Perception of Farmers on Climate Change on Agricultural Productivity in Ninewa Governorate of Iraq

Cinya Robert Rufino[1] & Ayodele Olorunfemi[2]

cinyarobert@gmail.com +252610272874
ayodele@agribusinessnigeria.org +2349129158989
[1,2]Department of Management & Accounting, Faculty of Management and Social Science, Lead City University, Ibadan, Nigeria

The study examined the perception of farmers on climate change on agricultural productivity in Ninewa Governorate of Iraq and was based on the conservation model and high payoff input model/theory. The study employed a mixed research design employing cross-sectional, descriptive, and correlational research design, which were guided by both qualitative and quantitative data collection approaches. Five-point Likert scale questionnaire and key-informant interview were used for data collection. Simple random sampling and purposive sampling techniques were used to select the respondents for this study. Collected data were analyzed using Statistical Package for Social Sciences (SPSS) version 22.0. The study involved a response rate of 81(76%), which was good and acceptable for subsequent analysis. The study succinctly revealed a negative and statistically significant impact on agricultural productivity. Based on coefficient of determination (r^2=0.172), the findings imply that the explained variation in agricultural productivity due to water scarcity and drought is about 17.2%. Based on coefficient of determination (r^2=0.171), the findings imply that the explained variation in agricultural productivity due to declining precipitation is about 17.1%. Based on coefficient of determination (r^2=0.115), the findings imply that the explained variation in agricultural productivity due to extremely high temperature is about 11.5%. Based on coefficient of determination (r^2=0.2601) the findings imply that the explained variation in agricultural productivity due to dust and sandstorms is about 26.01%. Based on coefficient of determination (r^2=0.282) the findings imply that the explained variation in agricultural productivity due to climate change is about 28.2%. Consequently, it is concluded that climate change has a negative and statistically significant impact on agricultural productivity. Based on this, it is recommended that the government should invest massively in environmental protection so as to improve on water precipitation in order to boost agricultural productivity in the governorate.

Keywords: Drought, Temperature, Declining precipitation, Dust and sandstorms, agricultural productivity and environmental protection.

Introduction

Climate change can be a natural process where temperature, rainfall, wind, and other elements vary over decades or more. In millions of years, world has been warmer and colder than it is now. But today we are experiencing unprecedented rapid warming from human activities, primarily due to burning of fossil fuels that generate greenhouse gas emissions.

The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment report, published in 2021, found that human emissions of heat-trapping gases have already warmed the climate by nearly 2 degrees Fahrenheit (1.1 degrees Celsius) since pre-industrial times (starting in 1750). The global average temperature is expected to reach or exceed 1.5ºC (about 3ºC) within the next few decades. These changes will affect all regions of planet. The severity of effects caused by climate change will depend on the path of future human activities. More greenhouse gas emissions will lead to more climate extremes and widespread damaging effects across the planet. However, those future effects depend on the total amount of carbon dioxide we emit. So, if we can reduce emissions, we may avoid some of the worst effects.

The IPCC sixth Assessment report further stated that the world average surface temperatures could increase by 1.0°C to 5.7°C by the end of this century. The rate of global mean sea level rise has accelerated and will continue throughout the 21st century, ranging from 0.32m to 1.01m. The year 2021 was Singapore's second wettest since 1980, with higher-than-average rainfall for most months and annual total rainfall of 2809.6mm at the Changi climate station. (From "2021 Climate and Weather: The Year in Review", NEA)

The Earth is now about 1.1°C warmer than it was in the 1800s. We are not on track to meet the Paris Agreement target to keep global temperature from exceeding 1.5°C above pre-industrial levels. That is considered the upper limit to avoid the worst fallout from climate change. Producing food causes emissions of carbon dioxide, methane, and other greenhouse gases in various ways. Deforestation and clearing of land for agriculture and grazing, digestion by cows and sheep, and the production and use of fertilizers and manure for growing crops all cause emissions, as does the use of energy to run farm equipment or fishing boats, usually with fossil fuels. Emissions also come from packaging and distributing food.

As greenhouse gas concentrations rise, so does the global surface temperature. The last decade, 2011-2020, is the warmest on record. Since the 1980s, each decade has been warmer than the previous one. Nearly all land areas are seeing more hot days and heat waves. Higher temperatures increase heat-related illnesses and make working outdoors more difficult. Wildfires start more easily and spread more rapidly when conditions are hotter. Temperatures in the Arctic region have warmed at least twice as fast as the global average.

Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond

natural climate variability. Some development and adaptation efforts have reduced vulnerability. Across sectors and regions, the most vulnerable people and systems are observed to be disproportionately affected. The rise in weather and climate extremes has led to some irreversible impacts as natural and human systems are pushed beyond their ability to adapt

Climate change has caused substantial damages, and increasingly irreversible losses, in terrestrial, freshwater, and coastal and open ocean marine ecosystems. Widespread deterioration of ecosystem structure and function, resilience, and natural adaptive capacity, as well as shifts in seasonal timing have occurred due to climate change, with adverse socioeconomic consequences. Hundreds of local losses of species have been driven by increases in the magnitude of heat extremes, as well as mass mortality events on land and in the ocean and loss of kelp forests.

The Middle East and North Africa (MENA) is among the most vulnerable places in the world to climate change. The U.N. has highlighted the devastating toll that climate change will have on the region's water supplies and food production systems, and its potential to create breeding grounds for terrorism and violent extremism. No country will be spared: The affluent Gulf nations face depleted freshwater resources within the next 50 years, while in conflict-ridden Iraq, average temperatures are soaring at a rate that is two-to-seven times faster than the global average and water production systems across the Levant face imminent collapse.

