Factors affecting Nigerian SMEs intention to adopt cloud computing services

Research dissertation presented in partial fulfilment of the requirements

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Dissertation Supervisor: **Dr George Latridis**

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4th June 2021

Candidate declaration

Candidate Name: **Nathaniel Babajide Adibi**

I certify that this dissertation entitled:

Factors affecting Nigerian SMEs intention to adopt cloud computing services

submitted for the degree of **MSc in Accounting and Finance Management** is the result of my work and that where reference is made to the work of others, due acknowledgement is given.

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Dedication

I dedicate this project to almighty God, my beloved family, and friends.

Acknowledgement

I would like to express my heartfelt gratitude to my supervisor, Dr George Latridis, whose expertise was second to none through my research process. Your incisive feedback helped in making sure I was pushed beyond limits in completing my dissertation.

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I would like to also appreciate all respondents who took part in this study as without them this study would not have been possible.

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Abstract

Factors affecting Nigerian SMEs intention to adopt cloud computing services

Nathaniel Babajide Adibi

Cloud computing is a concept that has been gaining increased attention over the last decade. It is expected to revolutionize how large and small business interact with Computing services by providing computing resources over the internet thus eliminating the cost of traditional infrastructure. Particularly in the case of small and medium scale enterprises, cloud computing can give access to services that would ordinarily cost them significant capital investments and could potentially improve business performance. While the adoption of cloud computing is increasing in other countries, the adoption process has been slow in Nigeria. This necessitated this study where I set out to try and understand the factors that can adopt the intention to adopt cloud computing services in Nigerian SMEs. A conceptual model derived from a combination diffusion of innovation theory and TOE framework was adopted from existing literature. From the model, Cloud relative advantage, flexibility, quality of service, security, privacy, and awareness were hypothesized to affect the intention to adopt cloud computing.

To test the research hypotheses, a quantitative research method was adopted in which a sample of 171 SMEs was used. Multiple regression analysis was conducted to see how the variables affected the intention to adopt. The finding of the result showed that only awareness seemed to affect the intention to adopt cloud computing and all other factors were not significant. It was also found in this study that cloud computing intention to adopt did not vary as a result of organization size and length of operation. The finding of this study suggests that in order to increase the level of adoption of cloud computing in Nigerian SMEs, Cloud service provider and other stakeholders would need to increase the level of awareness.

1. INTRODUCTION

1.1 Research Overview

Economic development in both developed and emerging economies around the world is heavily reliant on the success of small and medium-sized businesses (Eniola, 2014). These small businesses make a major contribution to economic development, dynamics, and stability in both advanced developed countries and emerging markets and developing countries (OECD, 2019). The SME industry hires more than 60% of the global population and contributes between 50% and 60% of overall value added (OECD, 2019). Higher quality goods and services are created as a result of SME competition, which benefits customers and allows for creativity to develop new products(Robu, 2013). In developing economies such as Nigeria the role of SMEs is further emphasized because it accounts for 96% of enterprises and 84% of total jobs, which the Nigerian statistical bureau estimates are 48% of national GDP. While this sector has been mostly positive in Nigeria, there is increasing concern that it is not growing quickly enough to keep up with the rising unemployment rate (Eniola, 2014). This slow growth of the sector can be attributed to lack of sufficient capital, level of business owner's financial literacy (Eniola, 2014). Generally, small and medium enterprises are able to achieve a higher level of productivity through investment in technology (Robu, 2013). These investments into information technology have however not been achieved and this is because the cost of running inhouse traditional ICT infrastructure is still too high for smaller businesses(Carroll *et al.*, 2014). With growing concerns about the future of small enterprises in Nigeria, coupled with the effect of the Covid 19 pandemic as one of the worst-hit sectors, Many SMEs are looking for alternative ways to reduce the overall cost of ownership of their ICT systems so that they can concentrate their time and capital on their core businesses operations. The search for alternative means to traditional ICT infrastructure has increased interest in on-demand computing, which can provide ICT services using the internet and can be scaled in accordance to the business needs of the cloud customers at any given time while lowering their IT systems' operating costs (Alshamaila *et al.*, 2013).

Information technology has evolved greatly over the last decade with new development in every field. IT has become the driving force of human behaviours, especially in a digitized world, effectively shaping how we live and work. Businesses have demonstrated a genuine interest in utilizing innovations that have the potential to reduce the cost of technology, simplify businesses processes and increase company performance(Anderson and Rainie, 2010). The concept of Cloud computing is the most recent innovation that has become obvious to the

discussion of modern computing innovations(Alshamaila *et al.*, 2013). Cloud computing can be seen to provide IT-enabled services through the use of Internet technology, in the form of three services (software, platform and infrastructure)(OECD, 2014). These three services are delivered on the customers demand using the various choice of deployment models and a pay-as-you-go model(Armbrust, *et al.*, 2010). Cloud computing involves data being sent to an offsite server commonly referred to as " Cloud" where it can be stored and processed to be accessed at any time by the intended users(Khanom, 2017). Cloud computing is transforming the way business information systems are built, scaled up, managed, and paid for. Cloud computing has the potential to increase the efficiency and scalability of IT systems, enabling SMEs, to concentrate their limited resources on their core business(Buyya *et al.*, 2008). The concept of cloud computing seems almost tailored particularly to small and medium enterprises need for computing services. The flexibility of these businesses makes a great case for them to adopt cloud computing(Sultan, 2011; Alshamaila *et al.*, 2013). In theory, these businesses should be able to easily integrate cloud computing and reap the benefits more quickly than larger enterprises with complex internal business structures. Despite cloud computing seeming almost tailored made to enhance SMEs performance and accessibility to computing services, there are immense benefits that can be enjoyed by larger enterprises as well as a country's government and public services. with internet use currently at 4.1 billion of the world population as of 2019 according to the International Telecommunications Union (ITU, 2019), cloud computing use is projected to grow significantly over the coming years according to industry-based analysts. Researchers think "cloud computing" would revolutionize the whole ICT sector. Despite the upside to cloud computing adoption particularly in Nigeria, there has been a reluctance by most Nigerian businesses to adopt cloud computing.

