Kind of Evidence and Analysis used Typology

Using this typology, research can be classified as quantitative, qualitative or multiple perspective.

* 1. **Quantitative Research:** This type uses information or data expressed in numerical values.

Most experimental studies fall under this type or category.

Data collection methods include tests of various types, experiments, questionnaire, rating scales etc. Anaekwe (2002), quantitative data are analyzed using either descriptive or inferential statistics.

* 1. **Qualitative Research:** This type uses information which is verbal or non-numerical. It makes use of qualitative data yielded through interviews, observations, artifacts, and documentary sources, audio and visual materials among others. Information could be analyzed using transcription, coding, historical and philosophical analysis. Anaekwe (2002) and Olagbewo (2006), this can introduce elements of subjectivity in explaining, describing, collecting and even analyzing information.
  2. **Multiple Perspective Research:** This type uses both quantitative and qualitative approach otherwise known as eclectic is usually more comprehensive, yielding more generalizable and holistic findings which are more rigorous than any one approach.

# Characteristics of Educational Research

According to Anaekwe (2002), some of the characteristics are:

1. Research is Systematic: This means that the steps followed have to be sequential and logical. The procedures used can be repeated by another research to verify the findings.
2. Research is Objective: This means that the findings are reported as they are. The biases, prejudices, beliefs or interests of the researcher and/or the society are not allowed to interfere with the research procedure and/or results.
3. Research Report is Precise: This is pertinent as the use of vocabulary which is capable of multiple interpretation is not encouraged.
4. Research is Testable/Measurable: Research is not speculative, but quantifiable. It becomes imperative that data collected for research must be measurable and tested against a specified hypothesis.
5. Research is Replicable/Verifiable: Results or findings of a research can be verified by the researcher or any other person interested in the findings. This can be done by going through the data used in the study or the processes involved.

The research can be replicated by re-administering the same instrument or similar instrument of data collection to the same subjects or similar group of subjects. This replication can help one to justify the authenticity or otherwise of an earlier conclusion.

# Educational Research in Tertiary Institutions

Bako (2005) defines research as a systematic search and investigation for increasing the sum of knowledge; and research and development (R and D) as the search and application of this knowledge for the development of new and improved products, services and industrial processes of capital development. In other words, research is the process of creating new knowledge or new insights on knowledge, or unlocking knowledge (Ibidapo-obe 2010).

Nature of research in the universities is definitely more rooted and more spirited than in the non-university sector and, quite often, borders on basic research, especially in the conventional universities. The specialized universities, notably the universities of technology and agriculture, are supposed to focus more on applied research and technology adaptation, but at present suffer from acute shortage of specialized research facilities and inadequacy of qualified research personnel that could enable them fulfill this expectation.

However, funding in Africa, the universities are among the most important institutions for the development of science and technology (S and T), and they consume a significant amount of national resources devoted to research (Alo, 1995). Funding is unquestionably the most critical factor in university research. In Nigeria, the NPST has recommended 5% of GNP be set aside for research, but Nigeria‘s federal university system is said to spend only 1.3% of its budget on research (Harnett, cited in Saint et al., 2003). In the federal universities, routine funding from budgetary allocations is channeled through the NUC, which then disburses the funds to the University Boards of Research at the institutional level. However, research votes from the NUC were not disbursed regularly, and when disbursed, were often grossly inadequate to cater for the research needs of the large number of public universities in the country. This is understandable since the Nigerian higher education system is adjudged as the largest higher education system in Africa (ADEA 2000). Current university enrolment of degree students alone is estimated at over 800,000 (Okojie, 2009).

Massive increases in enrolment in the universities by the year have apparently overwhelmed government‘s capacity to maintain proportional financial support for research and other services. This has created funding shortfalls. Thus, despite substantial annual increases in government‘s recurrent grant to federal universities, the system has not had the financial resources necessary to maintain educational quality (Bako, 2005)

# Forms of Educational Research in Tertiary Institutions

Yusuf (2012) discussed the following forms of research in the universities:

1. **Individual research:** This is initiated and conducted by an individual researcher or a team of researchers who may seek funding from the University Board of Research or from alternative funding agencies, including international organizations, NGOs and the private sector.
2. **Institutional research:** This is initiated and supervised by the institution or a unit of the institution (faculty, department etc.) and usually involves a team of researchers. Funding is internal, except where assistance is obtained from external sources.
3. **Commissioned or contractual research:** This is carried out at the instance of an external body, which may be government or a government organ, the private sector, NGOs etc., which also funds the research. The sponsor has right of ownership of the research results.
4. **Collaborative research:** This is a joint research effort with common objectives or goals and involving the sharing of ideas, methodologies, facilities etc. between individual researchers or research teams, from same or different institutions, organizations, countries or regions of the world.
5. **Student research:** This is an undergraduate or postgraduate research project undertaken by a student, supervised by the student‘s department, and the results of which are reported in student‘s thesis or dissertation. Student research is usually jointly funded between the student himself (or his sponsor) and his department (Ibidapo- obe, 2010).

# ICT and Educational Research in Tertiary Institutions

The cliché "publish or perish" is quite popular in the university setting. This phrase underscores the importance attached to research in any university. In fact, it is the major

index of an academic staff quality and the determinant of advancement. Research is a systematic attempt to find solutions to problem or question. It may be targeted at describing events, predicting events or controlling events (Olagbewo 2006). The value of ICTs cannot be over-emphasized in research design and implementation of experimental and descriptive studies, statistical analysis, data production and storage, and dissemination of research information. Colwell (2000) succinctly pointed out the potential of ICTs in research when she noted that:

First, field of research will be left untouched by the current explosion of information and information technologies. Indeed, science used to be composed of two endeavors-theory and experiment but today it has a third component: computer simulation which links the other two ICTs can guide lecturers into new frontiers in basic and fundamental research.

Specific areas of relevance of ICT to lecturers in the areas of research are enumerates below:

1. First, information and communication with one another through email, mail lists, newsgroups and chat rooms. These ICT resources enable communication between scholars as they can post research, assignments book or journal lists references to on- line materials.
2. Problems and solutions can be discussed between researchers and scholars can react to the work of others in an electronic manuscript.
3. ICTs is further providing greater opportunities for research collaboration and networking among scholars spread throughout the world, thus national and international dimension of research issues can be studied as they can allow for communication with peers and experts around the world. Colwell (2000), through collaborative knowledge building, studies can spotlight transnational trend analysis through human and instrumentation collaboration.

Secondly, ICTs can facilitate Research in any discipline as they provide quicker and easier access to most extensive and current information through digital libraries that provide digitized full-text resources to learners and researchers. Others are the electronic list-a- directory of scholarly and professional e-conferences containing relevant topics and articles relevant to researchers, and electronic reference desks or virtual libraries. Others include electronic journal and catalogues and image database. Other Internet resources, gopher and CD-ROM can provide a researcher with current, in depth, firsthand information (Colwell 2000).

Thirdly, ICT can be used to do complex mathematical and statistical calculations which are important in research. They can be used for data manipulation and analysis. The ICTs will facilitate the completion of data on time, performance of statistical analysis. In fact, complex statistical analyses are not only performed instantaneously but also more accurately than possible manually. The ICTs also provide researchers with Ready Avenue for the dissemination of research reports and findings. Publication outlets include e-books, e-journals or through personal websites. ICTs provide ready means for production of research reports.

Furthermore, digital video, audio, software simulation, synchronous and asynchronous chats and interactive software, among others, bring dynamism in describing a method or reporting result (Middleton, 2000).

# Impact of Information and Communication Technology (ICT) on Decision Making in State Tertiary Institutions

In education system, decision-making is the process of selecting the appropriate action(s) to be taken which aimed at improving the well-being of the educational institutions. According to (Ocheni 2015) the educational system is expanding at an unprecedented rate because it appears that the demand for appropriate, adequate and timely information for management decisions in Nigerian educational institutions is challenging. The author stresses that, as the system and its institutions expand, so do the problems of their planning,

organization, administration, monitoring and control. Correspondingly, there is the need for increased information acquisition and information management capacity among educational administrators, planners and policy makers (Nwankwo, 2013).

Education is one of the key industries in which government invests her scarce resources. Educational institutions, therefore, are expected to justify the resources that government invests in them for the educational development of the society and the nation. He further said, the already scarce resources need to be judiciously utilized. The educational planners, administrators and policy makers need more than ever before accurate, up-to-date and timely information to make appropriate decisions. Right decisions give direction for a right course of action. Ocheni, (2015) cited in Daft (1983) stated that when an organization is designed to provide correct information to managers, decision processes work extremely well and tasks will be accomplished. However, when information is poorly designed, problem- solving and decision processes will be ineffective and managers may not understand why and this could create inefficiency in the administrative processes.

In Nigeria, the functions of the head of tertiary institutions, that is, the vice- chancellor, are to manage people, tasks and resources in order to achieve these goals. All the activities of the institution‘s management, whether working with the general public, the management ranks, academics, the board of directors, staff or the student union, are ultimately meant to contribute to this end (Adesoji and Jeremiah, (2015). In this process, both conscious and unconscious processes are involved. When these processes are conscious, decision-making is already evoked and is in use. More so, Erwat and Fabunmi (2014), investigated the extent to which information acquisition and management capacity correlated with administrators‘ decision-making effectiveness in tertiary institutions in Southwestern Nigeria. The results of their study revealed significant relationship between information acquisition and administrators‘ decision making effectiveness.

The importance of appropriate decision-making process in the governance of institutions has been stressed in the literature of Higher education leadership and management (Ogbogu 2013). Nwachukwu (1998), for instance posited that the Nigerian University system utilizes committees in the decision making process under the collegial arrangement with the Institution Governing Council and Senate at the summit. The Council is in the management of finance, property and personnel, while the Senate is theoretically supreme with respect to academic matters. It is from these two bodies that all other committees derive their ―raison d‘être‖. Each public university in Nigeria has not less than forty (40) standing committees with which they make decisions that facilitate the proper management and growth of the university system (Ogunruku 2012).

# Stages in Decision Making

The stags in decision making process include the followings; from issue identification to action evaluation, as identified by Nobert (1996) as follows:

* + - 1. **Identify a Problem:** The first step is to recognize a problem which hinders the realization of the organization.
      2. **Gather Information:** this has to do with gathering relevant information about the problem in which the decision is to be on. This has to do with what do you need to know before you can make a decision, or that will help you make the right one. Also, it concerns with whom you know, who can help, who has the power and influence to make this happen.
      3. **Analyze the Situation:** After gathering of useful information about the problem, you then analyze to determine the alternative courses of action that may be available to you.
      4. **Develop Options:** At this stage, you will need to generate several possible options.

By so doing, you also need to be creative and positive. Again, you will design/plan your situation just the way and how you want it to be.

* + - 1. **Evaluate Alternatives:** Evaluate for feasibility, acceptability and desirability. This is to identify alternative that will best achieve your objectives.
      2. **Select a Preferred Alternative:** Explore the provisional preferred alternative for future possible adverse consequences. Here, you also consider the likely problems to be entered as well as the risks of making any decision.
      3. **Act on the Decision:** At this final stage, you need to put the plan in action or place to implement the decision. You also need to allocate resources to implement the plan effectively and sufficiently. The decision or plan should also be accepted and supported by colleagues in the organization.

# Factors Affecting Decision Making at Secondary School Level

These factors include behavior and styles of leadership, delegation of authority and responsibility, communication, motivation and teachers related factors as identified by (Kumbi, 2015).

1. **Leadership Related Factors:** To encourage teachers and others to take part in the decision making process, the success or failure in managing the school is highly depending upon the efforts of the principal. This is because, it is believed that, he is well equipped in exercising the right authorities and principles of leadership within the school environment (Kumbi, 2015). Hence, leadership factor is one factor that may either encourage or discourage teachers‘ participation in school decision making affairs. These leadership factors are behaviors of leadership and styles of leadership that should be considered by the school leaders (Northouse, 2010).
2. **Behaviors of Leadership:** Studies those have been conducted on behaviors of leadership show there are many dimensions of leadership behaviors Despite the fact that there could potentially be numerous leadership behaviors, Farris (1998), identified two specific kinds of leadership behaviors: task-oriented behaviors and relations-oriented behaviors. They help their employees accomplish their goals by defining roles, establishing goals and methods of evaluations, giving directions, setting time lines, and showing how the goals are to be achieved. They provide their employees with the necessary motivation, equipment, supplies, and technical assistance for completing the task (Northouse 2010).
3. **Leadership Styles:** Leadership at school level depends on a number of factors. Some of the most important factors influencing the choice of particular type of leadership style depend on the following factors: the leadership personality, the nature of the task, the type of people involved in the task, the expectation of the group, the relationship between the leader and the other members of the group, the nature and culture of the organization (MOE, 2004).

In general, as many people agreed, from these three categories of leadership styles, a democratic style of leadership is better than the other two styles (Kumbi, 2015). This is due to the fact that democratic leadership styles allow subordinates to participate in any decisions of the organization. Therefore, school principals and vice principals have to know which style of leadership is more suitable to their school environment. Moreover, they also need to have necessary knowledge and skills about leadership styles more participating teachers in school decision making issues (Kumbi, 2015).

1. **Delegation of Authority and Responsibility:** Delegation is the process by which school managers such as principals and vice principals transfer part of their authority to subordinates (teachers) for the performance of certain tasks and responsibilities of their schools (Kumbi, 2015). The role of the secondary school principal is very crucial in meeting the objectives of

the education in the school. However, the role of the principal has become more complex that the principal needs to share the responsibilities with others in the school through delegation. While delegation involved empowerment of employees as stated above, certain factors should be taken into consideration such as defining the delegated task, capacity, and interest of the person to be delegated the task (Kumbi, 2015). Delegation of responsibility to teachers and other staff in the school relieves the principal from many pressures of work. According to Eyre and Pettinger (1999), if delegation of responsibility is not effective it could lead to work overload, delayed or inaccurate decisions, stress, mistrust, resentment, and low morale among the staff. It was also apparent that, without effective delegation by school administrators, cases of inefficiency, disharmony, and a poor working environment could result to (Missik, 2004). Despite the importance of delegation of responsibility in schools, there were still barriers that affected the effectiveness of delegation (Kumbi, 2015).