The World Bank estimates that climate-related water scarcity will cost Middle Eastern nations between 6 percent and 14 percent of their GDP by 2050, due to water-related impacts on agriculture, health, and incomes.These red flags already indicate severe near-term implications for national and regional stability, including geopolitical flare-ups. Turkey controls more than 90 percent of the water that flows into the Euphrates, and 44 percent of that in the Tigris. Since December 2020, Turkish dams have cut the flow of the Euphrates to neighboring countries such as Iraq by 60 percent, which has also resulted in food and power shortages in Syria. This has compounded the water crisis in Iraq, which could see at least seven million people lose access to water.Similarly, upstream dams in Iran have shrunk the Tigris tributaries, cutting off flow at the Diyala river in Iraq's northeast. Lake Hamrin, the main water source for Iraq's Diyala province, which borders Iran, has lost nearly 70 percent of its water.
Iraq has three major climate zones, primarily delineated by rainfall quantities: a largely uninhabited and extremely arid lowland desert, a semi-arid steppe, and a moist Mediterranean region in the sub-humid upland and mountainous north and northeast. The Iraqi desert is extremely hot and arid, with average diurnal temperatures ranging from 4°C to 17°C in the winter and rising to 25°C to 43°C in the summer months. Extreme temperatures ranging from 8°C in the winter to over 48°C in the summer can occur. Annual rainfall is negligible. The Iraqi steppe is also very hot, though rainfall is substantially higher than it is for the desert floor. The average diurnal temperature in Baghdad, located in the steppe, ranges from 5°C to 18°C in the winter. In the summer, temperatures increase, rising from 26°C to 46°C daily. The steppe receives 200–400 mm of precipitation per year, with nearly all of that falling between

November and April. In the mountains, the climate is considerably wetter but only marginally cooler than the steppe.

With precipitation falling below 40% of normal levels in some regions of the country, the winter of 2020/2021 recorded the second lowest rainfall in four decades. Multiple simulation models predict that if no measures to address this issue are taken, annual rainfall levels in various locations of Iraq may diminish. By 2050, mean annual rainfall is anticipated to decline by 9%, as is the number of rainy days. Temperature is soaring high to new extremities as degrees above 50°C are becoming more common with the country being reported to warm at least twice faster than the global average. Prevalent long-term warming trend with an increasing frequency of extreme temperatures is becoming a routine. Unless global emissions are reduced, the Middle East, including Iraq, is set to experience 121 days per year of extreme heat by the end of the century, making certain areas in Iraq uninhabitable, which reveals the great threat heat is imposing to existence within the country. In 2022, the surge of prolonged dust storms in Iraq led to a variety of complications. Numerous hospitalization cases were recorded throughout the country as a result of dust-induced respiratory illnesses. The airports of Baghdad, Erbil, Sulaimani, and Najaf temporarily halted all flights during April due to poor visibility, which poses a danger when aircrafts land and take off.

Ratifying the Paris Agreement in 2021, Iraq submitted its first NDC in October, in which it aspires to implement its nationally determined contributions for the period from 2021 to 2030 with the goal of an expected reduction of 1–2% of its total greenhouse gas emissions by national effort, and up to 15% when international financial and technical support is granted. Iraq intends to reduce its emissions through the implementation of dedicated measures in the energy, industrial, agricultural, waste, and housing sectors. However, haste is of the essence when it comes to these implementations, as the current situation promises increased heat waves, dust storms, water scarcity, and soil erosion; harming population health and eventually deeming certain regions in Iraq uninhabitable.

In 2019, a UN report classed Iraq as the world's fifth most vulnerable country in terms of availability of water and food, and exposure to extreme temperatures. Temperatures in the country are increasing up to seven times faster than the global average, while annual rainfall is predicted to decrease by 9 percent by 2050. At the same time, the country faces a rate of population growth that is twice the global average, at 2.25 per cent a year; its population is set to reach 50 million by 2030 and 70 million by 2050.

Summary of Gaps in Literature

The key gaps in the literature review are the specific impact of water scarcity and drought, impact of declining precipitation and extremely high temperatures and dust and sandstorms on agricultural production in Ninewa governorate.

There is also a gap in documentation of short-term or immediate assistance interventions and

sustainable long-term interventions to address the impact of water scarcity, declining precipitation, extremely high temperature and dust and sandstorms to the communities in Ninewa governorate in Iraq.

It is imperative therefore to carry out research work on the perception of farmers on climate change on agricultural production in Ninewa Governorate of Iraq so that to document the gaps in the previous literature review.

Statement of the Problem

Climate change is drastically advancing with Iraq being one of the fastest warming areas on the planet. Desertification, water scarcity, declining precipitation, extremely high temperatures and dust storms are some of the major climate issues Iraq is currently facing.

Forty (40) percent of Iraq's land is desert; this number will continue to grow with an annual loss of 100 square kilometers of arable land to desertification. The desertification of Iraq is caused by a range of factors. Climate elements contributing to the problem include, but are not limited to, high temperatures, water scarcity, and erosion of soil.

Aim and Objectives

General Objective of the study

To assess the perception of farmers on climate change on agricultural production in Ninewa Governorate of Iraq.

Specific Objectives

1. To investigate the impact of water scarcity and drought on agricultural production
2. To determine the impact of declining precipitation and extremely high temperatures on agricultural production
3. To investigate the impact of dust and sandstorms on agricultural production in the study area.
4. To investigate the impact of Climate change on agricultural productivity.

Research Questions

1. What is the impact of the water scarcity and drought on agricultural production?
2. What is the impact of declining precipitation and extremely high temperature on agricultural production?
3. What is the impact of dust and sandstorms on agricultural production?
4. What is the impact of climate change on agricultural productivity?

Hypothesis of the study

The study tested one null hypothesis which stated that:

1. H_{01}: There is no significant impact of climate change on agricultural productivity.

Methodology

The study was conducted through cross-sectional, descriptive, and correlational designs using both quantitative and qualitative research approaches to collect and analyze data. The cross sectional research design allowed the researcher to gather information for a specified period of time.