1.2 Research purpose

Businesses by their very nature regardless of the sector or country in which they work must maintain at the very least some kind of records, but over time this process of recording, and processing data is becoming much too difficult particularly for those small businesses using conventional means. Another layer of complexity is added if we factor in growth, which is the aim of most businesses. With growth, the number of transactions, the complexity of transactions and the risk of financial information errors will increase significantly. This pursuit of growth led to the need for information systems capable of storing, processing data as quickly and accurately as possible. The integration of Information technology into business operations of large organizations has greatly helped managerial functions such as planning, organizing, controlling and decision-making (Ganyam and Ivungu, 2019.) but this benefit has not trickled

down to smaller enterprises as the majority of them have not integrated information technology into their operations out of the fear of cost and complexity of running traditional IT infrastructure (Kuwayama *et al.*, 2005). Cloud computing can be seen as a solution to satisfy businesses computing needs at a cost significantly lower than traditional IT infrastructure. Cloud computing has become more common in developed economies with more businesses opting to use it. However, this has not been the case in emerging economies like Nigeria where indigenous enterprises find it difficult to resolve reticence and aversion to third party hosting and managing of their technological properties and other environmental factors do not contribute to this path either(Oladipo and Nkiru, 2016).

Although there have been several prior studies on Cloud adoption in SMEs, there is a dearth of studies exploring Cloud computing adoption in micro, mid, and medium-sized businesses separately. Furthermore, the contributing factors will differ depending on the situation and the enabling environment, so these topics should be analysed in the context of their own surrounding environment. As a result, the focus of this study is on SMEs in Nigeria. Understanding why and how SMEs are inspired to use Cloud computing will allow for the creation of a more conducive atmosphere for increased adoption and will aid in the development of policies to support the adoption phase. Considering this, the purpose of this study is to answer the research question:

What are the factors that influence the intention of SMEs to adopt Cloud computing in Nigeria?

To answer this research question, the following subsidiary research questions are considered.

1. What effect does relative advantage on the intention to use cloud computing in Nigerian SMEs
2. What effect does cloud flexibility have on the intention to adopt cloud computing in Nigerian SMEs?
3. What effect does Cloud quality service have on the intention to adopt cloud computing in Nigerian SMEs?
4. What effect does cloud security have on the intention to adopt cloud computing in Nigerian SMEs
5. What effect does cloud privacy have on the intention to use cloud computing in Nigerian SMEs

6. What effect does the awareness of cloud computing have on the intention to use cloud computing in Nigerian SMEs
7. What effect does the size and length of operation of the businesses have on the intention to adopt cloud computing services?

1.3 Significance of the study

In terms of embracing information technology, Nigerian business associations, especially SMEs, face a range of daunting challenges. Cloud adoption is expected to provide many advantages to organisations, especially for SMEs.

This study, by gaining insight into the variables that can affect Cloud computing adoption in Nigeria, has the potential of increasing awareness as to the reason for the slow adoption of cloud computing technology in Nigerian SMEs. It also has the potential of starting the conversation around how the government can incentivize SMEs to adopt cloud technology. This research will help small and medium-sized businesses pursue growth by providing a deeper view of the possible advantages and risks associated with cloud adoption. It would also be of benefit to Potential investors to highlight the business benefits and growth opportunities if cloud computing infrastructure is utilized, cloud computing service providers and the Nigerian government to assist in the formulation of policies aimed at the growth of Small and Medium Scale Enterprises.

1.4 Research Objectives

The aim of this study is to analyse and understand how certain variables affect the intention to adopt cloud computing in small and medium enterprises across Nigeria. This can be further broken down into the following objectives:

1. To Recognize the factors which influence Cloud computing adoption by Nigerian SMEs.
2. To give service providers, governments, and other policymakers a greater understanding of cloud deployment challenges in Nigeria.

1.5 Structure of the Study

This research is divided into five chapters. The first chapter provides an overview of the study, the purpose and significance of the study, and an outline of the research questions. It includes the aims and objectives; a brief overview of the study structure is also given.

The second chapter provides a comprehensive overview of the related research literature concerning the definition, the key features, of cloud computing, services, and delivery model. It also outlines SMEs in general and in particular in the Nigerian context and includes empirical

literature and a conceptual framework for the research. The third chapter examines the research methodology and details the research design of the report describes the data collection methods and the reasoning behind it. In chapter four the results from the primary data collection were presented; the analyzes were performed using descriptive and inferential statistical instruments. The fifth and last chapter provides discussions, more research proposals, guidelines, research shortcomings and completes the research report.

2 LITERATURE REVIEW

2.1 Introduction

In this chapter, the concept of Cloud computing, the characteristics of cloud computing, the basic model of cloud computing, cloud computing deployment and service models. It would also consider the definition of small enterprises in Nigeria and the benefits of cloud computing, particularly to small enterprises. The risk associated with cloud computing adoption is also examined. This chapter will also cover the relevant theories pertaining to IS adoption and other empirical literature pertaining to this research will also be reviewed.

2.2 Concept of Cloud Computing

Technological Advancements are made daily because of human nature to always find better and more efficient ways of doing things. And one such technological advancements is Cloud computing. Years ago, when it gained popularity as the future of computing and data storage, the concept was difficult to comprehend and define(Buyya *et al.*, 2008). But today, it is no longer so as people are more concerned about how to make use of it (Needleman, 2017). While some researchers have referred to cloud computing as a new paradigm, others have refuted the claim because of its similarity to existing concepts such as grid computing and application service providers(ASP)(Weinhardt *et al.*, 2009). With its similarity to other existing concepts, some have argued that cloud computing might not offer any significant improvements over its predecessors and could also be seen as a marketing ploy used by service IT providers to attract attention to an already existing concept (Armbrust *et al.*, 2010; Hoberg *et al.*, 2012). It could be however argued that there is a difference between cloud computing and existing concepts in terms of scalability, flexibility, and provision of On-Demand services according. Buyya et al (2008) accept that cloud computing is not a new concept but an advancement of the existing concepts. Virtualization is the foundation of cloud computing. Cloud computing uses virtualisation to accomplish the desired goals as opposed to grid computing, which utilizes computational resources from many domains to meet the main objective(Chang *et al.*, 2014).