1. **Communication:** In organization, there should be effective communication in keeping effective participation of staff members. This can be achieved through creating good coordination and cooperation between managers and staff members by building their morale (Caldwell and Brian, 2005). Therefore, to make decision there must be a good communication, cooperation, coordination between school principals, vice-principals and teachers. If this is so, there is trust and respect among them. Otherwise, the reverse will be true, supporting this, Cheng (2008) points out that, unless the staff members feel secure in communicating certain information and feel that what they are communicating will be taken seriously, they are not likely to increase their communication. So, without effective communication among principals and teachers‘ participatory decision making is ineffective (Pashiardis, 1994).
2. **Motivation:** Motivation involves a constellation of closely related beliefs, perceptions, values, interests, and actions. The use of rewards may either encourage or diminish

motivation, depending on the type of rewards and the context in which they are given. Accordingly, Mokoena‘s (2011) study concludes that where teachers are given an opportunity to participate in decision making, indications are that they experience high morale. A reason for teachers‘ participation in decision making is meaningful for teachers‘ empowerment (Anderson, 2002).

Many factors influence teachers and other staff members‘ level of motivation at work.

These include school climate, lack of recognition, head teachers‘ skill in handling decisions, communication, how the past decisions have been handled, nature of task, fear, alienation, teacher expertise and victimization (kiprop and Kandic, 2012).Therefore, the school principals and vice principals should not only have some knowledge of the staff but should also bear in mind all factors which can enhance or weaken motivation as it is the engine of activity implementation.

1. **Factors Related to Teachers:** Indeed, there are limitations to teachers‘ decision making, such as the school political pressure, the lack of time, the vagueness of shared decision making models, the discord between teachers and administrators (Howes, 2000). Nevertheless, others may be; lack of adequate knowledge and skills on some certain important aspects of the school like budgeting, communication and the likes.

Similarly, Gail and Linda (2016) identified the following as factors affecting decision- making process:

* 1. Clarity of purpose and access to information
  2. Power and authority relationship
  3. Administrative support and changing role of central office personnel
  4. Policies at the district, state and federal levels

Clarity of purpose and access to information: Schools that are active in decision- making have a vision statement that focuses their decision-making process on the technical

core of teaching and learning situation of the school (Wilkinson, 1991 in Gail & Linda, 2016). According to Welfson (1998) assert that in areas where data are limited or not disaggregated at the school level, the decision-making process is limited and curtailed to issues that hold less promise of impact on the school‘s educational programs.

Power and authority relationship: Frequently, when decision-making authority is delegated, the degree of authority given to the site is often limited and ambiguous (David, 1989 in Gail and Linda, 2016). In a situation where the school is in confusion over decision- making authority, issues addressed at the school level tend to focus on secondary issues such as school climate, scheduling, safety and parent involvement rather than on primary issues affecting school success such as instructional programs and strategies, students‘ achievement, school performance (Gail and Linda, 2016). In order to focus the primary issues affecting school success, the school authority should concern itself on areas such as curriculum, staffing and budgeting.

# The Benefits of Employee Involvement in Decision Making

According to Noah (2008), for an employee involvement process to be effective, three things need to be present as follows:

1. Employees need to be given the authority to participate in substantive decisions
2. Employees need to have the appropriate decision-making skills
3. Incentives to participate (whether implicit or explicit) must be present

Employee involvement exists in organizations that intentionally establish work cultures, systems and processes to encourage and make use of employee input and feedback. Involving employees more in decision making has become increasingly common in early 21st century organizations as companies see benefits in keeping employees at all levels actively engaged in core activities (Noah, 2008). Direct involvement of employees helps an organization fulfill its mission and meet its objectives by allowing employees applying their

own ideas, expertise, and efforts towards solving problems and making decisions. It is a range of processes designed to engage the support, understanding and optimum contribution of all employees in an organization and their commitment to its objectives. Employee involvement in decision-making has resulted in successful value creation in many organizations.

Similarly, Bhatti and Qureshi (2007) and Ahmed (2013) shares the following positive responses of employees in the involvement process:

1. A positive attitude towards, and pride in, the organization
2. Belief in the organization‘s products/services
3. A perception that the organization enables the employee to perform well
4. A willingness to behave altruistically and be a good team player
5. An understanding of the bigger picture and a willingness to go beyond the requirements of the job.

# Dimensions of Decision-Making

Research conducted by Pierre, (2014) identified four (4) dimensions measuring employees‘ perceptions of their involvement in decision-making, namely power, information, knowledge and rewards.

1. Power
2. Information
3. Knowledge
4. Rewards
5. **Power:** This dimension sought to discover the extent to which employees are empowered to become involved in decision-making in their daily operations. This according to Pierre (2014) includes numerous types of decisions to be made in the institution, from institutional strategy decisions to day to day operational decisions. Any form of decision-making that is

made within the institution, but outside the top management team, could be argued as a form of participative decision-making.

1. **Information:** This dimension sought to investigate how many types of shared communications ranging from institutional performance to actual employee output to almost any type of knowledge is transferred. With the statements that they receive information regarding matters that will affect them at work, they are informed of any changes that will affect their job, they are making an impact in decisions regarding the dissemination of information in their respective departments. Pierre (2014), this indicates inadequate information sharing that could negatively affect these employees‘ performance and be a hindrance in gathering information about them as to how they work and where training may be necessary, all of which could lead to an increase in effectiveness, teamwork and performance.
2. **Knowledge:** This dimension elicited information about the skills, abilities and knowledge of employees. This is important for their involvement in decision-making in that it allows them to engage robustly with issues and the development of new ideas in taking their institution forward.

This is a positive response and is affirmative for the given institution since it endeavors to organize a culture and environment conducive to employee participation in decision-making (Pierre, 2014). This is because the employees are required to operate in a climate of guidelines, directives, time-frames and goals where there will be no tolerance for individuals who are idling not knowing what to do (Pierre 2014), this can perhaps be explained by the significant number of these employees (29.1%) who disagree with this statement.

This state of affair does not bode well for an institution which hopes to allow or encourage its employees to share or participate in decision- making. Consequently, it is incumbent upon the institutions to devise the best possible means that will allow employees

to acquire the necessary knowledge to partake in effective decision-making processes. Employees need to be made aware of the processes, be offered insightful knowledge into the institution‘s needs and be made to understand the policies of the institution and its overall direction.

1. **Rewards:** This is a critical component of employee involvement effectiveness, in particular, sharing organizational rewards is crucial because employees obtain more power, information and knowledge, and they expect more when they feel that their participation has made the organization more effective. Pierre (2014), this type of environment will heighten conflict and lead to emotional strain on the part of employees. Hence, it is suggested that more proactive employee involvement in decision-making regarding the employees‘ rewards be implemented for them to gain a greater sense of job satisfaction, motivation and institutional loyalty.

# Impact of Information and Communication Technology (ICT) Facilities on Maintenance Culture in Tertiary Institutions

It is highly needed but hardly possible to have free maintenance problems in an organization. Much work can however be done at the design stage to reduce the amount of subsequent maintenance work that will be done during the operation and maintenance life in facility (Faremi and Adenuga, 2012). Cited in Olatunji, Aghimien and Ayodeji (2016) define maintenance as work undertaken in order to keep or restore every facility of the organization

i.e. every part of a site, organization and contents to an acceptable standard. There are two process envisaged: ―keeping‖ i.e. work carried out in the anticipation of failure and

―restoring‖ i.e. work carried out in anticipation of failure (Olatunji, Aghimien, and Ayodeji, 2016).

Olatunji, Aghimien and Ayodeji, (2016) see maintenance as the combination of all technical and administrative functions, intended to retain an item in, or restore it to a state in which it can perform its required function. It includes routine preventive, predictive,

emergency and corrective maintenance employed in putting the facility back to a state in which they will continue to perform their intended function as originally conceived.

According to Olatunji, Aghimien and Ayodeji (2016), maintenance is a way of preserving the economic value of a building. It is a routine repair of a facility needed to maintain utility, structural soundness and value of the building. ―Sick buildings‖ are buildings that are not being maintained. Seeley (1987) in (Olatunji, Aghimien and Ayodeji, 2016) believe that the nature of maintenance comprises three separate components that inform the tasks involved in maintaining and these are servicing, rectification, and replacement. Renovations which are works done to restore a structure, service an equipment by a major overhaul to the original design and specification are acknowledged as part of maintenance. While culture has no generic definition because it is a complex concept. The definition of culture varies from scholars to scholars depending on the understanding of individuals, nature of the society and/or organization. In conformity with this, culture is a notoriously difficult term to define (Spencer-Oatey 2012).

Culture consists of patterns, explicit and implicit, of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievements of human groups, including their embodiment in artifacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values; culture systems may, on the one hand, be considered as products of action, on the other, as conditional elements of future action (Kroeber, and Kluckhohn in Adler,1997).

Schwartz (1992) cited in Avruch (1998) saw culture to consists of the derivatives of experience, more or less organized, learned or created by the individuals of a population, including those images or encasementsz and their interpretations (meanings) transmitted from past generations, from contemporaries, or formed by individuals themselves. Culture is the collective programming of the mind which distinguishes the members of one group or

category of people from another (Hofsted, 1994). The set of attitudes, values, beliefs, and behaviors shared by a group of people, but different for each individual, communicated from one generation to the next (Matsumoto, 1996: 16).

Culture is a fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member‘s behaviour and his/her interpretations of the ‗meaning‘ of other people‘s behaviour (Spencer-Oatey, 2008). However, our notion of culture is not something exclusive to certain members; rather it relates to the whole of a society (Spencer-Oatey, 2008). More so, cultures are advanced and some backward, some more civilized and polite while others are coarse and rude.

# Maintenance Culture

In the context of this, maintenance culture is the attitude of managing and protecting facilities. The aim is smooth working of the facilities as well as increasing the life span of those available facilities. Maintenance culture according to Tijani, Adeyemi and Omotehinshe (2016) is the habit of regularly and consistently keeping a building, machine, facilities, equipment, infrastructures etc in good and working condition. In support of this assertion, Suwaibatul-Islamiah, Abdul-Hakim, Syazwina and Eizzatul (2012)posited that maintenance culture is the values, way of thinking, behaviour, perception and the underlying assumptions of any person or group or society that considers maintenance as a matter that is important and practices it in their life.

If a nation must develop, it is imperative that installation as well as maintenance of its existing facilities be given priority. This is more so for developing nations like Nigeria where there is a huge gap between the supply and demand for such facilities due to high rate of population growth and other factors (Dabara, Ankeli, Guyimu, Oladimeji and Oyediran, 2015). Nigerian government, according to Eti, Ogoji and Probert (2006), took certain

economic steps towards being among the best twenty economies in the world by the year 2020. Attaining sustainable infrastructural development by successive governments and cultivation and practicing maintenance culture are essential in achieving this vision.

Infrastructural facilities generally referred to as economic and social overhead capital which includes education, water supply, sewage systems, and energy. Others are postal and telecommunication services, transport system, hospitals and roads (World Bank, 1994; Oluwasegun, Okorie, Dabara and Abdulazeez, 2013; Dabara, Lawal, Adebowale, Ankeli and Gambo, 2016). Governments (Federal, State and Local), private organizations and individuals need to have a strategy on how to maintain their infrastructural facilities to ensure sustainability of same. This can be achieved through maintenance culture which is said to have a correlation with national development.

It is common knowledge that the deplorable state of public facilities in Nigeria poses great concern to stakeholders. Facilities at Nigeria‘s airports, hospitals, schools, roads etc. would give indication that the society lacks an agent that would have helped manage, ensure effective and efficient functioning of the facilities as well as fostering national development. Nahimah, (2008), while working on the state of Nigerian Aviation Industry, opined that the flaws in the Nigerian Aviation sector was attributed to lack of maintenance culture and the training of professional engineers. The author further argued that, acquiring aircrafts is not as relevant to the industry as good maintenance of the existing ones, adding that a well maintained aging aircraft is as good as a poorly maintained new aircrafts. This wholly agrees with the author.

Existing maintenance records as posited by studies carried out by Eti, Ogoji, and Probert (2006) and Omotehinshe, Dabara, and Guyimu, (2015) had suggested the deteriorating nature of public facilities in terms of street lights that were erected some years back by the past and present governments that would have served as means of beautification

and illumination in our society, but due to lack of maintenance culture in terms of bulbs replacement or fixing minor faults has turned our roads to death traps and hubs of illicit games, such as arm robbery stations. Contribution of private organizations into national development cannot be over-emphasized in term of facilities construction (industrialization), environment conservation, employment generation and assisting government businesses through prompt payment of taxes. These, opined Nahimah (2008), are achievable when companies‘ operational facilities (machines) are continuously reliable, available and maintainable throughout

# Maintenance Culture in Nigerian Tertiary Institutions

Maintenance culture in tertiary institutions is the process or the act of managing the available facilities in the school in order to achieve the predetermine goals of educational industries. It means keeping school plants in good condition. According to Suwaibatul, Abdul-Hakim, Syazwin and Eizzatul, (2012), maintenance culture is the values, way of thinking, behaviour, perception and the underlying assumptions of educational institutions that considers maintenance as a matter that is important (priority) and practices it in their life. When an institution has maintenance culture, they would have the attitude to maintain, preserve and protect the available facilities.

Maintenance culture is not universal in nature, Florence (2011) postulated. It is usually derived or learns through a person making maintenance, a natural daily practice that can be followed and emulated by others. According to Mark, Ogaji and Probert (2006), the concept of maintenance culture is the internal environment between management and staff in ensuring effective maintenance through the sharing of ideas, beliefs, and values of each member in an educational organization. Similarly, Tijani, Adeyemi and Omotehinshe (2016) opined that developing and embracing maintenance culture through effective leadership,

sound policy and attitudinal development among others would not only enhance national development but also enlist our country among the comity of developed nations.