The descriptive research design was also employed in order to collect data on the variables of interest in the study among farmers in Ninewa Governorate of Iraq

Further, the study also employed a correlational research design in order to establish the statistical relationship between climate change and agricultural productivity in Ninewa Governorate of Iraq.

The target population of this study was 145 farmers in Ninewa Governorate of Iraq. It also considered extension officers in charge Agriculture and six local authority officers. The sample size of the study was 106 farmers determined using Slovenes (1970) formula.

The study employed simple random sampling to select 106 farmers in Ninewa Governorate of Iraq, wherein the researcher wrote names of all one hundred forty-five (145) farmers on pieces of paper that were folded and kept inside a small box such that each farmer had an equal chance to be selected.

The study also employed purposive sampling in order to identify the key informants due to the nature of the inquiry needed by the researcher, which included the six (6) extension officers and six (6) local authority officers

The study employed a survey method of data collection and a key informant interview method.

The study employed two data collection instruments that is self-administered questionnaire and key informant interview guide.

The validity of the research instruments was examined by calculating the Content Validity Index (CVI). The minimum recommended CVI value is 0.7 as recommended by (Amin, 2005). Validity was calculated using the content validity index (CVI) formula;

$$CVI=(Totalnumberofrelevantitems\ (R))/(Totalnumberofitems\ ((N))$$

$$CVI= 19/23$$

$$= 0.83$$

The CVI computed was 0.83, this means the instruments were valid as recommended by (Amin,2005).

A pretest was done at Kawanda Agricultural Research Institute in Uganda using 20 questionnaires administered to 20 respondents to test reliability because it shares similar characteristics of a farm. After data was entered in SPSS version 22 and analyzed using reliability statistics, Cronbach's Alpha reliability coefficient

The instrument was found valid for data collection, since the Cronbach's Alpha was 0.933 which was greater than that recommended of 0.7 and above.

Data was collected from the field was checked for completeness, sorted, coded and entered in the computer using StasitcalPacakage for Social Sciences(SPSS) version 22.0 to analyse data. Demographic characteristics were analyzed using frequencies and percentages.

The objectives of the study were analyzed using inferential statistics by determining Pearson's correlation coefficient to establish the strength of relationship between climate change and agricultural productivity. In addition, linear regression analysis was done to determine the contribution of each construct of independent variable towards agricultural productivity.

Hypothesis of the study was tested and analyzed by researcher using P-value significant level of 0.05, which was used to decide whether to accept or reject the Null hypothesis. If there was 5% or less chance the Null hypothesis was to be rejected and the alternative hypothesis will be accepted.

Discussion of Findings

Objective 1

To investigate the impact of water and drought on agricultural production, the findings revealed that there is a negative and statistically significant impact of water scarcity and drought on agricultural productivity (r =0.415 p=0.000).

Objective 2

To investigate the impact of declining precipitation on agricultural production, the study revealed that there is a negative and statistically significant impact of declining precipitation on agricultural productivity (r =0.414 p=0.000).

Objective three

To investigate the impact of extremely high temperature on agricultural productivity, the study findings revealed a negative and statistically significant impact of extremely high temperature on agricultural productivity (r =0.339 p=0.000)

Objective Four

To investigate the impact of dust and sandstorms on agricultural productivity, the study findings revealed that there is a negative and statistically significant impact of dust and sandstorms on agricultural productivity (r =0.510 p=0.000).

Based on the adjusted R square (0.303), the findings imply that the explained variations in agricultural productivity due to climate change is about 30.3% and unexplained variations of 69.7% is attributed to other factors which were not considered in the study.

Null hypothesis H01 which stated that "there is no significant impact of climate change on agricultural productivity" was rejected while the alternative hypothesis which stated that "there is a significant impact of climate change on agricultural productivity" was accepted. This is because p-0.000 which was less than the significant level=0.05.

Conclusion

Regarding the impact of water scarcity and drought on agricultural productivity, the study concludes that these parameters impacted negatively on agricultural productivity.

The study concludes that declining precipitation, extremely high temperatures, dust, and sandstorms collectively had negative impact on agricultural productivity. It also shows that climate change has a negative and statistically significant impact on agricultural productivity.

Recommendations

1. Farmers should practice water harvesting so as to avail water during periods of water scarcity and drought in order to improve agricultural productivity.
2. Farmers and extension officers should come up with appropriate measures such as understanding the seasons so as to plant according to seasons in a bid to improve agricultural productivity.
3. Those that are engaged in agriculture should practice farming in greenhouses, so as to protect plants from getting damaged by extremely high temperatures as well as practicing irrigation farming in a bid to increase agricultural productivity.
4. Farmers should provide safety measures such as surrounding the entire farm with tapeline to harvests from getting contaminated with dust. The study further recommends that farmers should plant trees surrounding their farms that will serve as in order to protect the farms from strong winds and storms.
5. The study also recommends that the government should invest massively in environment protection so as to improve on water precipitation in order to boost agricultural productivity**.**

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APPENDENCES

Appendix I: Questionnaire

Dear respondent,

I am CINYA ROBERT RUFINO, a student pursuing a Master's Degree at Lead City University, Ibadan Nigeria Graduate School. I am conducting an academic research on the topic: "Climate Change and its Impact on Agricultural Productivity in Ninewa Governorate of Iraq".

I humbly request you to fill this questionnaire with relevant current information. The information you will give me will be kept confidentially. You are not required to write your name on this paper. Therefore, you are requested to fill this questionnaire by ticking the necessary box and write where possible as honest as possible.

Thank you for your time.