The most common use of cloud applications by individuals usually comes in the form of social media and backup services(Needleman, 2017). While this is the most common daily use and understanding of cloud applications to the public, it has a wide range of application and benefits. Cloud computing has made it possible, for public and private enterprises that would have traditionally needed desktops or laptops powered by proprietary software to access computing services through remote servers (Klumpp, 2010). Although Cloud computing has been gaining traction over the last decade, with most governments, enterprises and even individuals choosing to migrate to cloud computing as a result of the potential benefits of its adoption (Azarnik and Shayan, 2012), the adoption process has been uneven among countries of the world. The industry experts and researchers have described cloud computing differently, Therefore the cloud concept is seen as equivocal this is because cloud computing is not a technology in itself but it instead, a concept comprising of a collection of technology(Schubert *et al.*, 2010). The technology in this case is a combination of the data centre hardware and software(Armbrust *et al.*, 2010) and these two elements make up the cloud infrastructure.

There are some prominent comprehensive definitions that touch on the core areas of the cloud computing concept. these definitions were made by the US National Institute of Standards and Technology (NIST) and Berkeley RAD Lab.

Institution	Definition
US National Institute of Standards and Technology (NIST)	Cloud computing is a model for enabling ubiquitous, convenient on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.
Berkeley RAD Lab	Cloud computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services. The services themselves have long been referred to as Software as a Service (SaaS), so we use that term. The datacenter hardware and software is what we will call the cloud.

Figure 1. Definition of cloud computing (Schubert *et al.*, 2010; Mell and Grance, 2011.)

Both these definitions look at cloud technology from two viewpoints. The first definition by the NIST looks at the purpose of cloud technology while the other focuses on the different components of cloud computing. Another definition by OECD in 2014 defined it as "as a service model for computing services based on a set of computing resources that can be accessed in a flexible, elastic, on-demand way with low management effort."(OECD, 2014). This definition combines both definitions made by the NIST and Berkeley research lab to establish that cloud technology is a service rendered to customers on demand by cloud service providers for quick access to computing power and data access at a cost relatively cheaper than acquiring the hardware for themselves.

2.2.1 Essential Characteristics of Cloud Computing

According to Mell and Grance (2011) in their definition of cloud computing, cloud infrastructure is expected to have certain essential characteristics which qualify it to be regarded as a cloud solution. These characteristics, however, do not have to be present in every cloud infrastructure, as the characteristics are based on the specific use of the cloud infrastructure (Schubert *et al.*, 2010). This would mean that, depending on the use of the cloud service by the client, the characteristics will differ. These essential characteristics are:

- **On-demand self-service**: A customer can have unilateral computing resources, such as server time and network storage, without human intervention with any service provider, as necessary(Mell and Grance, 2011.).

- **Availability of "infinite" computing resources:** one of the major selling points of cloud computing is the access to immense computing power to the clients as the need arises without any prior planning or additional investment(Armbrust, *et al.*, 2010).

- **Elimination of up-front commitment:** with the use of cloud services, customers would not need to make heavy upfront investments into IT. This characteristic is of great importance to small and medium enterprises as they would gain access to state-of-the-art software at a relatively low cost.

- **Broad Network Access (mobility):** Consumers can always and from anywhere access cloud services via the Internet via various types of devices (e.g., mobile phones, laptops, and PDAs)(Rashid and Chaturvedi, 2019).

- **Cost-effectiveness:** Users will pay for cloud services on a per-user basis, only paying for the time they use the computing resources and releasing them when they no longer need them. Thus, companies may reduce and transform capital expenditures to operating expenses(OECD, 2014).

- **Rapid elasticity and adaptability:** One of the most important aspects of cloud computing is elasticity. Computing resources can be provisioned in an elastic and rapid manner, allowing for adaptation to evolving needs such as the amount of data served by a service or the number of concurrent users. Users can purchase computing resources at different granularities at any time. They can scale those programs up or down depending on their needs.

- **Multitenancy:** A cloud is a service that offers services to many users at the same time. Such users share cloud resources at the network, host, and application levels, but each user is isolated within his or her own personalized virtual application instance.

- **Pooling of resources:** The cloud combines physical and virtual computing capabilities. These services are not location-dependent in the sense that the consumer has no influence over or knowledge of their location

2.2.2 **Deployment models**

According to Mell and Grance (20110, Private cloud, community cloud, public cloud and hybrid cloud are the Four deployment models for the provision of cloud services. The choice of the deployment model to be used is dependent on the organizations need and capacities (ICTC, 2013).

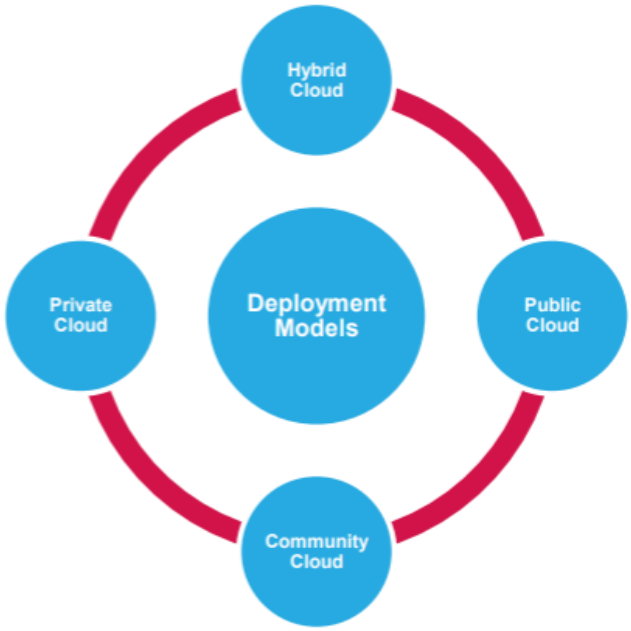


Figure 2. Cloud computing Deployment models sourced from: (ICTC., 2013)

Private cloud: here, the cloud infrastructure is run exclusively by a single entity and maintained by the organization or a third party, regardless of whether it is on or off-premises. the private cloud within an organization would allow for the maximization of all in house resources and also protect against data violation(Dillon *et al.*, 2010). This deployment model is usually more suitable for large organizations(Marston *et al.*, 2011).