# Types of Maintenance

For the purpose of this study, Tijjani, Adeyemi and Omotehinshe, (2016) identified the types of maintenance to include:

1. Planned maintenance
2. Unplanned maintenance
3. Preventive maintenance
4. Corrective maintenance
5. Emergency maintenance
6. Condition-based maintenance
7. Schedule Maintenance
8. **Planned Maintenance:** The maintenance organized and carried out with fore thought, control and the use of records to a predetermined plan.
9. **Unplanned Maintenance:** The maintenance carried out to no predetermined plan. This is the restoration of sudden defective facility to its functional state.
10. **Preventive Maintenance:** The maintenance carried out at predetermined intervals or corresponding to research criteria and intended to reduce the probability of failure or the performance degradation of an item. Preventive maintenance is an action performed on a time or machine run based schedule that detect, preclude, or mitigate degradation of a component or system with the aim of sustaining or extending its useful life though controlling degradation to an acceptable level (Kumar and Suresh, 2008). This approach to maintenance management is predominantly recurring or time-driven tasks performed to maintain acceptable levels of availability and reliability (Mobley, 2002).

Comprehensive preventive maintenance programs, schedule repairs, adjustments machine rebuilds for all critical equipment while more limited programs only consist of minor adjustments and lubrication. The scheduling guideline for these programs is the common denomination due to the fact that, all preventive maintenance management programs assume that equipment will degrade within a certain period of time (Mobley, 2004). The strategy is cost effective, energy saving as well as increased component lifecycle and reduced equipment or process failure. The problem with the preventive approach to maintenance is that the operation mode and plant specific variables have a direct impact on the normal operating life of equipment.

1. **Corrective Maintenance:** The maintenance carried out after a failure has occurred and intended to restore an item to a state in which it can perform its required function. This maintenance strategy is simple and straight forward, ―fix it when it breaks‖ (Mobley, 2004)

i.e. the defective items are fixed either after failure or during failure (Moubray, 1997). The corrective technique does not take any maintenance action until failure occurred. This maintenance management philosophy is rarely used altogether without any preventive tasks,(lubrication and adjustment). Still, in a corrective environment, the equipment is not rebuilt nor repaired in greater extent until it fails to operate (Mobley, 2004). This enjoyed low cost investment for maintenance and few staff is required.

1. **Emergency Maintenance:** The maintenance which is necessary to put in hand immediately failure occurred to avoid serious consequences (Mobley, 2004). This is sometimes referred to as day-to-day maintenance, resulting from such incidences as gas leaks and damage.
2. **Schedule Maintenance:** The preventive maintenance carried out to a predetermined, say, interval of time, number of operations or mileage.

**`7. Condition-Based Maintenance:** The preventive maintenance initiated as a result of knowledge of the condition of an item from routine or continuous monitoring.

# Models of Maintenance

According to Santiago (2011), the following four (4) are models of maintenance:

1. Corrective model
2. Conditional model
3. Systematic model
4. High availability maintenance model
5. **Corrective Model:** This is the most basic model, and includes, in addition to visual inspections and lubrication mentioned previously, the arising breakdowns repair. It is applied, as we will see, to equipment with the lowest level of criticality, whose faults are not a problem, economically or technically. In this type of equipment is not profitable to devote more resources and efforts.
6. **Conditional Model:** It includes the activities of the previous model and also this model carries out a series of tests that will determine a subsequent action. If after testing we discovered an anomaly, we will schedule an intervention; on the contrary, if everything is correct, we will not act on the equipment. This maintenance model is valid in equipment not to very used, or for equipment that despite being important in the production system the probability of failure is low.
7. **Systematic Model:** This model includes a set of tasks we will perform no matter what is the condition of the equipment, also we will perform some measurements and tests to decide whether to carry out other tasks of greater magnitude, and finally, we will repair faults that arise. It is a model widely used in equipment of medium availability, of some importance in the production system whose failures cause some disruption. It is important to note that equipment subjected to a systematic maintenance model does not have to have all its tasks

with a fixed schedule. Just equipment with this model of maintenance can have systematic tasks that are carried out regardless of the time it has been operated or state of the elements on which it works. It is the main difference with the previous two models in which to perform a maintenance task should be some sign of failure. An example of equipment subjected to this maintenance model is a discontinuous reactor, in which the tasks that must react are introduced at once, the reaction takes place, and then their action product is extracted before making a new load. Regardless of this reactor is doubled or not, when operating should be reliable, so it is warranted a series of tasks regardless of whether any signs of failure have been arising.

1. **High Availability Maintenance Model:** It is the most demanding and exhaustive model of them. It is applied to that equipment that under no circumstances may suffer a breakdown or malfunction. These are equipment are also required very high levels of availability, above 90% (Santiago, 2011). The reason for such high level of availability is generally high cost in production due to a fault. With a demand so high, there is no time to stop the equipment if the maintenance requires it (corrective, preventive, systematic).

To maintain this equipment is necessary to use predictive maintenance techniques that allow us to know the status of the equipment when is working, and scheduled shut downs, which supposes a complete overhaul, with a frequency usually annually or higher. This review will replace, in general, all parts subject to wear or failure probability over the years (parts with a lifetime less than two years). These reviews are prepared well in advance and not have to be exactly the same every year.

Since in this model the corrective maintenance is not included, that is, the aim should be zero breakdowns on this equipment; usually there is no time to properly address the issues that occur, being desirable in many cases quick provisional repairs that will maintain the equipment working until the next overhaul. Therefore, the Annual overhaul must include the

resolution of all those provisional repairs that have had to be made throughout the year. Examples of this model of maintenance may be: Turbine of power production high temperature furnaces, where an intervention means cooling and re-heating the furnace, resulting in energy expense and production losses associated with it, rotating equipment working continuously, reactor deposits or reaction tanks not duplicated that are the basis of production and to be kept in operation as many hours as possible.

# Importance of Maintenance Culture in Nigerian Tertiary Institutions

A thorough adherence to a well-defined and developed maintenance strategy will take care of facility breakdown or malfunction there by allowing facility managers to concentrate on capitalization (Omotehinshe, Dabara, and Guyimu, 2015; Akinyemi, Gambo, Ankeli, and Dabara, 2016). In the absence of this, measurable time will be required to develop and define a maintenance strategy, communicate it, and last focusing on the tactical choice, for how to achieve it. Tactics are the actual activation needed to implement the strategy, which concerns the management of processes, people, and physical asset infrastructure (Camphell and Reyes- Picknell, 2006).

The management‘s objectives must be realized in accordance with safety, environmental regulations and also in a cost effective way. The integration of machines, men, methods and means into a well-designed strategy requires indispensable managerial capacity (Waeyenberghad and Pintelon, 2002). However, below are some of the accruable benefits if maintenance culture is embraced in our society:

1. Keeping assets in utmost working condition in order to minimize downtime and disruption to services.
2. Keeping facilities in a state of good repair for the owner‘s health and safety.
3. Keeping assets from deteriorating in appearance and aesthetics.
4. Keeping facilities so as to optimally achieve their full potential service life.
5. Leveraging efficiencies that can be reflected on the owner‘s statement of financial position.
6. Satisfying a legislated duty that is owed to owners, occupants and guests on the property.
7. Preventing unnecessary damage to assets or facilitation that may result in their performance failure.

# Challenges of Poor Maintenance Culture

The following are some of the identified factors responsible for the poor maintenance culture in our society:

1. **Corruption:** Obayelu (2007) defines corruption as an effort to secure wealth or power through illegal means for private gain at public expense; or a misuse of public power for private benefit while Lip set and Lenz (2000) compared the growth of corrupt practices, in all its manifestations with human race. Ogundiya (2009) in his work saw corruption as the exploitation of public position, resources and power for private gain. Corruption is not only found in democratic and dictatorial politics, but also in feudal, capitalist and socialist economies. Christian, Muslim, Hindu and Buddhist cultures are equally bedeviled by corruption (Obayelu, 2007).

Corruption has threatened our national development because there is no effective and functional mechanism that can control the menace. A sitting government awards projects (without means of its completion) only to be abandoned by its successor due to personal gain. One government would award projects and build infrastructural facilities while successive government who should maintain and consolidate on existing ones would totally abandon them because they believed that awarding new projects at inflationary cost would profit the administration rather than the public.

1. **Leadership:** Good and effective leadership is essential to national development. Ability to formulate policy, transform potential to reality and proper leadership to subordinate are the major features of a sound leader. Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objective (Yukl, 2006). Leadership also is the shifting of owns vision to high sights, the raising of man‘s performance to higher standards, the building of man‘s personality beyond its normal limitations (Peter 1977).

Few among our leaders are up to the tasks whereas majority of them really have no ingredient of effective leadership which may account for why most of the Nation‘s facilities are in shambles and decay. It is a general believe that one cannot give what one doesn‘t have. Most of our leaders lack maintenance culture, vision, passion and empathy (Omotehinshe et al., 2015b) which are some of the leadership ingredients required to influence and stimulate people‘s behaviour towards maintaining and sustaining existing facilities.

1. **Attitudinal Problem:** More worrisome is Nigerians attitude towards government property as well as their private properties. Public office holders, according to Peter (1977), hardly rehabilitate their official buildings or facilities until when such assets stand the danger of risking the life of the users. It is common knowledge in Nigeria that most incoming governments make little or no efforts in keeping existing facilities in a proper shape through maintenance and rehabilitation rather they would abandon the inherited facilities and embark on new ones with a view to draining the little resources of the state. Nonchalant attitude, noted Omotehinshe, *et al*. (2015), of individuals towards their health, building, cars amongst other had made them to spend huge amount of money on things that ought to have been prevented or rehabilitated through the act of maintenance program.
2. **Lack of Effective Policy:** Another reason why most of our public and private facilities are in total state of mess is non-existence of maintenance policy. Policy is a law, regulation, procedure, administrative action, incentive or voluntary practice of governments and other institutions. There is no single blue print, program or scheme is it federal or state level on how public facilities should be maintained. Our elected legislators, both at the federal and state levels, are yet to take concrete steps in promulgating effective laws that would take cognizance of major maintenance problems encountered in the administration of public facilities. On their own part, executive arms are busy inaugurating ad-hoc committees or agencies on how to sustain, maintain and rehabilitate the nation‘s facilities in order to handle the national development.

# Empirical Studies

In a study by Adeoye, Oluwole and Loto (2013) was on appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria. The objectives of the study were to ascertain how efficient is the Information, Communication Technology in performing its lofty role as a change agent for higher education in Nigeria and examine the constraints to effective utilization of Information, Communication Technology as a change agent for higher education in Nigeria. Two hypotheses were formulated and tested for the study. The study specifically focuses on the critical appraisal of the role of Information Communication Technology as a change agent for higher education in Nigeria; a descriptive survey research design is adopted for the study. This research design entails collection of relevant data about the problem under investigation, with the aim of describing the nature of existing conditions or identifying the standards against which existing conditions can be compared or determining the relationships that exist between the identified variables in the study.

The study was carried out in six randomly selected tertiary educational institutions in South west, Nigeria. These include two Universities, two polytechnics and two Colleges of Education. A structured questionnaire titled Information Communication Technology as a change Agent Questionnaire was designed for the study. The reliability of the instrument was determined through test-retest method. A correlation coefficient of 0.87 was obtained, using Pearson Product Moment Correlation, indicating that the instrument was reliable. The questionnaires were administered to fifty members of academic staff in each of the six sampled tertiary institutions, making a total of three hundred questionnaire administered.

The findings of the study revealed that, inadequate computer trained and certificates teachers and poor funding affects efficient and effective utilization of Information, Communication Technology in performing its lofty role as a change agent for higher education in Nigeria. Recommendations were made which included that adequate funds must be provided to initiate, develop, promote, review and implement ICT policies in the educational sector to bring about an improvement on ICT utilization, through computer apprentices courses taught in Nigerian tertiary institutions.

This study is related to the present one because they both focus on the role of ICT in the management of tertiary institutions; the former study covers the entire country while the latter covers only Niger state.

Eze and Aja (2014) in a study on effective communication is of great importance in teaching-learning situation. That is why Federal Republic of Nigeria (FRN, 2004) provides that ICT devices will be used to improve communication as well as for expansion of instructional techniques in schools. Information and Communication Technologies (ICTs) are technological gadgets that receive process, store, retrieve and disseminate information. It is in response to the need for ICT in schools that this study was undertaken to assess the availability and utilization of Information and Communication Technology (ICT) devices in

senior secondary schools in Ebonyi Local Government Area of Ebonyi State. Four research questions guided the study. The population of the study comprised of two hundred and twenty five (225) teachers and Eight thousand one hundred and twenty eight (8,128) students in the fifteen (15) senior secondary schools in the study area. Simple random sampling technique was used to select ten (10) teachers and twenty six (26) students from ten (10) schools used for the study to give a sample size of three hundred and sixty (360) respondents. The instrument used for data collection was structured questionnaire. Pearson‘s Moment Correlation Co-efficient was used to calculate the reliability co-efficient of the pilot tests to get established reliability value of 0.78. The data collected were analyzed using mean scores. It was found among other things that ICT devices are not adequately utilized, personnel to operate ICT devices are not adequately trained and most of the ICT devices are not in good working condition in schools studied. Based on the findings, the following recommendations were made: urgent review and implementation of policy on ICT adaptation in secondary schools, recruitment and posting of qualified personnel to operate ICT devices in secondary schools, review of teacher education curriculum to incorporate ICT skills and training and encouraging individuals and non-governmental agencies to participate in the

provision and maintenance of ICT devices.

This study is related to the present one because they both focus on the role of ICT in the management of tertiary institutions; the former study covers the entire country while the latter covers only Niger state while the former covers Ebonyi local government in Ebonyi state.