SECTION A. (BIO- DATA)

1. Sex?
   a) Male b) Female
2. What is your age group (years)?
   a) 20-24 b) 25-29 c) 30-34 d) 35 – 3 e) 40 and above
3. For how long have you been working at this farm?
   a) Less than 2 years b) between 2-10 years c) 10 years and above
4. What is your highest level of education?
   a) basic b) Diploma c) 1stDegree d) Master's Degree e) Others specify

SECTION B (CLIMATE CHANGE)

For this section, please indicate the level of agreement or disagreement regarding climate change with each statement by ticking a number 1 to 4 with:1-Strongly Disagree (SD), 2-Disagree (D), 3- Moderate (M), 4- Agree (A), 4-Strongly Agree (SA)

Climate Change	1	2	3	4	5
Water Scarcity and drought	SD	D	M	A	SA
1. We have experienced water scarcity in the recent years					
2. We do water harvesting in rainy seasons.					
3. Water scarcity lowers agricultural productivity					
4. At our farm we do modern irrigation during drought times.					

Declining Precipitation SD D M A SA

1. We experience decline precipitation at times.
2. Declining precipitation lowers agricultural productivity.
3. At times of declining precipitation we yield poor yields.
4. During declining precipitation, number of farmers engaging in agricultural production reduce

Extremely high temperatures

1. At times we experience high temperatures
2. extreme high temperatures reduce agricultural productivity
3. farmers adopt greenhouse farming during high temperatures
4. extremely high temperatures affect soil fertility

Dust and Sand Storms SD D M A SA

1. Dust sometimes lowers the quality of cereal products
2. At times sand storms destroy crops
3. Dust and sand storms affect agricultural production negatively.
4. At times dust and storms demotivate farmers to carry out their activities

SECTION C. (AGRICULTURAL PRODUCTIVITY)

For this section, please indicate the level / extent of satisfaction with each statement by ticking a number 1 to 5 with 1-Strongly Disagree (SD), 2-Disagree (D), 3- Moderate, 4. Agree (A) and 4-Strongly Agree (SA)

Agricultural Productivity SD D M A SA

1 There is loss of agricultural productivity due to climate change
2 There is increased loss of arable land due to desertification.
3 There is increased soil salinization which reduces land for agriculture

SECTION D: SUGGESTIONS

1. What other factors do you think causes decline in agricultural productivity?

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2 What measures would you suggest should be taken to control effects of climate change on agricultural productivity.

I Thank You Most Sincerely!

APPENDIX II: Key Informant Interview Guide for Extension workers and Local Authorities

1. In which ways does climate change affect agricultural productivity?
2. What strategies have been put in place to reduce on the effects of climate change in agriculture?
3. Which modern methods do you employ and train farmers to safe guard against climate change?
4. What has been the trend of agricultural productivity in Newa Governorate of Iraq?

Thanks a lot

Management of Information in Nigerian Tertiary Institutions: The Place of Contemporary Office Managers within the Discourse

Sudetu OSENI

[1]*Osenisudetu@auchipoly.edu.ng: +234 805 823 1607*

[2]*Bakare.oluwabunmi@lcu.edu.ng: +234 806 636 5376*

[1]*Department of Office Technology & Management, Auchi Polytechnic, Auchi, Nigeria*

[2]*Department of Information Management, Lead City University, Ibadan, Nigeria*

The paradigm shift in the management of information across organizations from the traditional methods to the digital space has been necessitated to the infusion of Information and Communications Technology (ICT). This has become an important tool in the day-to-day running of the office environment across organizations of which offices in tertiary institutions are not an exception. For the past two decades, fast changes have been taking place in the office environment as a result of technological advancement, and office managers across global tertiary institutions have been working towards situating their significance within the information management life cycle. However, the reverse is the case in most public tertiary institutions in Nigeria which are still grabbling with the old order of information management within the office space. It is based on this premise this study intends to systematically investigate the management of information in tertiary institutions in Nigeria by taking into consideration the place of contemporary office managers. The study will adopt a positivist research paradigm and a quantitative research approach; while the study population is office managers across the public and private tertiary institutions in Edo state, Nigeria. The study will be underpinned by the Information Life Cycle Management Model to showcase the place of contemporary office managers within the discourse of information management in tertiary institutions. The study is expected to be significant to practice, policy, society, and theoretically based on the conceptual model that would be developed.

Keywords: Information Management Life Cycle, ICT, Information Management, Contemporary Office Managers

Introduction

The information age and its array of Information and Communication Technology (ICT) have led to an interconnected and interdependent world. It is obvious that a highly developed Information and Communication Technology is important for the attainment and sustenance of global relevance of every nation. Therefore, every nation must place premium on ICT development. In this modern age, the continuous increase in the volume of information has transformed the manner in which organizations including institutions, both public and private carry out their businesses. Significant changes have taken place in the nature of the information being generated, stored, processed and distributed. Although technology can help to manage the creation and the processing of information, if used without understanding the information management principles, it will only invite haphazard effects.

Information management has to do with everything involving how records are controlled right from when they are created down to when they are finally disposed of. It involves how records are created, received, maintained, used and finally disposed of. It has to do with making sure that information is systematically managed throughout their lifecycle by efficiently and systematically (digitally) controlling them from their creation, reception, usage, storage, preservation as well as their disposition (Adediji, 2006).

The role of Information and Communication Technology (ICT) in improving the general management of information cannot be downplayed. This is affirmed by the ability of ICT to capture, store, retrieve, analyze and transmit large volumes of information across various locations. The adoption of ICT in information managementhas not only been crowned generally as eminent in improving the reliability and effectiveness of the information, but it has also been gloated for strengthening service delivery through its various tailor-made innovative applications and programmes (Akinyemi, 2001).

For decades now, fast changes have been taking place in all facets of human life including the office environment. This is as a result of technological advancement. Every office in today's business world, be it government, industry or other human endeavours, require facts and accurate information for quick decision-making. The office manager, expects certain support from the organization into which he/she is employed. This support can be technological (machines and equipment) and human. In offices of the past, office managers use manual methods in managing information. This has adverse effects on the office space generally. Most recently, businesses have developed digital means of managing information in an effort to ease the office manager's functions and make the organization progress (Ayodele, 2006). As a result of changes in technology, the role of office managers in managing records has changed tremendously.