Community cloud: in this deployment model, several organizations sharing similar businesses operations, ideology, and business's structure partner together to develop and share a singular cloud infrastructure. The cloud community develops a degree of economic scalability and democratic balance(Dillon *et al.*, 2010). In this model, there is a choice of the cloud infrastructure being hosted by one of the members of the community or by the cloud service provider (Dillon *et al.*, 2010).

Public cloud: this is the most used of the cloud computing deployment models as they are generally perceived as the most cost-efficient by the cloud consumer(Neicu *et al.*, 2020). Made with the intention to be used by any company regardless of size, the cloud service creates several data centres in different geographical regions to ensure high-quality services(Neicu *et al.*, 2020).

The hybrid cloud: It integrates pre-existing infrastructure (usually a private cloud) with the public cloud's unique functions. In theory, either of the two solutions may be applied, but in practice, this is difficult because the individual software or facilities are not always compatible and are highly dependent on data transfer speed. As a result, the public cloud is typically used as an extension of the private cloud, with different non-essential company processes or resource-consuming processes held in the public cloud. The key benefit of the hybrid cloud is the balance of economic, technological, and security aspects(Neicu *et al.*, 2020).

While these are the four defined models in the cloud community, a new deployment model is being introduced by Amazon Web Services (AWS). This new deployment model is the Virtual Private Cloud (VPC)(Zhang *et al.*, 2010). This is meant to be the bridge between the public and private cloud models. it was created to solve the issues related to the Hybrid cloud model(Dillon *et al.*, 2010).

2.2.3 Cloud service models

Cloud computing is a service-oriented business of providing hardware and platform-level resources as services to clients(Zhang *et al.*, 2010). The cloud service providers offer 3 major services to which the Cloud consumers can make a choice based on their specific requirement(Zhang *et al.*, 2010; Neicu *et al.*, 2020). The three service models are given in the table below.

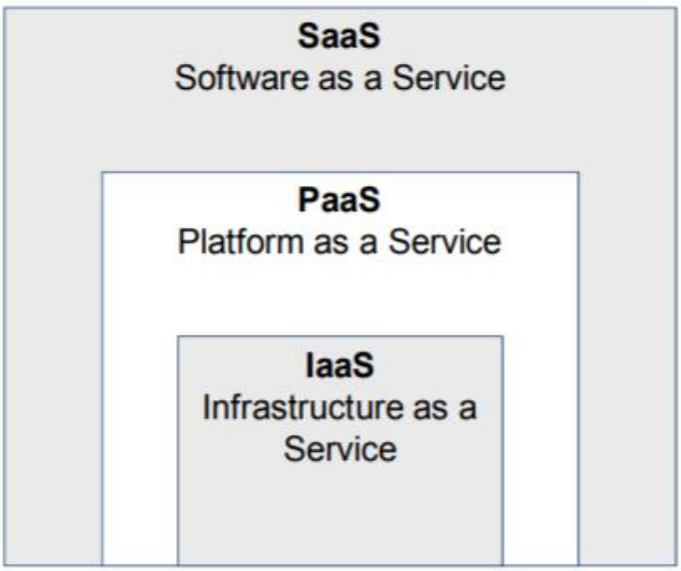


Figure 3. cloud service model sourced from (OECD, 2014)

Software as a Service (SaaS): For several business applications ranging from accounting to business resource planning, and through human resources management, this delivery model has become the most popular (ICTC,2013). This model sometimes referred to as "on-demand software"(CSA, 2011) provides the software for cloud users without issues of implementation and installation and maintenance of the cloud customers computers (Gupta *et al.*, 2013; Kondraju, 2014; Khanom, 2017) and is usually charged on a subscription model. The software is installed on the cloud service providers server and offered as a service to the client over the internet on a web browser on any authorised device(Khanom, 2017; CSA,2011). Web-based apps, on-demand software or hosted software are called SaaS applications(Kondraju, 2014). The cloud provider ensures the safety, access, and efficiency of the application. SaaS Cloud Computing provides thousands of customers with multi-part architecture with the desired application via the internet(Kondraju, 2014).

Platform as a service (PaaS): the primary customer of this service are application developers. The Cloud service providers run and operate all system software and other computing services(Rashid and Chaturvedi, 2019)**.** The cloud customer is provided with the necessary tools required to develop and deploy an application without the cost of and complexity of running and managing computing resources of their own (CAS, 2013).

Infrastructure as a Service (IaaS): IaaS is a set of computer, networking and storage resources that have been virtualized by a cloud service provider so that the cloud consumer can access them and configure them to their specific requirements(Schubert *et al.*, 2010)**.** Here, the cloud service provider only provides the computing resources and would not be responsible for

the management and configuration of the computing resources. This responsibility is solely the responsibility of the cloud consumer(Neicu *et al.*, 2020).

2.3 Attitude towards Cloud Computing

Although there are obvious benefits of cloud computing, this does not necessarily translate to a positive intention to use.

Lin and Chen (2012) examined IT professionals' awareness and concerns about cloud computing. An IT professional was described as someone with at least three years of experience working in IT companies or the IT departments of large corporations. Customer interests have been described as key drivers for their cloud decision, as companies are hesitant to implement cloud-based technologies without their customers being explicitly asked to do so. Another concern preventing respondents' interest in cloud computing is the consistency of Cloud-based applications with the current information systems and policies. Cloud services are deemed useful to individual workers and informal teams, but there is no apparent advantage to the use of cloud computing for the whole organisation. The cloud computing interest was further reduced by possible threats including the loss of information technology control, hidden costs and the need to retrain personnel.

A similar theme is found in PwC's (2011) research. There was a clear difference between the understanding of cloud computing and the plans in place to ensure adoption, according to a survey of 489 senior and middle managers in large organizations (ninety per cent of which have more than $500 million in revenue) and 261 IT outsourcing providers. Despite their apparent excitement about the cloud computing trend, most respondents predicted that only 3% of additional workload will be transferred to the cloud over the next three years. Concerns about security, especially the lack of control over data, were identified as a major issue by 62 per cent of respondents.