Egoeze, Misra, Makeliunas and Damaševičius (2018) conducted a study on impact of ICT on Universities Administrative Services and Management of Students' Records: ICT in University Administration. This study describes the issue of governance in higher education of which administration is key, is saddled with numerous challenges, as such, new

approaches are being sought out to enhance the process. The objectives of the study were to examine the impact of ICT on administrative services/management of student’s records in Nigeria universities and the most popular ICT-enhanced administrative service in Nigeria universities. Two corresponding research questions guided the study, while one null hypothesis was formulated for the study. It is obvious that Information and Communication Technology (ICT) is a tool that enhances administrative activities of higher education institution. This article is based on descriptive survey design which investigates the impact of ICT on the administrative services/management of students' records in Nigerian universities. A questionnaire was the research instrument employed, and questionnaire items were developed through a review of related literature. A total of 200 respondents participated, comprising students, lecturers and administrators were randomly selected from ten universities in Nigeria. Data collected was analyzed using ANOVA. The major impacts of ICT in administrative services/management of students' records in Nigerian universities were identified and discussed. Suggestions are made on the need for Nigerian universities to widen the scope of ICT application in administrative services to fully reap the benefits of ICT.

The findings of the study revealed that, Computers are extensively used for accounts- related, clerical and general administrative duties in the university. Another finding was that, application and admission are conducted online and applicants can check admission status anywhere. Recommendations were made that necessary actions should be taken to ensure that impact of ICT is also felt in these activities, for maximum efficient delivery in the administrative services of Nigeria universities.

In another study by Osakwe (2012) on Problems and prospects of using Information and Communication Technology for Record Keeping in Tertiary Institutions in Nigeria. The objectives of the study were to ascertain types of records kept and managed in tertiary institutions, problems of using ICT facilities in record keeping and their solutions and

prospects of using ICT facilities for record keeping and management in tertiary institutions. Three hypotheses were formulated and tested for the study. The study specifically focuses on the rapid changes in technology led to a revolution in Information and Communication Technology (ICT). This poses new challenges and opportunities to all levels of educational institutions. Academic and non-academic staff in tertiary institutions needs to be computer- literate if competencies in record keeping and management have to be upheld; a descriptive survey research design is adopted for the study. This research design entails collection of relevant data about the problem under investigation, with the aim of describing the nature of existing conditions or identifying the standards against which existing conditions can be compared or determining the relationships that exist between the identified variables in the study.

The study was carried out in eighteen randomly selected universities in Nigeria. These include one Federal University, one state and one private university from each of the six geographical zones of Nigeria. A structured questionnaire titled Information Communication Technology as a change Agent Questionnaire was designed for the study. The reliability of the instrument was determined through test-retest method. A correlation coefficient of 0.86 was obtained, using Pearson Product Moment Correlation, indicating that the instrument was reliable. The questionnaires were administered to ten members of academic staff in each of the eighteen sampled universities, making a total of one hundred and ninety questionnaire administered.

The findings of the study revealed that, all types of records are properly kept and managed in tertiary institutions, that problems of using ICT facilities in record keeping in universities have great prospects in the management of universities in Nigeria among others. Recommendations were made which include that; ICT should be fully applied to record keeping in tertiary institutions. This will enhance individual, institutional and national

development tradition. Also, energy and time used on manual record keeping will be conserved; mutual confidence between academic staff, non-academic staff and students will be enhanced, and good judgment based on facts and figures will prevail. ICT will also facilitate the preparation for and issue of transcripts to graduates who wish to further their education along a given professional line.

This study is related to the present one because they both focus on the role of ICT on record management in tertiary institutions; the former study covers the entire country while the latter covers only Niger state.

Hashim, Alam and Siraj (2010) conducted a study on Information and communication technology for participatory based decision-making-e-management for administrative efficiency in Higher Education. The objectives of the study were: how does QuESt ensure accountability in the decision making and management process, how does QuESt manage activities that are currently time-consuming to ensure participatory based decision making, how does QuESt ensure bias-free decision (avoiding grouping and lobbying), how does QuESt address negative aspects of participation in decision-making, how does QuESt identify activities that are the root cause of problems/issues among others. The Quality e Management System (QuEST) was developed as a research tool to incorporate participatory decision making and to ensure greater efficiency in the management of a faculty in a university.

The findings of the study revealed that, e-management facilitate participatory decision making in an organization while ensuring tight quality control and monitoring procedures. Ethical and confidentiality issues are addressed as well. QuESt has the potential to take the organizations, in this case the faculties, internal as well as external processes to the next level by putting into place electronic record management while maintaining flexibility. Using technology, the faculty can ensure reliable participatory decision making through the enforcement of policy guidelines.

The former study was conducted in Malaysia while the latter study was conducted in Nigeria, to be specific in Niger state tertiary institutions. Both study adopted questionnaire as instrument for collection of data.

Noor-Ul-Amin (nd) conducted a study on Worldwide Knowledge, Research, and Experience: ICT as a Change Agent for Education (A literature review). Information and communication technologies (ICT) have become common place entities in all aspects of life. Research questions were formulated so as to achieve the aim and specific objectives of the study; also various literatures of scholars and authors in the field were reviewed. In order to achieve the purpose and objectives of this study, questionnaire was designed to elicit information from the respondents. The sample size for the study was one hundred and fifty

(150) academic staff. After the total collection of data, critical analysis of the study was carried out and the major findings revealed the following: that the adoption and use of ICTs in education have a positive impact on teaching, learning, and research. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers.

Ametepe and Annan (2015) Conducted a study on the Impact of ICT on Teaching, Learning and Research in Tertiary Institutions: A Case Study of Wisconsin International University College, Ghana. They posit that, times underscores management of tertiary institutions, lecturers and students concern for the integration of ICT into tertiary institutions. The study specifically aimed at evaluating the benefit of various ICT tools used by tertiary institutions and examines the challenges tertiary institutions face in terms of implementing

ICT in teaching, learning and research. Another objective is to determine the role of lectures, administrators and students in integrating ICT into research in tertiary institutions. The research was conducted on lecturer‘s administrators and students of Wisconsin International university College, Ghana and information was gathered through administration of structured questionnaires. Three null hypotheses were postulated and tested at 0.05 levels of significance. Results from the study indicated that there is a positively high impact of ICT on teaching, learning and research in tertiary institutions in the sense that, broadband is a major factor in increasing collaboration between teachers; Interactive whiteboards make a difference to aspects of classroom interaction. Motivate both lecturer students to use ICT. The findings also presented challenges, where students need to access computers in an easy way; recurrent technical problems; and the use of software applications require skills that have to be gotten. It was then recommended based on the findings of the study that, policy makers should include new competencies in the curricula and in assessment schemes, implement new forms of continuous professional development in a workplace environment.

The former study was conducted in Wisconsin university in Ghana while the latter study was conducted in Nigeria, to be specific in Niger state tertiary institutions. Both studies adopted questionnaire as instrument for collection of data.

David (2017) conducted a study to investigate ICT adoption on the educational growth of colleges of education in Agbor and Warri, Delta State. As part of the study, research questions were formulated so as to achieve the aim and specific objectives of the study; also various literatures of scholars and authors in the field were reviewed. In order to achieve the purpose and objectives of this study, questionnaire was designed to elicit information from the respondents. The sample size for the study was one hundred and twenty-six (126) non-academic staff which is 50% of the total population. After the total collection of data, critical analysis of the study was carried out and the major findings

revealed the following: that majority of the ICT facilities available in Colleges of Education, Agbor and Warri, Delta State include the internet, television, photocopying machines, computers, flash drives, printers, DVD and Video Players, intercom, scanners and CD- ROMs; that the benefits of the utilization of ICT facilities in colleges of education can be seen in the ability to type, process and store work for later use, digitization of school processes amongst others and that there are many constraints to the effective adoption and utilization of ICT facilities in colleges of education in Agbor and Warri which include poor funding, lack of investments in ICTs, low ICT literacy by staff amongst others. Finally, the study was concluded that every higher institution of learning especially colleges of education should utilize and maintain every source possible to combat the constraints facing the effective adoption, utilization and maintenance of ICT into their teaching, learning, research and administrative activities to ensure that higher educational processes are optimized. Thus, it was recommended among other things that the role of ICT in tertiary institutions should continually be awarded its prominent role.

The former study was conducted in colleges of education in Agbor and Warri, Delta State while the latter study was conducted on tertiary institutions in Niger state. Both studies adopted questionnaire as instrument for collection of data but vary in the instruments used for data analysis. While the former used mean percentage and standard deviation to analyze its data, while the former used Analysis of Variance to analyze all the hypotheses at 0,05 levels of significance.

# Summary

The literature for this study focused on four main headings; introduction, conceptual framework, theoretical framework and empirical studies. Under the conceptual framework, concepts such as Information and Communication Technology, Management, Communication, Record Keeping, Educational Research, Decision Making, Theoretical Framework as well as Empirical Studies were reviewed.

Information and Communication Technology is a combination of manufacturing and services industries that capture, transmit, display data and information electronically, Management is the utilization of resources, to enhance the performance of organizations in their external environments, Communication is the process of disseminating information from one place to the other, Record is the act of keeping information in such a way that it can be easily retrieved when the information is needed, Educational Research is the process of finding solution to a problem, Decision Making is the process of selecting the appropriate action(s) to be taken which aimed at improving the well-being of the educational institutions. System theory was studied as theoretical framework for this study while the works of other researchers whose researches are related to this research work were however reviewed as empirical studies for this research work.

# CHAPTER THREE RESEARCH METHODOLOGY

# Introduction

This chapter includes methods/ procedures which the researcher used in this research work. The procedures were discussed under the following headings: Research Design, Population of the study, Sample and Sampling Techniques, Instrumentations, Validity and Reliability of the Instrument, Pilot Testing, Procedures for Data Collection and Analysis.

# Research Design

The researcher employed descriptive survey research design for this research study. This is because the design allowed the researcher to generalize findings of a small sample size on the whole population. Research design is a term used to describe a number of decisions which need to be taken regarding the collection of data before the data are collected (Nwana, 1981). According to Osuala (2005) in survey research, small sample is studied and the findings are generalized to the entire population of the study.

# Population of the Study

The population for this study comprises of management staff, academic and non- academic staff in state owned tertiary institutions in Niger State. According to data from Department of Planning, Research and Statistics, (DPRS), Niger State Ministry of Education (2017), the tertiary institutions has the total population of 10 managers, 8000 academic Staff and 7258 non-academic Staff. However, the distribution of Population of the stakeholders is presented in table 3.1.

# Table 3.1: The Population of this Study

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **S/N** | **Names of Inst. Mgn** | **Staff** | **Acad. Staff** | **Non- Acad. Staff** |  |
| 1 | Ibrahim Badamasi Babangida University, Lapai | 5 | 446 | 269 |  |
| 2 | College of Education, Minna | 5 | 2454 | 1409 |  |
| 3 | Niger State Polytechnic Zungeru | 5 | 2368 | 2353 |  |
| 4 | College of Agriculture, Mokwa | 5 | 1638 | 1746 |  |
| 5 | College of Arts and Islamic Studies Minna | 5 | 284 | 293 |  |
| 6 | Institute of Innovation and Technology, Minna | 5 | 163 | 153 |  |
| 7 | School of Nursing, Bida | 5 | 209 | 285 |  |
| 8 | School of Midwife, Minna | 5 | 153 | 356 |  |
| 9 | School of Health and Technology, Minna | 5 | 146 | 238 |  |
| 10 | School of Health and Technology Tunga, Magajiya | 5 | 139 | 156 |  |
|  |  | **Total** | **50** | **8000** | **7258** |  |

**Source**: Planning, Research and Statistic Department, Niger State Ministry of Education, Minna (2017)

# Sample and Sampling Techniques

Research advisor table (2006) was relied upon to determine the sample size of the study. Thus, from the Research Advisor table, a population of 7500 and a little above 7500 thousand has a corresponding sample size of 370. Since the population of the study is 7258 which is within the ambit set by the research advisor, the sample size of 365 was therefore chosen for the study.

There are 10 educational institutions in Niger state, out of which three were sample randomly representing 30% of the population of the schools, this is by relaying on the

opinion of Olayiwola (2007) that 10-30% of a population can be used as sample to represent the entire population.

However, to determine the distribution of the sample size which comprises the managers, non-academic staff and academic staff, purposive sampling was employed to determine the distribution based on their respective population. This was done relying on the opinion of Nwana (2008), that purposive sampling technique gives the researcher the opportunity to select a size that appears to him or her as being representative of the population defined by his research problem**.**

# Table 3.2: Sample of the Study

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **S/N** | **Names of Inst. Management** | **Staff** | **Academic Staff** | **Non- Academic Staff** |
| 1 | Ibrahim Badamasi Babangida University, Lapai | 5 | 48 | 41 |
| 2 | College of Education, Minna | 5 | 152 | 80 |
| 3 | School of Health and Technology Tunga, Magajiya | 5 | 20 | 14 |
|  |  | **Total** | **15** | **220** | **135** |

# Instrumentations

In this research study, the researcher made use of self-structured design questionnaire to collect data from the stakeholders/respondents. The questionnaire comprised of fifty (50) structured items on the Impact of Information and Communication Technology on the Management of State Tertiary Institutions in Niger State. More so, the items were structured on five (5) point Likert scales; Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The instrument has two sections; section ―A‖ is demographic data of the respondents/stakeholders and section ―B‖ item statements

# Validity of the Instrument

This refers to the functionality of the instrument to measure what it is expected to be measured. Nevertheless, the instrument was given to experts in educational administration and planning (the supervisors in particular) of this research work for validation. Also, the instrument was given to linguistics for grammatical and/or semantics validation. Based on their suggestions, some items were modified, some removed while others were replaced in order to make the instrument valid.

# Pilot Study

A pilot test was conducted at Niger State Polytechnic Zungeru and Federal University of Technology in Bosso Local Government Area of Niger state. The questionnaire was administered within one week to fifty respondents. One questionnaire was given to each of the institutional leaders and four management staff, twenty copies of questionnaires were given to twenty academic staff while twenty-six copies of the questionnaires were given to non-academic staff. The aim was to ascertain the reliability and internal consistency of the items in the questionnaire. The result of the data PPMC 0.05 levels of significance was used to test the level of significance of the calculated Alpha.