Information management has gone through series of advancements for a long time now as a result of the adoption of ICT. This has improved the way tasks are performed. The adoption of technology has changed the management of information in organizations as most organizations in today's world now use ICT in their businesses in order to cope with the increase in the volume of information such organizations generate (Alex, 2015). Advances in ICT are phenomena in the developed countries as they are centres of industrial and ICT revolution. The situation in Nigeria is a far cry from what obtains in the advanced nations. Nigeria is, however, coming along but at a slower pace as observed by Adediji (2006), "we hop rather than leap, automation wise". Consequently, Nigeria is still trapped among the group of nations categorized as information poor societies. Although, Nigeria is not relenting in her efforts to be part of the global village, a lot still needs to be done in order to achieve a breakthrough in ICT. It is disheartening to note that most public tertiary institutions in Nigeria still manage their information through the traditional method. This has given rise to a lack of office space to house these institutions' records. The lack of space for the increasing volume of information generated by tertiary institutions in Edo State as well as poor management of information has led to the challenge of retrieval of information within these institutions as it is always very difficult (at times impossible) to locate some records.

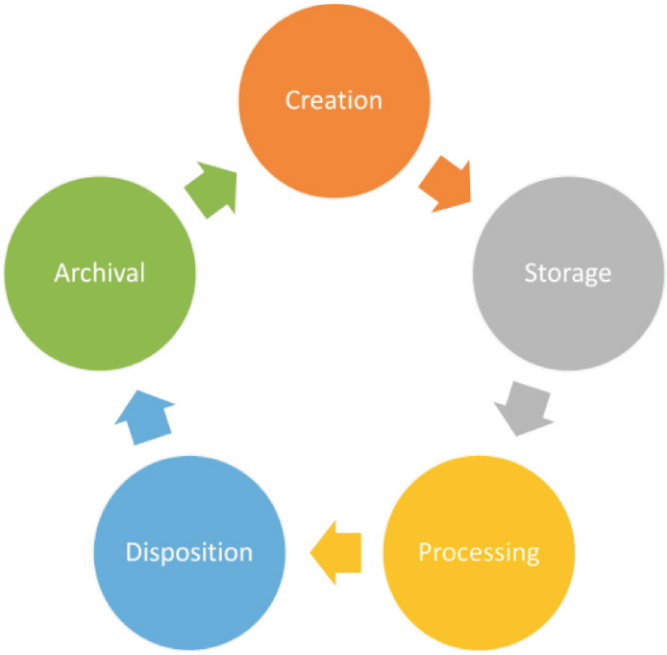
The office manager is an employee that coordinates office activities and performs office duties especially information management for organizations including tertiary institutions. The adoption of ICT has changed the way office managers manage information from the traditional method to the modern method (Agbongiasede, 2018). Office managers have access to modern office technologies such as the computers, internet, smart phones, micro chips etc. These technologies make the management of information much easier thus enhancing the access and retrieval of vital information. This factor has contributed to the positive performance of the office managers in organizations around the world (Albert, 2014).

Offices in the 21st century are well equipped with ICT devices that facilitate productivity, accuracy and efficiency of work output. The availability of these facilities in tertiary institutions and the ability of office managers to use the facilities had a great impact on their performance. This is made possible through the use of computers and several computers software to manage information. The result of such performance is quick retrieval of information as well as safety of such information (Duniya, 2011).

The use of ICT in managing information reduces the office managers' office from paper more to paper less thereby enhancing economy of space. It is the duty of the office managers to keep all official records in safe custody and be able to retrieve them when needed in future. This makes their offices full of papers and files. With the advent of ICT, storage of information is being done in the computer system without making use of papers. What is done is to save the information in a folder in the computer and when needed in future, it is printed out (Braimoh, 2016). ICT has also enabled the use of Electronic Mail System which has replaced the inter-office memorandum and notices of meetings which is a substitute

for telephone calls in organizations. It has replaced a major part of organizations' mail as it is used for sending and retrieving of information at any time. *The Information Life Cycle Management Model is used to showcase the place of contemporary office managers within the discourse of information management in tertiary institutions.* Information lifecycle management (ILM) is the effort to oversee data, from creation through retirement, in order to optimize its utility, lower costs, as well as minimize the legal and compliance risks that may be introduced through that data. *T*he information life cycle model describes the stages through which information passes, typically characterized as creation or collection, processing, dissemination, use, storage, and disposition, to include destruction and deletion.

The diagram below illustrates the five stages comprising the life cycle of information assets:



The 5 stages of information lifecycle include creation, storage, processing, disposition and archival. Effectively managing these phases will help organizations get the most out of their most important asset. This cycle describes the process of how information is created, shared and stored throughout its lifecycle.

1. Acquisition and creation

The first stage of the information lifecycle is creation. This is the stage at which information is created and produced by a company or individuals. As an organization, you must identify all of the information sources from which you will receive or generate information. This will allow you to identify the types of information to process as well as provide insight into how the information will flow throughout the lifecycle. Organizations must ensure that the collected information is of high quality in order for it to be processed and analyzed for better decision making.

2. Storage and maintenance

The second stage of the information lifecycle is storage and maintenance. It is critical for organizations to clearly define where their information will be stored, define backup schedules, maintain the information and secure it in appropriate ways. In this digital age, most businesses use the cloud to store their information, ensuring that it is secure and accessible when needed. Some organizations, on the other hand, prefer to host their information centrally on their premises in order to control and secure the information as needed. The benefit of using the cloud is that you can outsource backup plans, server maintenance and information availability to a provider, lowering costs and allowing your employees to focus on more important tasks.

3. Processing and use

The third stage in the information lifecycle is Usage, during this stage the information is received, organized and evaluated. Organizations must also understand how information is shared among employees/departments and with external entities in order to provide the best possible service while ensuring information safety and protection. Always remember Information is only valuable if it can reach the right audience at the right time.