2.4 Theoretical Review

2.4.1 IS adoption theory

For Information systems to be adopted, they must be of some benefit to the potential users. There are several relevant theories and models which provide a framework to understanding the factors that might affect the adoption of information systems. These theories are:

Technology-Organization-Environment (TOE) framework: The technology organization environment (TOE), created by Tornatzky and Fleischer, is an organisational theory and a multi-perspective system (Tornatzky, 1990). In this context, the technological innovation

adoption process is informed by the technological, organizational and environmental aspects of an organization(Alharbi *et al.*, 2016; Hujran *et al.*, 2018).

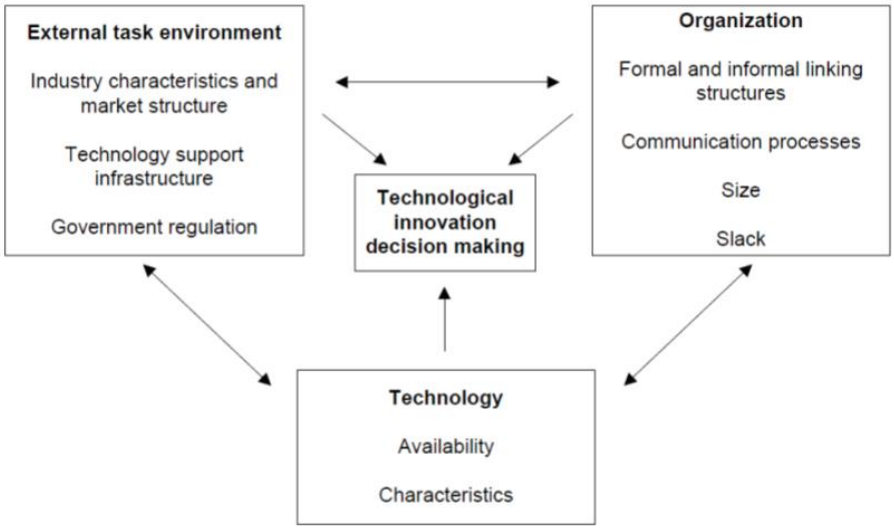


Figure 4 TOE framework (Tornatzky, 1990)

Technological

This refers to both internal external technology that is applicable to an organization. according to this framework, the intention to adopt technology is influenced by the current technology in use by the organization and the technologies available on the market(Oliveira and Martins, 2011). According to Tornatzky and Fleischer (1990), the technology that is available outside the organization tend to do one of three things. Either it provides an incremental, synthetic, or discontinuous change to the existing organization's technology.

Organisational

This refers to factors stemming from the organization's characteristics such as size, organizational structure, human resources that can affect an organizations innovation adoption. Rogers (2003) noted that an organizations size is the most crucial determinant of innovation adoption in an organization. According to Oliveira and martins (2011) in the case of cloud computing in SMEs, it could be different. They noted that while larger organizations usually have the financial resources to cope with technological changes and failure, small organizations because of their flexibility can adapt quickly to changes.

Environmental

The external environment applies to external factors such as competition, government legislation, and industry. Competitors are an environmental factor that affects the adoption of

innovation. The external climate that can have a direct impact on an organization's decision making is referred to as competitive pressure. It provides a powerful motivation to implement appropriate new technologies.

TOE advantages over other adoptive models in the analysis of technology use, utilization of and technological value generation by using technology, organizational and environmental factors(Gangwar *et al.*, 2015). Cloud computing is regarded as an innovation due to its ability to leverage IT and market efficiency by constantly improving to offer optimal technical solutions at affordable prices. The TOE system has been used to research the adoption of various technologies all over the world. To study the adoption of innovation, researchers have either used this model exclusively, expanded it with additional constructs, or merged it with other common theoretical models.

Diffusion of Innovations theory: DOI is a theory that describes how, why, and at what pace new ideas and technologies propagate through cultures, with applications at the individual and firm levels(Oliveira and Martins, 2011). According to this theory, innovations are communicated through a given social channel over time(Rogers, 1983). Individuals are seen to be able to take innovation in varying degrees and therefore, it is commonly found that an innovation portion of the population is usually spread over time. This led to the division of the population into five groups (i.e., innovators, early adopters, early majority, late majority, and laggards) of adopters ranging from the earliest to the last adopters. At the organizational level, however, the theory suggests that organizational innovation is linked to three factors: leadership, organizational structure and organizational features(Rogers, 1983).

Iacovou's EDI adoption model: Iacovou et al. (1995) analysed characteristics of inter-organizational structures (IOSs) that influence firms in their adoption of IT innovations in EDI. (Electronic Data Interchange) They are suitable for explaining the acceptance of an IOS. It is dependent on three factors: perceived profitability, preparation for organization and external pressure. Perceived benefits are a separate factor from the TOE framework, whereas organizational readiness is a combination of the TOE framework's technology and organizational context. IT resources are, thus, similar to the technological context and financial resources are similar to the corporate context(Oliveira and Martins, 2011).

Theory of Reasoned Action (TRA): Developed by Martin Fishbein and Icek Ajzen in 1967, with the purpose of explaining intention, this model suggests that an individual's intention to perform a certain action is the biggest determinant of whether the individual would perform the action or not. All human behaviours are predicted and explained in this system through

three key cognitive modules: attitude, subjective norms, and intents(Malik *et al.*, 2019). According to this theory, the intention is a function of the individual's attitude and subjective norms. It goes further by adding that the attitude is influenced by salient beliefs and evaluation of outcomes, while subjective norms are influenced by normative beliefs and motivation to comply(Rattanasampan and Kim, 2002).

Technology Acceptance Model (TAM): TAM is commonly used to describe why a certain information system or technology is accepted and used by consumers(Rattanasampan and Kim, 2002.). TAM is based on a well-known marketing philosophy known as the Theory of Reasoned Action (Fishbein & Ajzen, 1975) But it differs in the sense that it rejects the subjective norms as an influence on Intention while adding two additional constructs s (i.e., perceived usefulness and perceived ease of use)(Rattanasampan and Kim, 2002.)