# Reliability of the Instrument

The reliability of the instrument was ascertained through a credible Pilot Testing using test-retest methods. The instrument was used on fifty-one members of the population (but not part of the sample size). The result of the pilot test was analyzed using Pearson Product Moment Correlation Coefficient, (PPMC) to get the internal consistency of the instrument. A reliability co-efficient is expected to be 0.83 which signifies that the instrument is reliable.

# Method for Data Collection

The researcher personally administered the instrument on the sampled institutions. The researcher briefed the respondents on important and value of the information required of them and then solicits for their necessary information. However, the researcher explained items that were difficult for respondents to understand. More so, each of the respondents was given a copy of the instrument with sufficient time to respond to items for which the instrument was later retrieved from them (respondents) by the researcher.

# Method of Data Analysis

The data collected by the researcher was statistically analyzed using frequencies and percentage for the Bio-data variable while mean and standard deviation were used to answer research questions and analysis of variance (ANOVA) was used to test all the hypothesis at

0.05 levels of significance. This is because there were three categories of respondents involved. That is, institutional management staff, academic staff and non-academic staff.

# Introduction

**CHAPTER FOUR**

# DATA PRESENTATION AND ANALYSIS

The researcher presents the analysis and interpretation of results in this chapter. The analysis of data focuses mainly on the respondent‘s‘ opinions on Impact of Information and Communication Technology (ICT) on the Management of State owned tertiary institutions in Niger State, Nigeria. The Data analyzed were based on the personal data of the respondents, the research questions and the null hypotheses. A total number of three hundred and sixty- five (365) copies of questionnaire were distributed but 357 were successfully completed and retuned. Table of frequency and percentage was used to analyze personal data of the respondents. Weighted mean of 3.0 was used to answer the research questions. A bench mark of 3.0 was set for acceptance to the item statement while a score of less than 3.0 was set for disagree. One-way Analysis of Variance was used for the Analysis at 0.05 level of significant.

# Analysis of Bio-Data of respondents

Table 4.1 presents the distribution of personal data of the respondents in frequency and percentages.

# Table 4.1: Analysis of Personal Data of the Respondents

**S/N Bio-Data Category Frequency Percentage**

# %

**Cumulative Percentage**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Managers of inst. | 15 | 4.2 | 4.2 |
| 1 Status | Academic staff | 220 | 59.4 | 63.6 |
|  | Non-academic | 135 | 36.4 | 100 |
|  | Male | 260 | 72.8 | 72.8 |
| 2 Gender | Female | 121 | 33.9 | 100 |
|  | NCE | 65 | 18.2 | 18.2 |
| 3 Qualification | B. ED | 91 | 25.5 | 43.7 |
|  | M.ED | 103 | 28.9 | 72.6 |
|  | Ph.D. | 75 | 21.0 | 93.6 |
|  | Others | 23 | 6.4 | 100 |

Table 4.1 shows that 15 managers of institutions, 212 academic staff 130 and non- academic staff representing 4.2%, 59.4 %, and 36.4% respectively took part in the study. A total of 260 respondents representing 72.8 % were males while 121 representing 33.9 % were females. On qualification, 65 had NCE, 91 had B. ED, 103 had M. ED, 75 had Ph.D, and 23 had others with respective percentages as18.2 %, 25.5 %, 28.9 %, 21.0 % and 6.4 %.

# Answers to Research Questions

The researcher used 3.0 as the mean (weighted mean) otherwise known as decision mean since the instrument was structured along a modified five point Likert scale to take decision on whether to accept or reject the research questions. Therefore, a mean score of 3.0 and above indicates acceptance; while a mean score below 3.0 indicates rejection. This is shown below.

SA = 5 points A= 4 points

UD= 3 points

D= 2 points

SD= 1 point

5+4+3+2+1 = 15 = 3.0

5 5

# Research Question One: Is There Impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions in Niger State, Nigeria?

This section contained Item 1-10 on impact of information and communication technology (ITC) on communication in tertiary institutions in Niger State, Nigeria.

# Table 4.2: Opinions of Respondents on Mean Score of Respondents on the Impact of Information and Communication Technology (ICT) on Communication in Management of Tertiary Institutions in Niger State, Nigeria

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item statement** | | | | **Respondent** | | **SA** | **A** | **UD** | **D** | **SD** | **N** | **MEAN** |
| 1 | ICT serves as |  | a | tool | for | Managers | 10 | 2 | - | 3 | - | 15 | 4.3 |
|  | communication | in |  | the | higher | Non-academic staff | 5 | 107 | - | 7 | 16 | 135 | 3.6 |
|  | institutions |  |  |  |  | academic Staff | 20 | 130 | 2 | 58 | 10 | 220 | 3.7 |

t

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | e-libraries | | have | impac | on | Managers | 2 | 10 | - | 2 | 1 | 15 | 3.6 |
| communication between lecturers and | | | | | | Non-academic staff | 105 | 7 | - | 18 | 5 | 135 | 4.5 |
| students | | | | | | academic Staff | 90 | 40 | 8 | 25 | 49 | 220 | 3.7 |
| 3 ICT enhance communication between | | | | | | Managers | 5 | 8 | - | 2 | - | 15 | 4.0 |
| Vice-chancellor and academic staff | | | | | | Non-academic staff | 32 | 80 | - | 16 | 2 | 135 | 4.3 |
|  | | | | | | academic Staff | 102 | 35 | 6 | 49 | 20 | 220 | 3.9 |
| 4 ICT ensure good communication | | | | | | Managers | 3 | 9 | - | 1 | 2 | 15 | 3.6 |
| between Provost and academic staff | | | | | | Non-academic staff | 87 | 8 | - | 26 | 11 | 135 | 4.0 |
|  | | | | | | academic Staff | 55 | 113 | 5 | 59 | 29 | 220 | 4.6 |
| 5 ICT facilitate communication between | | | | | | Managers | 7 | 1 | 2 | 5 | 2 | 15 | 4.2 |
| Rector and academic staff | | | | | | Non-academic staff | 88 | 18 | - | 24 | 4 | 135 | 4.3 |
|  | | | | | | academic Staff | 9 | 128 | 6 | 86 | 40 | 220 | 3.7 |
| 6 ICT is used to send students results via | | | | | | Managers | 6 | 4 | - | 1 | 10 | 15 | 3.8 |
| internet | | | | | | Non-academic staff | 54 | 13 | - | 45 | 18 | 135 | 3.3 |
|  | | | | | | academic Staff | 30 | 50 | 6 | 81 | 45 | 220 | 2.7 |
| 7 Public address system is used for | | | | | | Managers | 3 | 6 | - | 3 | 3 | 15 | 3.2 |
| communication during students‘ | | | | | | Non-academic staff | 32 | 59 | - | 15 | 24 | 135 | 3.5 |
| orientation | | | | | | academic Staff | 123 | 25 | - | 45 | 19 | 220 | 3.8 |
| 8 The use of ICT has impact on | | | | | | Managers | 8 | - | - | 5 | 2 | 15 | 3.4 |
| communication between students and | | | | | | Non-academic staff | 71 | 30 | - | 17 | 12 | 135 | 4.0 |
| lectures | | | | | | academic Staff | 45 | 70 | 18 | 48 | 31 | 220 | 3.2 |
| 9 | The | use | of | ICT | enhance | Managers | 5 | 6 | - | 4 | - | 15 | 3.8 |
| communication amongst staff | | | | | | Non-academic staff | 52 | 35 | - | 27 | 16 | 135 | 3.6 |
|  | | | | | | academic Staff | 50 | 94 | 6 | 56 | 23 | 220 | 3.7 |
| 10 Public address system has made | | | | | | Managers | 2 | 8 | - | 3 | 2 | 15 | 2.8 |
| communication much easier during | | | | | | Non-academic staff | 63 | 27 | - | 28 | 12 | 135 | 3.8 |
| convocation ceremonies | | | | | | academic Staff | 65 | 80 | 9 | 29 | 29 | 220 | 3.6 |

From table 4.2, shows the mean score of respondents on the impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions in Niger State, Nigeria.

Item 1 was on whether ICT serves as a tool for communication in the higher institutions. It was revealed that the item statement was accepted by all the respondents with managers having mean score of 4.3, non-academic staff 3.6 and academic staff 3.5. This shows that the respondents agreed that ICT serves as a tool for communication in the higher institutions.

Item 2 showed that managers have mean score of 3.6, non-academic staff 4.5, and academic staffs 3.5, which indicate acceptance, meaning that e-libraries have impact on communication between lecturers and students. Item 3 was also accepted by two of the respondents and rejected by one, with the respective mean scores for managers 4.0, non- academic staff 4.3, and academic staff 3.7. Item 4 was on whether ICT ensure good communication between Provost and academic staff, the responses showed accepted by all the respondents with the mean score of 3.6, 4.0, and 4.2 for managers, non-academic staff, and academic staff representatively.

Item 5 had mean score for managers 4.2, non-academic staff 4.3, and academic staff 3.7, which implies it was accepted that ICT facilitate communication between Rector and academic staff. Item 6 showed that managers had mean score of 3.8, non-academic staff 3.3, and students 2.7. Item 7 was accepted by all the respondents with the respective mean scores of 3.2, 3.5, and 3.8., this implies that the respondents agreed that public address system is used for communication during students‘ orientation.

Item 8 have the mean score of 4.3, 4.0 and 3.2 for managers, non- academic staff and academic staff, accordingly, indicating acceptance of the item statement. Item 9 have the means score of 3.8, 3.6 and 3.7 for managers, non-academic staff, and academic staff

respectively and was accepted. Item 10 was accepted with the corresponding mean score of 2.8, 3.8, and 3.6 for mangers, non-academic staff, and academic staff. It was established that ICT is very much in use in higher institutions in Niger state and has facilitated communication between the management and other staff in the institution.

# Research Question Two: Does Information and Communication Technology (ICT) Impact on Record keeping in Management of Tertiary Institutions in Niger State, Nigeria?

This section contained Item 11-20 on impact of information and communication technology (ITC) on record keeping in tertiary institutions in Niger State, Nigeria.

# Table 4.3: Opinions of Respondents on Mean Score of Respondents on the Impact Information and Communication Technology (ICT) on record keeping in Management of Tertiary Institutions in Niger State, Nigeria

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item statement** | **Respondent** | **SA** | **A** | **UD** | **D** | **SD** | **N** | **MEAN** |
| 11 | ICT enhances record keeping in higher institutions | Managers | 10 | - | - | 3 | 2 | 15 | 3.9 |
|  |  | Non-academic staff | 5 | 100 | - | 23 | 4 | 135 | 3.6 |
|  |  | academic Staff | 20 | 94 | - | 60 | 39 | 220 | 2.9 |
| 12 | ICT ensure effective recordkeeping of staff | Managers | 2 | 7 | - | 6 | - | 15 | 3.3 |
|  | promotion | Non-academic staff | 95 | 7 | - | 28 | 4 | 135 | 4.3 |
| academic Staff | | | 62 | 72 | 9 | 50 | 20 | 220 | 3.5 |

academic Staff

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13 ICT gadgets are used in keeping financial records of | | Managers | 5 | 4 | - | 5 | 1 | 15 | 3.5 |
| higher institutions | | Non-academic staff | 30 | 70 | - | 19 | 9 | 135 | 3.6 |
| academic Staff | | | 100 | 30 | 4 | 29 | 45 | 220 | 3.4 |
| 14 | The use of ICT help in documenting students‘ | Managers | 1 | 9 | - | 4 | 1 | 15 | 3.3 |
|  | information | Non-academic staff | 80 | 15 | - | 24 | 11 | 135 | 3.9 |
| academic Staff | | | 20 | 120 | 5 | 38 | 29 | 220 | 3.3 |
| 15 ICT is used in storing the records of available | | Managers | 7 | 1 | - | 4 | 3 | 15 | 3.3 |
| facilities in higher institutions | | Non-academic staff | 78 | 18 | - | 28 | 6 | 135 | 4.0 |
| academic Staff | | | 8 | 125 | 6 | 25 | 48 | 220 | 3.1 |
| 16 | ICT helps in retrieving important records of visitors | Managers | - | 5 | - | 10 | -- | 15 | 2.7 |
|  |  | Non-academic staff | 54 | 31 | - | 43 | 2 | 135 | 3.7 |
|  |  | academic Staff | 50 | 60 | - | 75 | 27 | 220 | 3.1 |
| 17 ICT has impact on the management of examination | | Managers | 10 | - | - | 3 | 2 | 15 | 3.8 |
| result in higher institutions | | Non-academic staff | 20 | 59 | - | 31 | 20 | 135 | 3.2 |
| academic Staff | | | 140 | 13 | - | 49 | 10 | 220 | 4.0 |
| 18 | ICT enables easy access to past records | Managers | 6 | 4 | - | 1 | 4 | 15 | 3.5 |
|  |  | Non-academic staff | 75 | 30 | - | 15 | 12 | 135 | 4.1 |
|  |  | academic Staff | 49 | 90 | 2 | 48 | 23 | 220 | 3.4 |
| 19 | ICT makes access to library information easy | Managers | 6 | - | - | 6 | 3 | 15 | 3.0 |
|  |  | Non-academic staff | 32 | 29 | - | 51 | 18 | 135 | 3.0 |
|  |  | academic Staff | 50 | 84 | - | 40 | 38 | 220 | 3.3 |
| 20 | ICT enables the transfer of records between | Managers | 2 | 6 | - | 6 | 1 | 15 | 3.1 |
|  | departments | Non-academic staff | 65 | 25 | - | 30 | 10 | 135 | 3.8 |

53 80 -

59 20

220

3.4

From table 4.3, shows the mean score of respondents on the impact of Information and Communication Technology (ICT) on record keeping in Tertiary Institutions in Niger State, Nigeria.

Item 11 was on whether ICT enhances record keeping in higher institutions. It was revealed that the item statement was accepted by all the respondents with managers having mean score of 3.9, non-academic staff 3.6 and academic staff 2.9. This shows that the respondents agreed that ICT enhances record keeping in higher institutions. Item 12 showed that managers have mean score of 3.3, non-academic staff 4.3, and academic staffs 3.5, which indicate acceptance, meaning that ICT ensure effective record keeping of staff promotion.