4. Disposition

The fourth stage of an organization's information life cycle involves the disposal or retention of information. When does the organization want to either maintain or discard the information? Depending on the type of information, a retention schedule will be established in order to comply with various rules and regulations imposed by governments or industries. This is one of the most important steps in information lifecycle management because failing to dispose of sensitive information on time will almost certainly result in fines and penalties for noncompliance with various rules and regulations.

5. Archival

Archival is the final stage of the information lifecycle. In this step, organizations must clearly define how information will be archived and what hardware will be used. This is a critical step that takes more time than organizations anticipate. Due to technological advancements, businesses must carefully consider the format of information and the technologies to be used in order to preserve the information for as long as it is necessary for business operations.

Summary of Gaps in Literature

Although there is literature on digital information management, many of those studies were conducted in fields other than tertiary institutions, including the mainstream civil service, businesses and other organizations. The limited studies that have already been conducted in this field, however, offer a bleak image of the condition of digital information management in tertiary institutions. The relationships between governance, audit, risk and records keeping are a central concern of the discipline of

information management. Previous researches conducted were carried outside Africa and very few in Nigeria. Studies focusing on investigating the ***Management of Information in Nigerian Tertiary Institutions*** seem to have received less attention. Hence, the uniqueness of this work which aims at investigating the concept among Office Managers in Public Polytechnics in Edo State, Nigeria. This is the gap this study has identified to fill in the research.

Statement of the Problem

The awareness and use of Information and Communication Technology (ICT) and its associated facilities have grown rapidly in the management and service delivery of tertiary institutions over the last few decades. Paper-based records are fast giving way to digital records in most developed countries and crawling gradually into the developing countries including Nigeria. The digital information management system is designed to alleviate the limitations associated with the paper-based records management system and helps improve the quality of immediate retrieval of information within the sector. Unfortunately, the implementation of large-scale information technology projects such as electronic records management system seems to be associated with high failure rate. This challenge can be perceived to be even higher in developing countries including Nigeria. Preliminary investigation by the researcher showed that some public tertiary institutions in Nigeria still use the traditional information management system. In this system, the greatest issues are lack of space and safety for the increasing number of tertiary institutions' records. With concern to physical space and safety for storage of paper records, these have been challenges that many institutions keep battling with.

Polytechnics producing hundreds of records each day means that after a given period of time, the records accumulate huge volumes of paper records. This makes the work of the office managers difficult, tedious and cumbersome as they spend several hours in locating some records and also lack of sufficient space to carry all the records before they are disposed. This becomes the major challenge for office managers. It is observed that office managers are not fully aware of the digital methods of managing information as they are not trained on it. This has led to a lack of space for the increasing volume of the institutions' information as well as safety of the information. This has also led to the challenge of retrieval of information within these institutions as it is always very difficult (at times impossible) to locate some records. This may lead to the loss of image of such institutions. For this reason, there is the need for office managers to adopt digital information management system in managing the information of Public Polytechnics in Edo State.

Aim and Objectives

The aim of the study is to investigate the Management of Information in Nigerian Tertiary Institutions and the Place of Office Managers within this Discourse. Specifically, the study will:

1. *Identify the extent to which office managers are aware of digital methods of information management in the* Public Polytechnics in Edo State.
2. Ascertain the frequency of use of the digital methods in managing the institutions' information by office managers of Public Polytechnics in Edo State.
3. Identify the factors affecting the use of digital methods in managing information in Public Polytechnics in Edo State.
4. Identify the impacts of digital information management on office managers' performance in Public Polytechnics in Edo State.

Research Questions

The following questions are raised to guide the study:

1. To what extent are office managers aware of digital methods of information management in the Public Polytechnics in Edo State?
2. How often do office managers of Public Polytechnics in Edo State use digital methods in managing the institutions' information?
3. What are the factors affecting the use of digital methods in managing information in Public Polytechnics in Edo State?
4. What are the impacts of digital information management on office managers' performance in Public Polytechnics in Edo State?

Methodology

The design used for this research was a descriptive study based on survey research method. Survey research is often used to assess thoughts, opinions and feelings. It consists of predetermined set of questions that is given to a sample which is a representative of the larger population (Agbongiasede, 2018). The descriptive was chosen because of its acknowledged strength in fact finding.

The population of the study was 245 (two hundred and forty-five) office managers of the public polytechnic in Edo State which are Auchi Polytechnic, Auchi and Edo State Polytechnic, Usen.

The stratified and simple random sampling techniques were used to select a sample size of 49 (forty-nine) office managers. This represented 20% of the population studied. The choice of 20% sample size is in line with Westfall (2020) who posited that one strategy in ensuring that a sample is a good representative of the population is by making the sample big enough to optimally reduce error.

According to him, a minimum of 20% is advisable as the larger the subgroup, the more likely that error is reduced. The population and sample are represented in the Table 1 below:

Table 1: Po pulation and sample size of office managers in public polytechnics in Edo State

S/No	Institutions	Population	Sample
1.	Auchi Polytechnic, Auchi	190	38
2.	Edo State Polytechnic, Usen	55	11
	Grand Total	**245**	**49**

Source: Personnel Division of the two Polytechnics.

The instrument for data collection was the questionnaire titled "Survey of Effective Information Management (SEIM)" and it was divided into two sections – A and B. Section A sought a background information of the respondents such as Ownership of Institution (i.e. Federal or State Government), Sex, Marital Status and Age; while Section B was made up of 12 items designed to elicit responses on the awareness, frequency, factors and impact of digital information management system. The items in Section B of the instrument were raised on a four-point scale response items as follows:

SA – Strongly agree

A - Agree

D - Disagree

SD – Strongly disagree

Face validity was used for the study. The validity of the instrument was ascertained after the instrument has been subjected to scrutiny by two experts from the Department of Office and Information Management, Lead City University, Ibadan. After they critically examined it checking for appropriateness of the content, they gave their comments as to the validity of the instrument. Based on their suggestions and corrections, final copy of the instrument was drawn.