2.5 Small and Medium-Sized Enterprises (SMEs) in Nigeria

Many economists believed that the continued presence of small-scale enterprises in developing countries was justified by a lack of resources and administrative expertise until the early 1960s(Ekpenyong and Nyong, 1992). The argument was also made that the small, conventional type of business would be replaced by new types of large-scale production in one sector after another by economic development(Ekpenyong and Nyong, 1992). But this has not been the case as SMEs have now come to be globally recognized for their importance in economic growth, poverty reduction, increase in jobs, production, technological advancement, and the development of social standard and status(Zafar, 2016). As a result of their flexibility and organizational structure, these small enterprises have the capability to be innovative. This has led to governments of the world concentrating on developing SMEs as part of national development strategy(Eniola, 2014) and as such, These small enterprises make up the vast majority of business worldwide(Fatai, 2011; Sanusi, 2003.). For a business to be classified as a small enterprise, it would need to possess certain characteristics. These characteristic are however highly subjective and judgement based as different countries can choose to classify them differently(Zafar, 2016). The classification of Businesses has become rather complex and as such Guidelines have been released by international organizations such as the European Union to properly classify these businesses. The classification made by the European Union divided the business into 3 categories: Medium, small, and micro-enterprises. They used staff headcount and turnover to divide them into these three categories. The criteria for a small enterprise here are businesses with less than 50 employees and a turnover of fewer than 10 million euros (EU 2003). While this has provided countries of the European Union with the need for guidance, the definition is different in countries outside the European Union.

Nigeria is, without doubt, one of Sub-Saharan Africa's main economies. Although primarily based on oil, her economy is also cultivated in pockets of industry organisations, spanning nearly all areas of the world, including international corporations with country headquarters, local businesses, and most small and medium-sized enterprises (SMEs). In Nigeria, a business is classified as an SME if its asset base does not exceed N500 million excluding land and working capital or its staff count does not fall below 10 or exceed 300 persons(Sanusi, 2003). This definition could however change as they are usually tailored to specific government schemes and as the scheme changes the classification could also change(Ogechukwu and Goldman, 2015). The definition is further broken down by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) into Micro small and medium enterprises (MSME). In this classification, micro-enterprises are classified as businesses having between 1-10 employees, small enterprises have between 11-50 employees and medium enterprises have between 51-200 employees. Over the last three decades, The Nigerian government has recognized the importance of this sector to the economy have directed efforts towards their growth in the form of schemes and creation of financial institutions to cater to the financial need of the enterprises(Young, 2018). Aminu and sharif (2015) believed that despite the schemes and policies made to target the growth of SMEs, the sector is still underperforming and not contributing enough to the GDP of the country. They argued that the underperformance can be attributable not only to the availability of capital but also inadequate management skill, entrepreneurial capacity and above all, the application of suitable technology(Nigeria and National Planning Commission, 2009; Aminu and Shariff, 2015).

2.5.1 Cloud computing in Nigeria

With the advancements in information and communication technology, the reduction of the technological gap between developed and developing economies is within grasp(Moghaddam, 2005). Cloud computing is one of such advancements which could potentially give the smaller enterprises a fighting chance to be competitive in the global market as it would avail them to vast computing resource, they had not previously had access to. Cloud computing would significantly lessen the cost of computing resource and eliminate the complexity of running traditional IT infrastructure(Khan, 2015). While cloud technology has been widely adopted in developed countries, the potential has yet to be fully realized by the developing economies of the world. Cloud computing is seen by the Nigerian government as the future in terms of improving efficiency and business performance and this is evident in the remark made by Nigeria’s Honourable Minister of Communication Technology at the Institute of Software Professionals of Nigeria (ISPON) that the government intends to embrace cloud computing so

as to cut down their costs in Information Technology investments(Young, 2018). In 2017, the Federal Government of Nigeria unveiled the Economic Recovery and Growth Plan (EGRP), with the aim of creating a globally competitive economy and in August 2019, NITDA expanded on the EGRP objectives by releasing the Nigeria Cloud Computing Policy (NCCP), with the aim of increasing cloud computing adoption by 30 per cent among Federal Public Institutions (FPI) and Small, Medium, and Enterprises (SMEs) that provide digitally enabled services to the government by 2024, and increasing cloud computing investment by 35 per cent. The NITDA's goal is to overcome the challenges of digitalizing FPI processes and to make the market climate more conducive for local Cloud Service Providers. One way to do this is to increase the contribution of ICT and ICT-enabled activities to the Gross Domestic Product. Similarly, the Central Bank of Nigeria as well as eight other commercial banks have also pushed towards cloud computing(Iwuchukwu *et al.*, 2017). All these advances show a trend that Cloud computing is seen in Nigeria as a viable innovation but still, there is a disconnect between its benefits and intention to adopt.

2.5.2 Cloud computing and accounting

The 1950s marked the beginning of the accounting automation process and has not looked back ever since (Dimitriu and Matei, 2015). Cloud computing, is one of the more recent advancements made in Information Technology, makes the process of storing, processing, and accessing data more efficient and effectively giving users instant connectivity from almost any device connected to the internet giving them a better work-life integration (Khanom, 2017). Cloud accounting is one of the applications of cloud computing technology, it involves data being sent to an offsite server commonly referred to as " Cloud" where it can be stored and processed to be accessed at any time by the intended users(Khanom, 2017). While there already exists Accounting software that can perform the same function as cloud accounting software, it differs in the sense that there is no physical installation on a computer and is connected to the server making it comparably cheaper as no investment is needed in facilities and human resources(Le and Cao, 2020). The use of cloud accounting by accountants lessens the burden on them thereby allowing for the provision of more quality advisory services to their clients (Needleman, 2017). The accounting operations of a business are just some of the aspects of a business that can be impacted positively with the use of cloud computing.