Item 13 was also accepted by all the respondents, with the respective mean scores for managers 3.5, non-academic staff 3.6, and academic staff 3.4. Item 14 was on whether the use of ICT help in documenting students‘ information, the responses showed accepted by all the respondents with the mean score of 3.3, 3.9, and 3.3 for managers, non-academic staff, and academic staff representatively.

Item 15 had mean score for managers 3.3, non-academic staff 4.0, and academic staff 3.1, which implies it was accepted that ICT is used in storing the records of available facilities in higher institutions. Item 16 showed that managers had mean score of 2.7, non- academic staff 3.7, and students 3.1. Item 17 was accepted by all the respondents with the respective mean scores of 3.8, 3.2, and 4.0., this implies that the respondents agreed that ICT has impact on the management of examination result in higher institutions. Item 18 have the mean score of 3.5, 4.1 and 3.4 for managers, non- academic staff and academic staff, accordingly, indicating acceptance of the item statement. Item 19 have the means score of 3.0, 3.0 and 3.3 for managers, non-academic staff, and academic staff respectively and was accepted. Item 20 was accepted with the corresponding mean score of 3.1, 3.8, and 3.4for

mangers, non-academic staff, and academic staff. It was established that through ICT records in in higher institutions are not only properly kept but are effectively saved in retrievable gadgets for future use in Niger State.

# Research Question Three: Is There Impact of Information and Communication Technology (ICT) on Educational Research in Management of Tertiary Institutions in Niger State, Nigeria?

This section contained Item 21-30 on impact of information and communication technology (ICT) on educational research in tertiary institutions in Niger State, Nigeria.

# Table 4.4: Opinions of Respondents on Mean Score of Respondents on the Impact of Information and Communication Technology (ICT) on Educational Research in Management of Tertiary Institutions in Niger State, Nigeria

academic Staff

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item statement** | **Respondent** | **SA** | **A** | **UD** | **D** | **SD** | **N** | **MEAN** |
| 21 ICT wireless facilities enable easy educational | | Managers | 4 | 3 | - | 4 | 4 | 15 | 2.9 |
| research work in higher institutions | | Non-academic staff | 25 | 80 | - | 23 | 2 | 135 | 3.6 |
| academic Staff | | | 20 | 140 | - | 42 | 10 | 220 | 3.6 |
| 22 | Internet service facilitates effective educational | Managers | 5 | 1 | - | 9 | - | 15 | 4.8 |
|  | research | Non-academic staff | 35 | 37 | - | 18 | 40 | 135 | 3.1 |
|  |  | academic Staff | 90 | 50 | - | 30 | 42 | 220 | 3.5 |
| 23 ICT has made educational resources available to | | Managers | 8 | - | - | 6 | 1 | 15 | 3.5 |
| researchers in higher institutions | | Non-academic staff | 32 | 65 | 5 | 23 | 5 | 135 | 3.7 |
| academic Staff | | | 100 | 33 | 6 | 49 | 25 | 220 | 3.6 |
| 24 | ICT help lecturers to improve their service delivery | Managers | - | 9 | - | 1 | 4 | 15 | 2.8 |
|  | to students | Non-academic staff | 70 | 25 | - | 24 | 10 | 135 | 3.9 |
| academic Staff | | | 20 | 95 | 3 | 70 | 19 | 220 | 3.0 |
| 25 | ICT help students to access empirical materials | Managers | 7 | 1 | - | 6 | 1 | 15 | 3.4 |
|  | from the internet | Non-academic staff | 78 | 18 | - | 12 | 22 | 135 | 3.9 |
| academic Staff | | | 15 | 120 | 4 | 56 | 26 | 220 | 3.3 |
| 26 | ICT help the students and staff to use different | Managers | - | 5 | - - | | 10 | 15 | 2.0 |
|  | internet browser | Non-academic staff | 14 | 31 | - 43 | | 42 | 135 | 2.5 |
| academic Staff | | | 50 | 100 | - | 32 | 30 | 220 | 3.5 |
| 27 | ICT help lecturers and students to write education | Managers | 10 | - | - | 3 | 2 | 15 | 3.9 |
|  | research papers | Non-academic staff | 30 | 67 | - | 26 | 23 | 135 | 3.8 |
| academic Staff | | | 130 | 20 | - | 50 | 12 | 220 | 3.9 |
| 28 | ITC aid students to conduct their theses in good | Managers | 8 | 2 | - | 5 | - | 15 | 3.8 |
|  | time | Non-academic staff | 70 | 26 | - | 20 | 14 | 135 | 3.9 |
| academic Staff | | | 48 | 70 | 8 | 58 | 28 | 220 | 3.2 |
| 29 | ICT enable students to develop skills for | Managers | 3 | 6 | - | 6 | - | 15 | 3.4 |
|  | educational research | Non-academic staff | 36 | 29 | 2 | 45 | 18 | 135 | 3.1 |
| academic Staff | | | 60 | 70 | - | 56 | 26 | 220 | 3.4 |
| 30 ICT help students to get the latest information | | Managers |  | 10 | - | 4 | 1 | 15 | 3.2 |
| about their areas of studies | | Non-academic staff | 31 | 25 | - | 54 | 20 | 135 | 2.9 |

55 86

10 40

21 220

3.5

From table 4.4, shows the mean score of respondents on the impact of Information and Communication Technology (ICT) on education research in Tertiary Institutions in Niger State, Nigeria.

Item 21 was on whether ICT wireless facilities enable easy educational research work in higher institutions. It was revealed that the item statement was accepted by the respondents with managers having mean score of 2.9, non-academic staff3.6.and academic staff 3.6. This shows that the respondents agreed that ICT wireless facilities enable easy educational research work in higher institutions. Item 22 showed that managers have mean score of 4.8, non-academic staff3.1, and academic staff 3.5, which indicate acceptance, meaning that Internet service facilitates effective educational research.

Item 23 was also accepted by all the respondents, with the respective mean scores for managers 3.5, non-academic staff3.7, and academic staff 3.6. Item 24 was on whether ICT help lecturers to improve their service delivery to students, the responses showed accepted by the respondents with the mean score of 2.8, 3.9, and 3.0 for managers, non-academic staff, and academic staff representatively.

Item 25 had mean score for managers 3.4, non-academic staff3.9, and academic staff 3.3, which implies it was accepted that ICT help students to access empirical materials from the internet. Item 26 showed that managers had mean score of 2.0, non-academic staff2.5,and students 3.5. Item 27 was accepted by all the respondents with the respective mean scores of 3.9, 3.8, and 3.9; this implies that the respondents agreed that ICT help lecturers and students to write education research papers. Item 28 has the mean score of 3.8, 3.9 and 3.2 for managers, non- academic staff and academic staff, accordingly, indicating acceptance of the item statement.

Item 29 has the means score of 3.4, 3.1 and 3.4 for managers, non-academic staff, and academic staff respectively and was accepted. Item 30 was accepted with the corresponding mean score of 3.2, 2.9, and 3.5for mangers, non-academic staff, and academic staff. It was established that ICT has added tremendous value to educational research in higher institutions in Niger State.

# Research Question Four: What Impact Does Information and Communication Technology (ICT) have on Decision Making in Management of Tertiary Institutions in Niger State, Nigeria?

This section contained Items 31-40 on impact of information and communication technology (ITC) on decision making in tertiary institutions in Niger State, Nigeria.

# Table 4.5: Opinions of Respondents on Mean Score of Respondents on the Impact of Information and Communication Technology (ICT) on Decision Making in Management of Tertiary Institutions in Niger State, Nigeria

academic Staff

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N**  31 | **Item statement**  ICT gadgets are used as medium for passing | **Respondent**  Managers | **SA**  10 | **A**  2 | **UD**  - | **D**  3 | **SD**  - | **N**  15 | **MEAN**  4.2 |
|  | information during and after management | Non-academic staff | 5 | 107 | - | 2 | 16 | 135 | 3.6 |
|  | meetings | academic Staff | 20 | 130 | 2 | 50 | 10 | 220 | 3.4 |
| 32 ICT facilities are used to inform the school about | | Managers | 2 | 10 | - | 2 | 1 | 15 | 3.7 |
| important decisions taken | | Non-academic staff | 105 | 7 | - | 18 | - | 135 | 4.5 |
| academic Staff | | | 90 | 40 | 8 | 25 | 49 | 220 | 3.5 |
| 33 | ICT are used to keep records of decision about | Managers | 5 | 8 | - | 2 | - | 15 | 4.0 |
|  | students suspension | Non-academic staff | 32 | 80 | - | 16 | 2 | 135 | 3.9 |
| academic Staff | | | 102 | 35 | 6 | 49 | 20 | 220 | 3.7 |
| 34 | ICT help management of institutions to make | Managers | 10 | - | - | 3 | 2 | 15 | 3.9 |
|  | swift decision | Non-academic staff | 5 | 100 | - | 23 | 4 | 135 | 3.6 |
| academic Staff | | | 20 | 94 | - | 60 | 39 | 220 | 3.0 |
| 35 | Through ICT, decisions about students | Managers | 2 | 7 | - | 6 | - | 15 | 3.3 |
|  | indiscipline can be traced | Non-academic staff | 95 | 7 | - | 28 | 4 | 135 | 4.3 |
| academic Staff | | | 62 | 72 | 9 | 50 | 20 | 220 | 3.5 |
| 36 | Through ICT, decisions about students admission | Managers | 5 | 4 | - | 5 | 1 | 15 | 3.5 |
|  | process is enhanced | Non-academic staff | 30 | 70 | - | 19 | 9 | 135 | 3.6 |
| academic Staff | | | 100 | 30 | 4 | 29 | 45 | 220 | 3.4 |
| 37 ICT promote effective decision making process | | Managers | 4 | 3 | - | 4 | 4 | 15 | 3.0 |
| in terms of the change in school curriculum | | Non-academic staff | 25 | 80 | - | 23 | 2 | 135 | 3.7 |
| academic Staff | | | 20 | 140 | - | 42 | 10 | 220 | 3.5 |
| 38 | Through ICT, decisions about innovations are | Managers | 5 | 1 | - | 9 | - | 15 | 3.1 |
|  | easily discussed | Non-academic staff | 35 | 37 | - | 18 | 40 | 135 | 3.1 |
| academic Staff | | | 90 | 50 | - | 30 | 42 | 220 | 3.5 |
| 39 | ICT promotes decision making between ministry | Managers | 8 | - | - | 6 | 1 | 15 | 3.5 |
|  | and school management | Non-academic staff | 32 | 65 | 5 | 23 | 5 | 135 | 3.7 |
| academic Staff | | | 100 | 33 | 6 | 49 | 25 | 220 | 3.6 |
| 40 Through ICT, decisions about staff promotions | | Managers |  | 10 | - | 4 | 1 | 15 | 3.3 |
| and retirements are easily discussed | | Non-academic staff | 31 | 25 | - | 54 | 20 | 135 | 2.9 |

55 86

10 40

21 220

3.5

From table 4.5, shows the mean score of respondents on the impact of Information and Communication Technology (ICT) on decision making in Tertiary Institutions in Niger State, Nigeria.

Item 31 was on whether ICT gadgets are used as medium for passing information during and after management meetings. It was revealed that the item statement was accepted by the respondents with managers having mean score of 4.2, non-academic staff3.6. And academic staff 3.4. Item 32 showed that managers have mean score of 3.7, non-academic staff4.5, and academic staffs 3.5, which indicate acceptance, meaning that ICT facilities are used to inform the school about important decisions taken.

Item 33 was also accepted by all the respondents, with the respective mean scores for managers 4.0, non-academic staff3.9, and academic staff 3.7. Item 34 was on whether ICT help management of institutions to make swift decision, the responses showed accepted by the respondents with the mean score of 3.9, 3.6, and 3.0 for managers, non-academic staff, and academic staff representatively. Item 35 had mean score for managers3.3, non-academic staff 4.3, and academic staff 3.5, which implies it was accepted that Through ICT, decisions about students‘ indiscipline can be traced. Item 36 showed that managers had mean score of 3.5, non-academic staff3.6, and students3.4. Item 37 was accepted by all the respondents with the respective mean scores of 3.0, 3.7, and 3.5., this implies that the respondents agreed that ICT promote effective decision making process in terms of the change in school curriculum.

Item 38 have the mean score of 3.1, 3.1 and 3.5for managers, non- academic staff and academic staff, accordingly, indicating acceptance of the item statement. Item 39 have the means score of 3.5, 3.7 and 3.6 for managers, non-academic staff, and academic staff respectively and was accepted. Item 40 was accepted with the corresponding mean score of 3.3, 2.9, and 3.5 for mangers, non-academic staff, and academic staff. It was established that

ICT has made decision making faster and less cumbersome in higher institutions in Niger State.

# Research Question Five: What Impact Does Information and Communication Technology; (ICT) Facilities have on Maintenance Culture in Management of Tertiary Institutions in Niger State, Nigeria?

This section contained Item 41-50 on impact of information and communication technology (ITC) facilities on maintenance culture in tertiary institutions in Niger State, Nigeria.