The researcher used test-re-test reliability procedure to determine the reliability of the instrument. Federal Polytechnic, Idah, Kogi State was used to conduct a pre-test. The researcher administered the questionnaire on the office managers of Federal Polytechnic, Idah, Kogi State. After two weeks, the same questionnaire was administered to the same set of people. The results of both tests were compared to determine the reliability of the instrument.

The copies of questionnaire were administered by the researcher with the assistance of two research assistants. The research assistants were briefed on the purpose of the research and how to administer the instrument. Copies of the questionnaire were administered to the office managers of the two polytechnics and were retrieved same day. The whole exercise was done within two weeks. Percentage and mean method was used to answer the research questions.

Results

This section deals with the results obtained from the analysis of data. 49 questionnaires were issued out to the various respondents in their schools and they were all retrieved representing a 100% retrieval rate.

The following results emerged from the demographic data:

- That females are more among the population study.
- That there are more married respondents among the population study.
- That the respondents that have worked between the ranges of 11 – 20 years are more among the population study

The following are the results from the responses to the four research questions:

1. That most of the office managers are aware of digital methods of information management among the population study.
2. That most of the office managers do not frequently use digital methods in managing the institutions' information among the population study.
3. That unstable power supply, insecurity of information and lack of training are the major factors affecting the use of digital methods of information management among the population study.
4. That digital information management results to quick access to information, easy retrieval of information as well as enhances economy of office space for office managers among the population study.

Discussion of Findings

Findings obtained from the analysis of the research questions are discussed as follows:

Office managers are aware of digital methods of information management. This shows that digital information management system is not strange to the office managers as they are very much aware of the existence of ICT in information management. This finding agrees with Alex (2015) who asserts that the adoption of technology has changed the management of information in organizations as most organizations in today's world now use ICT in their businesses in order to cope with the increase in the volume of information such organizations generate. It also aligns with Agbongiasede (2018) who found that the adoption of ICT has changed the way office managers manage information from the traditional method to the modern method.

Most of the office managers do not frequently use digital methods in managing the institutions' information. This finding shows that even though the office managers of the population study are aware of digital methods of managing information, they do not make use of these digital means quick often. This finding disagrees with Adediji (2006) who believes that information is systematically managed throughout their lifecycle by efficiently and systematically (digitally) controlling them from their creation, reception, usage, storage, preservation as well as their disposition.

Unstable power supply, insecurity of information and lack of training are the major factors affecting the use of digital methods of information management among the population study. This is a fact in as power supply in Nigeria is very epileptic and unstable. Most of these ICT gadgets make use of constant and regular power supply for them to function effectively. Insecurity is also a plague when it comes to digital information management as most times, hackers invade the internet searching for prey. It is also a well-known fact that some of these office managers lack the requisite training and skills for managing information digitally.

Digital information management results to quick access to information, easy retrieval of information as well as enhances economy of office space for office managers among the population study. These findings agree with Albert (2014) who concluded that these technologies make the management of information much easier thus enhancing the access and retrieval of vital information; Duniya (2011) who believes that the use of computers and several computers software to manage information result to quick retrieval of information as well as safety of such information; and Braimoh (2016) who deduced that the use of ICT in managing information reduces the office managers' office from paper more to paper less thereby enhancing economy of space.

Conclusion

Information management has gone through series of advancements for a long time now as a result of the adoption of ICT. This has improved the way tasks are performed. The adoption of technology has changed the management of information in tertiary institutions as the institution in Edo State now use ICT in managing their information in order to cope with the increase in the volume of information they generate. Technology has helped to manage the creation and the processing of information in tertiary institutions in Edo State.

The awareness and use of Information and Communication Technology (ICT) and its associated facilities have grown rapidly among the tertiary institutions in Edo State. Paper-based records are fast giving way to digital records and this digital information management system has alleviated the limitations associated with the paper-based records management system as it has helped to improve the immediate retrieval of information within the sector. The adoption of ICT has changed the way office managers manage information from the traditional method to the modern method as office managers in tertiary institutions in Edo State have access to modern office technologies such as the computers, internet, smart phones, micro chips etc. These technologies make the management of information much easier thus enhancing the access and retrieval of vital information. This factor has contributed to the positive performance of the office managers in the institutions.

Offices of the tertiary institutions in Edo State are well equipped with ICT devices that facilitate productivity, accuracy and efficiency of work. The availability of these facilities in these institutions and the ability of office managers to use the facilities had a great impact on their performance. The

result of such performance is quick retrieval of information as well as safety of such information. The use of ICT in managing information in tertiary institutions has transformed the office managers' office from paper more to paper less thereby enhancing economy of space as storage of information is being done in the computer system without making use of papers.

Recommendations

Based on the findings and conclusion of this work, the following recommendations were made:

i. Management of institutions should place premium on ICT development as a highly developed ICT is important for the attainment and sustenance of the institutions.

ii. Management of institutions should provide facilities for ICT to be fully incorporated in tertiary institutions so that office managers can have frequent and easy access to use them.

iii. Information and Communication Technology needs electricity to be effective. It is a known fact that power supply is not stable in Nigeria. The government should try to see that power supply is stable. Also, Management of tertiary institutions in Edo State should always make an alternative for power supply.

iv. Management of tertiary institutions in Edo State should be made to understand that the knowledge and application of digital methods in managing information is very vital for ease of retrieval, safety of information as well as enhances economy of office space for office managers.

v. Management of institutions should provide facilities for ICT security programmes to be fully incorporated and implemented in tertiary institutions so that office managers can be trained and equipped to face the challenges of records management in modern business offices.

vi. Management of the institutions should ensure that the office managers should constantly update their skills and knowledge of these new technologies through periodic training on office automation technologies so that they will be up-to-date with the emerging advancements of office technologies. This is important because frequent changes and advancement of technology in the modern office climate has compelled the need for training and re-training of staff.

vii. Management should ensure that finances are allocated to the adoption and use of ICT in their institutions continuously in order to cope with changes in technology.