2.6 Empirical literature on cloud computing adoption

The potential cost savings has been touted by many researchers as one of the most prominent factors that can affect the intention to adopt cloud computing in businesses. Sobragi et al. (2014) in their research involving Brazilian organizations from different categories found cost

savings to cost to be the most prominent factors among others in influencing cloud adoption. Oliveira et al. (2014) investigated the main factors affecting the adoption of cloud computing in Portugal's manufacturing and service sectors using a combination of the TOE and DOI framework. In this study relative advantage; top management support; complexity; technology readiness; organizational size was recognized as the factors affecting cloud adoption. Data from online survey questionnaires collected from 369 IT leaders were quantitatively analysed to assess 40.8 per cent cloud computing acceptance in the services sector and 36.1 per cent in the manufacturing sector. Furthermore, cost savings had an immediate effect on relative advantage and an indirect impact on cloud computing adoption. All research has not, however, supported the significance of the cost-benefit. Gupta et al. (2013) in their research in Asia-Pacific found that 5 factors affected the intention of SMEs to use cloud computing. they identified convenience and ease of use, security and privacy, cost, reliability, and old conventional methods. They identified cost as was the third-largest factor and that ease of use and privacy and security are seen to be more significant.

Gutierrez et al (2015) used the TOE framework to access the Technological, organisational, and environmental factors influencing managers' decision to adopt cloud computing in the UK. They identified 8 possible factors which were Relative advantage; Complexity; Compatibility; Top management support; Firm size; Technological readiness; Competitive pressure and trading partner pressure. Using a survey of 257 respondents, they tested their hypothesis and only found 4 of the factors to be relevant in the UK. According to them Competitive pressure, complexity, technological readiness, and trade partner pressure are among the main considerations. The latter indicator, trading partner pressure, was the most important factor in cloud service adoption decisions. A similar study was carried out by Low *et al.*, (2011) in China. While they examined the same factors as Gutierrez *et al.*, (2015) using the same model, the findings differ. In this study, they found relative advantage, top management support, firm size, competitive pressure, and trading partner pressure as significant factors affecting cloud adoption in China.

Sobragi *et al.*, (2014) found that scalability to be a factor that could affect the adoption of cloud services in Brazilian small enterprises. Scalability here refers to the ability to adjust the businesses need for computing services in proportion to their needs. While it was seen to be a factor affecting adoption in Brazilian business, Alshamaila *et al.*, (2013) using the Technological, organizational, and environmental (TOE) framework found that it was not a factor that affected all businesses. According to Alshamaila *et al.*, (2013) some businesses such as information-based service industries, did not perceive scalability to be a benefit of cloud

adoption. Another research carried out by Rath et al (2012) to assess the adoption of cloud services in Indian SMEs found that scalability was indeed a benefit that could affect intention to adopt could computing but the benefit was more pronounced if SMEs used cloud computing for specific computational tasks such as modelling, data mining and simulation.

Another important factor that could potentially support or impede cloud adoption was the ease of use. Cloud services are expected to be easier to use than their predecessors (Yazn Alshamaila *et al.*, 2013). Gupta *et al.*, (2013) found that the ease of use was even more significant than cost reduction. Easier and more intuitive software systems will facilitate the transition to new cloud-based services for workers (Morgan and Conboy, 2013).

Sahandi and Alkhalil, (2013) carried out research on the perspective of cloud computing among SMEs in the UK. A survey involving 300 SMEs was done and the result showed that while there was a growing interest in cloud computing there were some hesitations attributed to security and vendor lock-in. security and trust have been a major concern in cloud computing and according to Alshamaila et al. (2013). This point of view is not however shared by all researchers and was evident in the research done by Le and Cao, (2020) where they analysed the adoption of cloud Technology in Vietnamese enterprises using the Technology Acceptance Model (TAM). A survey was conducted, and they found that perceived safety and privacy had no significant effect on cloud adoption. Instead, other factors such as perceived usefulness and perceived ease of use and had a significant effect on the intention to adopt cloud computing. similarly, some other researchers argued that SMEs perceived the cloud to be secure and would be willing to trade-off security for convenience. (Sultan, 2011; Oliveira and Martins, 2011; Gupta *et al.*, 2013).

Senarathna *et al.*, (2018) investigated the main factors influencing SMEs' adoption of cloud computing technology using aspects of the Technology, Organization, and Environment framework and Diffusion of Innovation They identified 6 possible factors which were a relative advantage, awareness, quality of service, security, privacy, and flexibility. To test their hypotheses a survey was conducted involving 149 Australian SMEs. The findings of this study showed that relative advantage, quality of service and awareness were the major factors affecting cloud adoption in Australian SMEs.

Tehrani and Shirazi, (2014) investigated the factors influencing cloud computing in SMEs using a combination of Diffusion of innovation theory and the Technology, organization, and environmental framework. A conceptual framework was proposed in which it was hypothesized that Cloud Knowledge, Cost Reduction, External Support, Relative Advantage,

Security and Privacy, Complexity, Information intensity and Innovativeness affect cloud adoption. To test the variables a survey was conducted involving a total of 101 respondents. the result of the analysis. The result of the analysis showed that decision-makers knowledge of cloud computing (awareness) significantly affected the intention to adopt.

Gangwar *et al.*, (2015) using a combination of TAM and TOE model aimed to determine the factors that affect cloud adoption in India. Ten possible variables were tested using a survey involving 280 valid responses. Of the 10 variables, they found relative advantage, compatibility, complexity, organizational readiness, top management commitment, and training and education as important variables.

2.7 Conceptual Framework

According to Cloud Security Alliance (2010), The characteristics of cloud computing include challenges and uncertainties for its users, despite the obvious advantages of cloud computing (Young, 2018). Previous researchers have made use of several frameworks and models to identify factors affecting cloud computing adoption in small enterprises. Diffusion of innovation theory and Technology, Environment and Organization Framework has been largely used in previous studies and according to Olivera et al (2014), they tend to complement each other as TOE could be seen as an extension of DOI. While DOI primarily focuses on individual adoption, TOE looks at technological adoption at an organizational level. Based on those works of literature, variables affecting adoption are selected to propose a conceptual framework.