# Table 4.6: Opinions of Respondents on Mean Score of Respondents on Impact Information and Communication Technology (ICT) Facilities on Maintenance Culture in Management of Tertiary Institutions in Niger State, Nigeria

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item statement** | **Respondent** | | **SA** | **A** | **UD** | **D** | **SD** | | **N** | **MEAN** |
| 41 | School computer facilities are | maintained | Managers | 7 | - | - | 5 | 3 | 15 | | 3.2 |
|  | regularly for effective use |  | Non-academic staff | 68 | 18 | - | 40 | 4 | 135 | | 3.8 |
| academic Staff | | | | 9 | 111 | 6 | 86 | - | 220 | | 2.8 |
| 42 | Internet facilities are properly monitored to | | Managers | 1 | 4 | - | 10 | - | | 15 | 2.7 |
|  | avoid misuse | | Non-academic staff | 50 | 10 | - | 61 | 12 | | 135 | 3.3 |
| Academic Staff | | | | 23 | 40 | 6 | 81 | 62 | | 220 | 2.4 |
| 43 | Library facilities that are in bad working | | Managers | 2 | - | - | 13 | - | | 15 | 2.4 |
|  | condition are replaced | | Non-academic staff | 32 | 44 | - | 31 | 23 | | 135 | 3.3 |
| Academic Staff | | | | 106 | 25 | - | 62 | 19 | | 220 | 3.6 |
| 44 Emergency maintenance is carried out as the | | | Managers | 7 | 1 | - | 4 | 3 | 15 | | 3.3 |
| result of sudden system failure | | | Non-academic staff | 78 | 18 | - | 28 | 6 | 135 | | 4.0 |
| Academic Staff | | | | 8 | 125 | 6 | 25 | 48 | | 220 | 3.0 |
| 45 | ICT gadgets are frequently supervised to | | Managers | - | 5 | - | 10 | -- | 15 | | 2.7 |
|  | avoid breakdown | | Non-academic staff | 54 | 31 | - | 43 | 2 | 135 | | 3.7 |
| Academic Staff | | | | 50 | 60 | - | 75 | 27 | 220 | | 3.1 |
| 46 Through maintenance, public address system | | | Managers | 10 | - | - | 3 | 2 | 15 | | 3.7 |
| brings effective output | | | Non-academic staff | 20 | 59 | - | 31 | 20 | 135 | | 3.2 |
| academic Staff | | | | 140 | 13 | - | 49 | 10 | 220 | | 4.0 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 47 | Proper maintenance of projectors gives | Managers | 10 | - | - | 3 | 2 | 15 | 3.8 |
|  | clarity in visual output | Non-academic staff  academic Staff | 30  130 | 67  20 | -  - | 26  50 | 23  12 | 135  220 | 3.7  3.9 |
| 48 | Effective maintenance extends the life span | Managers | 8 | 2 | - | 5 | - | 15 | 3.8 |
|  | of ICT gadgets | Non-academic staff | 70 | 26 | - | 20 | 14 | 135 | 3.9 |
| academic Staff | | | 48 | 70 | 8 | 58 | 28 | 220 | 3.2 |
| 49 | Regular maintenance reduces cost of | Managers | 3 | 6 | - | 6 | - | 15 | 3.4 |
|  | replacement | Non-academic staff | 36 | 29 | 2 | 45 | 18 | 135 | 3.1 |
| academic Staff | | | 60 | 70 | - | 56 | 26 | 220 | 3.3 |
| 50 Regular maintenance of wired internet | | Managers |  | 10 | - | 4 | 1 | 15 | 3.0 |
| facilities avoid high power supply | | Non-academic staff | 31 | 25 | - | 54 | 20 | 135 | 2.9 |
|  |  | academic Staff | 55 | 86 | 10 | 40 | 21 | 220 | 3.5 |

From table 4.6, shows the mean score of respondents on the impact of Information and Communication Technology (ICT) on maintenance of culture in Tertiary Institutions in Niger State, Nigeria.

Item 41 was on whether School computer facilities are maintained regularly for effective use. It was revealed that the item statement was accepted by the respondents with managers having mean score of 3.2, non-academic staff 3.8 and academic staff 2.8. Item 42 showed that managers have mean score of 2.7, non-academic staff 3.3, and academic staff 2.4, which indicates rejection, meaning internet facilities is not properly monitored to avoid misuse.

Item 43 was also accepted by the respondents, with the respective mean scores for managers 2.4, non-academic staff3.3, and academic staff 3.6. Item 44 was on whether emergency maintenance is carried out as the result of sudden system failure, the responses showed accepted by the respondents with the mean score of 3.3, 4.0, and 3.0 for managers, non-academic staff, and academic staff representatively. Item 45 had mean score for managers 2.7, non-academic staff3.7, and academic staff 3.1, which implies it was accepted that ICT gadgets are frequently supervised to avoid breakdown.

Item 46 showed that managers had mean score of 3.7, non-academic staff 3.2, and students 4.0 Item 47 was accepted by all the respondents with the respective mean scores of 3.8, 3.7, and 3.9, this implies that the respondents agreed that Proper maintenance of projectors gives clarity in visual output. Item 48 have the mean score of 3.8, 3.9 and 3.2for managers, non- academic staff and academic staff, accordingly, indicating acceptance of the item statement.

Item 49 has the means score of 3.4, 3.1 and 3.3 for managers, non-academic staff, and academic staff respectively and was accepted. Item 50 was accepted with the corresponding mean score of 3.0, 2.9, and 3.5 for mangers, non-academic staff, and academic

staff. It was established that the use of ICT has step up maintenance culture in higher institutions in Niger State.

# Test of Null Hypotheses

In this section, all results and outcome of the null hypotheses raised and tested in line with the objectives of this study were summarized and presented. Data obtained as responses from the respondents (Managers, Academic and non-Academic Staff of tertiary institutions) from the questionnaire administered were tested. The test of hypotheses was tested using one way Analysis of variance (ANOVA). This was determined at 0.05 levels of significant and statistical package for social sciences (SPSS) was used to analyze the data. In all, five hypotheses were tested and acceptability or rejection of the Null Hypothesis was determined by comparing the p-value against the significant level set by the study (F-value at 0.05). Hypothesis is therefore rejected if the p-value is less than the level of significance set by the study.

# HO1: There is no significant difference in the opinions of Managers of Tertiary Institutions, Academic and non-Academic Staff (stakeholders) on the impact of Information and Communication Technology (ICT) on Communication in Management of Tertiary Institutions in Niger State, Nigeria.

Opinions of respondents on Communication was collected and analyzed, the summary of data analyzed in respect of null hypothesis one is presented in table 4.8

# Table 4.7: Summary of Analysis of Variance (ANOVA) on the Opinions of respondents on the Communication in Management of Tertiary Institutions in Niger State

**Communication Sum of Squares Df Mean Square F Sig.**

Between Groups

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1.113 | 2 | .557 2.784 0.063 |
| Within Groups | 70.785 | 354 | .200 |
| Total | 71.898 | 356 |  |

From table 4.8, the F-value is 2.784 and the P-value is 0.063 at 0.05 levels of significance. Since the P-value is greater than the level of significance set for the study, the hypothesis is therefore retained, thus, there is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on communication in Tertiary Institutions in Niger State, Nigeria.

# HO2: There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Management of Tertiary Institutions in Niger State, Nigeria.

The responses of the respondents on record keeping was collected and analyzed, the summary of data analyzed in respect of null hypothesis two is presented in table 4.9

# Table 4.8: Summary of Analysis of Variance (ANOVA) on the Opinions of respondents

**on record keeping in Management of Tertiary Institutions in Niger State**

**Record keeping Sum of Squares Df Mean Square F Sig.**

Between Groups 1.818 2 .909

4.934 0.008

Within Groups

|  |  |  |  |
| --- | --- | --- | --- |
|  | 65.209 | 354 | .184 |
| Total | 67.026 | 356 |  |

From table 4.9, the F-value is 4.934 and the P-value is 0.008 at 0.05 levels of significance. Since the P-value is less than the level of significance set for the study, the hypothesis is therefore rejected, thus, **t**here is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Tertiary Institutions in Niger State, Nigeria.

# Table 4.9: Summary of Scheffe Multiple Comparisons Test on the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Management of Tertiary

**Institutions in Niger State, Nigeria.**

**95% Confidence Interval**

**(I) Status (J) Status Mean Difference (I-J)**

**Std. Error Sig.**

**Lower Bound**

**Upper Bound**

staff

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Managers Non-academic -.27783 | .11467 | .054 | -.5597 | .0040 |
| Academic staff -.35385\* | .11704 | .011 | -.6415 | -.0662 |
| Non-academic staff Managers .27783 | .11467 | .054 | -.0040 | .5597 |
| Academic staff -.07602 | .04781 | .284 | -.1935 | .0415 |
| Academic staff Managers .35385\* | .11704 | .011 | .0662 | .6415 |
| Non-academic .07602 | .04781 | .284 | -.0415 | .1935 |

staff

\*. The mean difference is significant at the 0.05level.

From Table 4.9; the respondents‘ mean differences on first row, shows that differences only exit between Non-academic staff and Academic staff, implying that the difference between the two respondents was significant. As shown in the second column of the first row, Non- academic staff had -0.27783 and Academic staff had -0.35385 mean differences. In the second row, the mangers and academic staff differed significantly in their opinions with respective mean difference of 0.27783 and -0.07602. However, in the third row, the managers and non-academic staff differed too in their opinions with the mean differences of 0.35385 and .07602.

# HO3: There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on Educational Research in Management of Tertiary Institutions in Niger State, Nigeria.

The responses of the respondents on education research was collected and analyzed, the summary of data analyzed in respect of null hypothesis three is presented in table 4.10

# Table 4.10: Summary of Analysis of Variance (ANOVA) on the Opinions of respondents on Educational Research in Management of Tertiary Institutions in Niger State

**Educational research Sum of Squares Df Mean Square F Sig.**

Between Groups

123.701 2 61.850 72.162 0.000

Within Groups 303.417 354 .857

# Total 427.118 356

From table 4.10, the F-value is 2.842 and the P-value is 0.060 at 0.05 levels of significance. Since the P-value is less than the level of significance set for the study, the hypothesis is therefore retained, thus, there is no significance difference in the opinion of respondents on the impact of Information and Communication Technology (ICT) on Educational Research in Tertiary Institutions in Niger State, Nigeria.

# Table 4.11: Summary of Scheffe Multiple Comparisons Test on the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Management of Tertiary

**Institutions in Niger State, Nigeria.**

**95% Confidence Interval**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | **Mean** | **Std.** |  |  | **Upper** |
| **(I) Status** | **(J) Status** | **Difference (I-J)** | **Error** | **Sig.** | **Lower Bound** | **Bound** |

Managers Non-academic

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | staff  Academic staff | 1.19231\* | .25246 | .000 | .5717 | 1.8129 |
| Non-academic staff | Managers | .03311 | .24735 | .991 | -.5749 | .6411 |
|  | Academic staff | 1.22542\* | .10313 | .000 | .9719 | 1.4789 |
| Academic staff | Managers | -1.19231\* | .25246 | .000 | -1.8129 | -.5717 |
| Non-academic -1.22542\* | | | .10313 | .000 | -1.4789 | -.9719 |

-.03311 .24735 .991 -.6411 .5749

staff

\*. The mean difference is significant at the 0.05 level.

From Table 4.11; the respondents‘ mean differences on first row, shows that differences only exit between Non-academic staff and Academic staff, implying that the difference between the two respondents was significant. As shown in the second column of the first row, Non-

academic staff had -0.03311 and Academic staff had 1.19231 mean differences. In the second row, the mangers and academic staff differed significantly in their opinions with respective mean difference of 0.03311 and 1.22542. However, in the third row, the managers and non- academic staff differed too in their opinions with the mean differences of-1.19231 and - 1.22542.

# HO4: There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on Decision Making in Management of Tertiary Institutions in Niger State, Nigeria.

The responses of the respondents on decision making the was collected and analyzed, the summary of data analyzed in respect of null hypothesis our is presented in table 4.11

# Table 4.12: Summary of Analysis of Variance (ANOVA) on the opinions of respondents on decision making in Management of Tertiary Institutions in Niger State

**Decision making Sum of Squares Df Mean Square F Sig.**

|  |  |  |  |
| --- | --- | --- | --- |
| Between Groups | .218 | 2 | .109 0.465 0.629 |
| Within Groups | 82.891 | 354 | .234 |
| **Total** | **83.109** | **356** |  |

From Table 4.12. The F-value is 0.465 and the P-value is 0.629 at 0.05 levels of significance. Since the P-value is greater than the level of significance set for the study, the hypothesis is therefore retained, thus, there is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on Decision Making in Tertiary Institutions in Niger State, Nigeria.

# HO5: There is no significant difference in the opinions of stakeholders on the Impact of Information and Communication Technology (ICT) facilities on maintenance culture in Management of Tertiary Institutions in Niger State, Nigeria.

The responses of the respondents on maintenance culture was collected and analyzed, the summary of data analyzed in respect of null hypothesis five is presented in table 4.12

# Table 4.13: Summary of Analysis of Variance (ANOVA) on the opinions of respondents

**on maintenance culture in Management of Tertiary Institutions in Niger State Maintenance culture Sum of Squares Df Mean Square F Sig.**

|  |  |  |  |
| --- | --- | --- | --- |
| Between Groups | .189 | 2 | .094 .0281 0.755 |
| Within Groups | 119.034 | 354 | .336 |
| **Total** | **119.223** | **356** |  |

From table 4.13 the F-value is 0.0281 and the P-value is 0.016 at 0.05 level of significance. Since the P-value is less than the level of significance set for the study, the hypothesis is therefore rejected, thus, there is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) facilities on Maintenance Culture in Tertiary Institutions in Niger State, Nigeria.

# : Summary of Hypotheses Testing

The summary of the five Null Hypotheses tested for this study is hereby presented in table

# Table 4.15: Summary of Null Hypotheses tested

**S/N H0 statement Statistical**

**Tool used**

**Result**

**Level**

**of sig. Decision**

1. There is no significant difference in the opinions of Managers of Tertiary Institutions, Academic and non-Academic Staff (stakeholders) on the impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions in Niger State, Nigeria.

Analysis of variance (ANOV)

F-ratio is 2.784,

While the

p-value is 0.063

0.05 H01 was retained. this mean that there is no significant difference in the opinions of

respondents

1. There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Tertiary Institutions in Niger State, Nigeria.
2. There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on Educational Research in Tertiary Institutions in Niger State, Nigeria.
3. There is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on Decision Making in Tertiary Institutions in Niger State, Nigeria.

There is no significant difference in the opinions of stakeholders on the impact of

1. Information and Communication Technology

(ICT) facilities on maintenance culture in Tertiary Institutions in Niger State, Nigeria.