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Research Instrument

Department Of Office Technology And Management
School Of Information And Communication Technology
Auchi Polytechnic, Auchi

6th June, 2023

Dear Respondent,

Letter of Introduction

We are researchers of the above-named Departments and currently carrying out a research work titled "***Management of Information in Nigerian Tertiary Institutions: The Place of Contemporary Office Managers within the Discourse*".**

We shall be most grateful if you can respond to items in the attached questionnaire as objectively as possible. Be rest assured that any information given shall be used for academic purposes and will be treated with absolute confidentiality.

Thank you in anticipation of your co-operation.

Yours faithfully,

OSENI, SUDETU (MS);
BAKARE, OLUWABUNMI. D. (Ph.D.)
(Researchers)

Section A – Background Information

Please tick (x) as appropriate.

1. Sex: Male ( ) Female: ( )
2. Marital Status: Single ( ) Married ( )
3. Working experience:
   0 - 10 years ( ) 11 - 20 years ( ) 21 - 30 years ( ) Above 30 years ( )

Section B

Please indicate what you consider to be the best option for each statement by marking (x) in the appropriate space provided against the option.

Key: SA - Strongly Agree
A - Agree
D - Disagree
SA - Strongly Disagree

RQ 1. To what extent are office managers aware of digital methods of information management in the Public Polytechnics in Edo State?

Items	Statement	SA	A	D	SD
1.	You are aware that there is digital means of stori ng information in your institution.				
2.	You know that the computer can store information aside from typesetting.				
3.	Information is managed in your institution using the traditional method.				

RQ 2. How often do office managers of Public Polytechnics in Edo State use digital methods in managing the institutions' information?

Items	Statement	SA	A	D	SD
1.	You frequently use computer to create, store, retrieve and disposed of information.				
2.	Information storage and retri eval is seldom done with digital methods in your institution.				
3.	The entire lifecycle of information is managed in your institution through the digital method.				

RQ 3. What are the factors affecting the use of digital methods in managing information in Public Polytechnics in Edo State?

Items	Statement	SA	A	D	SD
1.	Unstable power supply is a factor affecting the effective use of digital methods for managing information.				
2.	Insecurity of information is a factor affecting the use of digital means to manage information.				
3.	Lack of training is a factor affecting the use of digital information management.				

RQ 4. What are the impacts of digital information management on office managers' performance in Public Polytechnics in Edo State?

Items	Statement	SA	A	D	SD
1.	Digital information management results to quick access to information.				
2.	Digital information management results to easy retrieval of information.				
3.	Digital information management enhances economy of office space for the office manager.				

Data Analysis

Table 2: Gender Analysis of Respondents

S/No.	Gender	Respondents	Percentage (%)
1.	Male	12	24
2.	Female	37	76
	Total	**49**	**100**

Table 3: Marital Status A nalysis of Respondents

S/No.	Marital Status	Respondents	Percentage (%)
1.	Single	18	37
2.	Married	31	63
	Total	**49**	**100**

Table 4: Working Experience Analysis of Respondents

S/No.	Years Range	Respondents	Percentage (%)
1.	0 – 10	10	20
2.	11 - 20	16	33
3.	21 – 30	13	27
4.	Above 30	10	20
	Total	**49**	**100**

Table 5: Tabular Analysis of Responses to Research Question One

To what extent are office managers aware of digital methods of information management in the Public Polytechnics in Edo State?

Items	Statement	Variables	Responses	Percentage (%)
1.	You are aware that there is digital means of storing information in your institution.	SA A D SD	11 20 6 12	22 41 12 25
Total			**49**	**100**
2.	You know that the computer can store information aside from typesetting.	SA A D SD	40 9 - -	82 18
Total			**49**	**100**
3.	Information is managed in your institution using the traditional method.	SA A D SD	20 23 5 1	41 47 10 2
Total			**49**	**100**

Table 6: Tabular Analysis of Responses to Research Question Two

How often do office managers of Public Polytechnics in Edo State use digital methods in managing the institutions' information?

Items	Statement	Variables	Responses	Percentage (%)
1.	You frequently use computer to create, store, retrieve and disposed of information.	SA A D SD	10 10 16 13	20 20 33 27
Total			**49**	**100**
2.	Information storage and retrieval is seldom done with digital methods in your institution.	SA A D SD	- 29 20 -	- 59 41 -
Total			**49**	**100**
3.	The entire lifecycle of information is managed in your institution through the digital method.	SA A D SD	- - 35 14	- - 71 29
Total			**49**	**100**

Table 7: Tabular Analysis of Res ponses to Research Question Three

What are the factors affecting the use of digital methods in managing information in Public Polytechnics in Edo State?

Items	Statement	Variables	Responses	Percentage (%)
1.	Unstable power supply is a factor affecting the effective use of digital methods for managing information.	SA A D SD	40 8 1 -	82 16 2 -
Total			**49**	**100**
2.	Insecurity of information is a factor affecting the use of digital means to manage information.	SA A D SD	20 25 4 -	41 51 8 -
Total			**49**	**100**
3.	Lack of training is a factor affecting the use of digital information management.	SA A D SD	15 23 7 4	31 47 14 8
Total			**49**	**100**

Table 8: Tabular Analysis of Responses to Research Question Four

What are the impacts of digital information management on office managers' performance in Public Polytechnics in Edo State?

Items	Statement	Variables	Responses	Percentage (%)
1.	Digital information management results to quick access to information.	SA A D SD	19 30 - -	39 61 - -
Total			**49**	**100**
2.	Digital information management results to easy retrieval of information.	SA A D SD	21 28 - -	43 57 - -
Total			**49**	**100**
3.	Digital information management enhances economy of office space for the office manager.	SA A D SD	49 - - -	100 - - -
Total			**49**	**100**