Analysis of variance (ANOV)

Analysis of variance (ANOV)

Analysis of variance (ANOV)

Analysis of variance (ANOV)

F-ratio is 4.934,

While the

p-value is 0.008

F-ratio is 72.162,

While the

p-value is 0.000

F-ratio is 0.465

While the

p-value is 0.629

F-ratio is 0.281,

While the

p-value is 0.755

0.05 H02 was rejected. this mean that there is significant difference in the opinions of respondents

0.05 H03 was rejected. this mean that there is significant difference in the opinions of respondents

0.05 H04 was retained. this mean that there is no significant differences in the opinions of

respondents

0.05 H05 was retained. this mean that there is no significant difference in the opinions of

respondents

# Summary of Major Findings

The findings of the study revealed that**;**

1. ICT is very much in use in higher institutions in Niger state and has facilitated Communication between the management and other staff in the institution;
2. through ICT records in higher institutions are not only properly kept but are effectively save in retrievable gadgets for future use in Niger State;
3. ICT has added tremendous value to Educational Research in higher institutions in Niger State;
4. ICT has made Decision Making faster and less cumbersome in higher institutions in Niger State; and
5. The use of ICT has step up maintenance culture in higher institutions in Niger State.

# Discussion of the Findings

Finding from hypothesis one revealed that ICT is very much in use in higher institutions in Niger state and has facilitated communication between the management and other staff in the institution. The hypothesis was retained because there is no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on communication in Tertiary Institutions in Niger State, Nigeria. The study revealed that ICT serves as a tool for communication in the higher institutions and those e-libraries have impacted on communication between lecturers and students.This is in agreement with the statements of Hoy and Miskel (1998), Communication is particularly important for directors, who must understand the notion of communication because communication constitutes the main core of interpersonal relationships, organizational processes and the structures of the school

Finding from hypothesis two revealed that through ICT records in higher institutions are not only properly kept but are effectively save in retrievable gadgets for future use in Niger State.The hypothesis was rejected because there is significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on record keeping in Tertiary Institutions in Niger State, Nigeria. The study revealed that ICT enhances record keeping in higher institutions, ICT ensure effective record keeping of staff

promotion, ICT gadgets are used in keeping financial records of higher institution and the use of ICT help in documenting students‘ information.This is in agreement with the statements of Ikudayisi, Adesua and Arotiba (2003) that even educational laws require that every institution should keep certain school records.

Finding from hypothesis three revealed that ICT has added tremendous value to educational research in higher institutions in Niger State. The hypothesis was rejected because there is significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on educational research in Tertiary Institutions in Niger State, Nigeria. It was established that, ICT wireless facilities enable easy educational research work in higher institutions, Internet service facilitates effective educational research, ICT has made educational resources available to researchers in higher institutions, ICT help lecturers to improve their service delivery to students. This is in agreement with the statements of Ali (1996), when he described educational research as those activities or processes which allow one to systematically test and/or obtain a body of information, data or knowledge about teaching/ learning or conditions which affect teaching and learning. This means that research in education is a systematic attempt to define and investigate pertinent problems involved in teaching and learning.

Finding from hypothesis four revealed that ICT has made decision making faster and less cumbersome in higher institutions in Niger State. The hypothesis was retained because there was no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on decision making in Tertiary Institutions in Niger State, Nigeria. The study revealed that, ICT gadgets are used as medium for passing information during and after management meetings, ICT facilities are used to inform the school about important decisions taken, ICTs are used to keep records of decision about students‘ suspension, ICT help management of institutions to make swift decision. This

is in agreement with Ocheni (2015) that educational system is expanding at an unprecedented rate because it appears that the demand for appropriate, adequate and timely information for management decisions in Nigerian educational institutions is challenging. In addition, Nwankwo (2013) maintained that there is the need for increased information acquisition and information management capacity among educational administrators, planners and policy makers.

Finding from hypothesis five revealed that the use of ICT has step up maintenance culture in higher institutions in Niger State. The hypothesis was retained because there was no significant difference in the opinions of stakeholders on the impact of Information and Communication Technology (ICT) on maintenance culture in Tertiary Institutions in Niger State, Nigeria. The study established that, through maintenance, public address system brings effective output, Proper maintenance of projectors gives clarity in visual output, and effective maintenance extends the life span of ICT gadgets. This in agreement with Suwaibatul- Islamiah, Abdul-Hakim, Syazwina and Eizzatul (2012) who posited that maintenance culture is the values, way of thinking, behaviour, perception and the underlying assumptions of any person or group or society that considers maintenance as a matter that is important and practices it in their life.

# CHAPTER FIVE

**SUMMARY, CONCLUSIONS AND RECOMMENTDATIONS**

# Introduction

This chapter focused on summary, conclusion, recommendations and suggestions for further studies.

# Summary

This study was conducted on Impact of Information and Communication Technology (ICT) on the Management of State owned Tertiary Institutions in Niger State, Nigeria. In order to achieve the objectives of the study, five specific objectives were raised, in line with these objectives, research questions and five null hypotheses were formulated. Related literatures were reviewed along with two (2) empirical studies. Descriptive statistic research design was adopted for the study, a total of 357 respondents were sampled from the total population of 7,258. A structured questionnaire was used to collect data from the respondents. The data collected were presented in tables and were analyzed using weighted mean to answer the research questions. The five hypotheses were tested using one-way analysis of variance (ANOVA) for the null hypotheses at 0.05 alpha levels of significance. Descriptive statistic was used to analyze the bio- data of the respondents. The major findings of the study were; ICT is very much in use in higher institutions in Niger state and has facilitated communication between the management and other staff in the institution, through ICT records in higher institutions are not only properly kept but are effectively save in retrievable gadgets for future use in Niger State ICT has added tremendous value to educational research in higher institutions in Niger State, ICT has made decision making faster and less cumbersome in higher institutions in Niger State and the use of ICT has step up maintenance culture in higher institutions in Niger State.

# Conclusions

Based on the findings of this study, it was concluded that:

1. The advent of ICT has brought about communication exposure in higher institutions in Niger state and Nigeria in general.
2. Through ICT the era of manual search for document, students‘ information and inadequacy of space for shelves and files has become a thing of the past.
3. With ICT in higher institutions in Niger State, educational research will have no limit.
4. ICT has made decision making in all higher institutions in Niger State much easier, faster and all-encompassing at all levels.
5. ICT has reawakened and strengthened the maintenance practices in higher institutions in Niger State.

# Recommendations

In view of findings, the following recommendations were made:

1. More ICT facilities should be provided in required quantity and quality in all higher institutions in Niger State.
2. There is the need to train and retrain staff on proper record keeping through ICT in all higher institutions in Niger State.
3. Educational researchers should be given the required climate that will encourage them to embark on research in higher institutions in Niger State.
4. Educational administrators should deploy ICT in decision making in their respective institutions.
5. Regular maintenance practice should be uphold through the use of ICT in higher institutions.

# Suggestions for Further Studies

The researcher suggested the following areas for further studies;

* + 1. A similar study should be conducted in other states within the Northern Central Zone of Nigeria in order to affirm or debunk the findings of the study.
    2. Impact of e- library on the academic performance of students of colleges of education in North Central Zone, Nigeria

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# APPENDIX A

**Impact of Information and Communication Technology (ICT) on the Management of Tertiary Institutions Questionnaire (IICTMTIQ)**

Educational Foundations and Curriculum Department, Faculty of Education,

Ahmadu Bello University, Zaria. Dear Sir/Madam,

# REQUEST TO FILL A QUESTIONNAIRE

I wish to solicit for your assistance and corporation in collecting necessary data on the above research topic. This research work is an academic exercise and the information gathered in this questionnaire will be treated with confidentiality.

However, your candid response will help in improving the use of Information and Communication Technology in Tertiary Institutions in Niger State and beyond. Thank you.

Yours Faithfully

Salihu Abdullahi Ahmed

# SECTION A PERSONAL DATA

**Instruction**: Tick (√ ) in the appropriate columns that relate to your opinion from each section.

1. **Name of the Institution:** a. IBBUL ( ), b. C.O.E.Minna ( ), c. Sch. Tech. T/Magajiya (

)

1. **Designation of Respondent:** a. Manager ( ), b. Academic Staff (), c. Non-Academic Staff ( )
2. **Nature of Appointment:** a. Permanent/government ( ), b. Casual/Contract ( )
3. **Sex of Respondent**: a. Male ( ), b. Female ( )

Please, indicate the level of your perception in the following by choosing the corresponding options in all the sections bellow using five-point scale ranging from Strongly Agree (SA), Agree (A), Undecided (U), Strongly Disagree (SD) and Disagree (D)

# SECTION B

**Opinion of Respondents on the impact of Information and Communication Technology (ICT) on Communication in Tertiary Institutions in Niger State, Nigeria**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item Statements** | **SA** | **A** | **U** | **SD** | **D** |
| 1 | ICT serves as a tool for communication in the higher institutions |  |  |  |  |  |
| 2 | e-libraries have impact on communication between lecturers and students |  |  |  |  |  |
| 3 | ICT enhance communication between Vice-chancellor and academic staff |  |  |  |  |  |
| 4 | ICT ensure good communication between Provost and academic staff |  |  |  |  |  |
| 5 | ICT facilitate communication between Rector and academic staff |  |  |  |  |  |
| 6 | ICT is used to send students results via internet |  |  |  |  |  |
| 7 | Public address system is used for communication during students‘ orientation |  |  |  |  |  |
| 8 | The use of ICT has impact on communication between students and lectures |  |  |  |  |  |
| 9 | The use of ICT enhance communication amongst staff |  |  |  |  |  |
| 10 | Public address system has made communication much easier during convocation ceremonies |  |  |  |  |  |

# SECTION C

**Opinion of Respondents on the impact of Information and Communication Technology (ICT) on records keeping in Tertiary Institutions in Niger State, Nigeria**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Items Statements** | **SA** | **A** | **U** | **D** | **SD** |
| 1 | ICT enhances record keeping in higher institutions |  |  |  |  |  |
| 2 | ICT ensure effective recordkeeping of staff promotion |  |  |  |  |  |
| 3 | ICT gadgets aid in keeping financial records of higher institutions |  |  |  |  |  |
| 4 | The use of ICT help in documenting students‘ information |  |  |  |  |  |
| 5 | ICT is used in storing the records of available facilities in higher institutions |  |  |  |  |  |
| 6 | ICT helps in retrieving important records of visitors |  |  |  |  |  |
| 7 | ICT has impact on the management of examination result in higher institutions |  |  |  |  |  |
| 8 | ICT enables easy access to past records |  |  |  |  |  |
| 9 | ICT makes access to library information easy |  |  |  |  |  |
| 10 | ICT enables the transfer of records between departments |  |  |  |  |  |

# SECTION D

**Opinion of Respondents on the impact of Information and Communication Technology (ICT) on Educational Research in Tertiary Institutions in Niger State, Nigeria**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Items Statements** | **SA** | **A** | **U** | **D** | **SD** |
| 1 | ICT wireless facilities enable easy educational research work in higher institutions |  |  |  |  |  |
| 2 | Internet service facilitates effective educational research |  |  |  |  |  |
| 3 | ICT has made educational resources available to researchers in higher institutions |  |  |  |  |  |
| 4 | ICT help lecturers to improve their service delivery to students |  |  |  |  |  |
| 5 | ICT help students to access empirical materials from the internet |  |  |  |  |  |
| 6 | ICT help the students and staff to use different internet browser |  |  |  |  |  |
| 7 | ICT help lecturers and students to write education research papers |  |  |  |  |  |
| 8 | ITC aid students to conduct their theses in good time |  |  |  |  |  |
| 9 | ICT enable students to develop skills for educational research |  |  |  |  |  |
| 10 | ICT help students to get the latest information about their areas of studies |  |  |  |  |  |

# SECTION E

**Opinion of Respondents on the impact of Information and Communication Technology (ICT) on Decision Making in State Tertiary Institutions in Niger State, Nigeria**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Items Statements** | **SA** | **A** | **U** | **SD** | **D** |
| 1 | ICT gadgets are used as medium for passing information during and after management meetings |  |  |  |  |  |
| 2 | ICT facilities are used to inform the school about important decisions taken |  |  |  |  |  |
| 3 | ICT are used to keep records of decision about students suspension |  |  |  |  |  |
| 4 | ICT help management of institutions to make swift decision |  |  |  |  |  |
| 5 | Through ICT, decisions about students indiscipline can be traced |  |  |  |  |  |
| 6 | Through ICT, decisions about students admission process is enhanced |  |  |  |  |  |
| 7 | ICT promote effective decision making process in terms of the change in school curriculum |  |  |  |  |  |
| 8 | Through ICT, decisions about innovations are easily discussed |  |  |  |  |  |
| 9 | ICT promotes decision making between ministry and school  management |  |  |  |  |  |
| 10 | Through ICT, decisions about staff promotions and retirements are easily discussed |  |  |  |  |  |

# SECTION E

**Opinion of Respondents on the impact of Information and Communication Technology (ICT) Facilities on Maintenance Culture in Tertiary Institutions in Niger State, Nigeria**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **Item Statement** | **SA** | **A** | **U** | **D** | **SD** |
| 1 | School computer facilities are maintained regularly for  effective use |  |  |  |  |  |
| 2 | Internet facilities are properly monitored to avoid misuse |  |  |  |  |  |
| 3 | Library facilities that are in bad working condition are  replaced |  |  |  |  |  |
| 4 | Emergency maintenance is carried out as the result of  sudden system failure |  |  |  |  |  |
| 5 | ICT gadgets are frequently supervised to avoid breakdown |  |  |  |  |  |
| 6 | Through maintenance, public address system brings  effective output |  |  |  |  |  |
| 7 | Proper maintenance of projectors gives clarity in visual  output |  |  |  |  |  |
| 8 | Effective maintenance extends the life span of ICT gadgets |  |  |  |  |  |
| 9 | Regular maintenance reduces cost of replacement |  |  |  |  |  |
| 10 | Regular maintenance of wired internet facilities avoid high  power supply |  |  |  |  |  |