Figure 5: proposed conceptual model sourced from (Senarathna *et al.*, 2018)

The proposed conceptual model would be used to test the intention of adopt using both attributes of TOE and DOI. The elements of DOI include relative advantage, flexibility, qualify of service, security, and privacy. The TOE would add

2.8 Hypotheses formulation

2.8.1 Factors affecting cloud computing adoption

Cloud relative advantage (CRA)

Cloud relative advantage according to Rogers (1962) is the degree to which a customer or individual perceives an innovation to be better than the current innovation it seeks to replace. Studies involving technology adoption have frequently investigated this as a possible factor affecting adoption. reduced cost, scalability, flexibility, mobility and shared resources are some of the benefits cloud computing offer above other similar technology(Zhang *et al.*, 2010). Research such as those of Gangwar et al., (2015); Oliveira & Martins (2014); Senarathna et al (2018) and Low et al (2011) found Cloud relative advantage to be a critical factor affecting cloud adoption in SMEs. Cloud computing is seen as an innovation that provides small enterprises with computing services that they would have needed a substantial capital expenditure to acquire(Marston *et al.*, 2011). Based on these works of literature the hypothesis is as follows:

H1: There is a significant relationship between cloud relative advantage and the intention to adopt cloud computing in Nigerian SMEs

Cloud flexibility

IT flexibility is known as the rapid deployment of technology components through the IT infrastructure of a company (Ness, 2005). Mell and Grance (2011) pointed out that IT flexibility is a fundamental feature of organizational capacity to respond quickly and efficiently to new and evolving market processes requirements. Chebrolu (2010) proposed that cloud storage would be a substitute for IT flexibility. Fairchild (2014) noted that cloud-based computing offers far more flexibility than onsite solutions, especially for companies lacking the resources for a dedicated IT workforce, to be installed and managed. Flexibility in SMEs was more critical than issues such as security and cost, as well as ability, according to Dillon and Vossen (2014). Previous studies have shown that cloud adoption in many situations results in significant organizational gains by strategic flexibility(Armbrust, Fox, Griffith, *et al.*, 2010). Based on these works of literature the hypothesis is as follows:

H2: there is no significant relationship between cloud flexibility and the intention to adopt cloud computing in Nigerian SMEs

Quality of Service (QoS)

Cloud computing is a service-oriented businesses model. It involves the provision of computing services to its customers. Armbrust et al. (2010) identified quality of service as a factor affecting adoption. Cloud customers rely on cloud service providers to maintain a level of quality to ensure that their computing needs are met at any required time(Buyya *et al.*, 2008). According to Buyya et al (2008), customers could require specific QoS parameters to be guaranteed by cloud service providers before they consider the adoption of cloud computing. Based on these works of literature, the hypothesis is as follows:

H3: there is a significant relationship between the quality of service of cloud computing and the intention to adopt cloud computing in Nigerian SMEs

Cloud security

The basis for information protection is confidentiality, integrity, availability, transparency, security and information resilience (Friedman and West, 2010). Data security is concerned with preventing unauthorized access to data (Yazn Alshamaila *et al.*, 2013). Data are stored in remote servers and not on-site because Cloud Storage is supported by a third party via the internet. As a consequence, cloud computing allows companies to abandon physical control over their data and can create anxiety about the safety, reliability and privacy of user data(Armbrust *et al.*, 2010). Accountants and businesses owners frequently interact with sensitive data and as such, the risk of security is of particular importance to them (Du & Cong, 2010). The security of the data is solely in the hands of the third party (cloud service provider). Cloud security has commonly been researched as an issue of cloud computing and has yielded conflicting results. Alshamaila *et al.*, (2013); Gupta *et al.*, (2013) found security to be a factor affecting adoption. Also, sultan (2011) also noted that cloud security is commonly a concern for small enterprises. In contrast, the same level of security measures could not be implemented by companies that host their IT infrastructure indoors, due to a lack of resources. Some other empirical studies have shown that smaller companies view data protection as less critical than their larger counterparts and those small companies can better negotiate a compromise between cloud storage and perceived data benefits. (Sultan, 2011; Sobragi *et al.*, 2014). Based on these works of literature the hypothesis is as follows:

H4: there is a significant relationship between cloud security and the intention to use cloud computing in Nigerian SMEs

Cloud privacy

The privacy of cloud users is another important issue. Although safety and privacy are frequently listed together, the above-mentioned security measures typically do not address privacy issues (Armbrust, Fox, Griffith, *et al.,* 2010). Given that user data reside with cloud providers, the perception and suspicion are arising that cloud providers can misuse their privileged access to user data for their own commercial gain without the client's knowledge or consent. Data protection is one of the major barriers to its popularity and reception for smaller companies looking to implement cloud-based systems(Grubisic, 2014). Contrary to data security, data protection solutions are not technical interventions but social measures (contracts and enforceable agreements) (Armbrust, Fox, Griffith, *et al.,* 2010). Based on works of literature the hypothesis is as follows:

H5: there is a significant relationship between cloud privacy and the intention to adopt cloud computing in Nigerian SMEs

Awareness of Cloud

Recent IT advances in cloud computing give more advantages to SMEs. Cloud awareness and knowledge are established as major limitations on the initial adoption of the cloud (Senarathna *et al.,* 2018). According to Hadjimanolis (2000), one of the reasons preventing cloud adoption is a lack of technological knowledge. Shetty and Kumar (2015)'s research model indicated that cloud perception drives adoption. Tarmidi et al. (2014) investigated the extent of awareness and adoption of Cloud computing by Malaysian small and medium enterprises (SMEs). Tehrani and Shirazi (2014) discovered that awareness about Cloud computing is the primary factor influencing SMEs' decision to embrace Cloud computing. similarly, Carcary et al. (2014) findings showed that a failure to understand the advantages of cloud computing limits its acceptance. Alshamaila, et al (2013) indicated that cloud computing advantages knowledge and comprehension is essential in adopting decisions. Based on these works of literature the hypothesis is as follows:

H6: there is a significant relationship between the awareness of cloud computing and the intention to use cloud computing in Nigerian SMEs

2.9 Conclusion

Cloud computing is already recognized as an important innovation that could transform how small and medium scale enterprises interact with data. The core defining characteristics of cloud computing can be seen as advantages to its adoption. Yet, there is a disconnect between the hype of this innovation and its actual usage in businesses, especially in developing countries. The factors that have affected its adoption have differed in several countries and this cloud is a result of differences in perceptions of individuals from different geographical regions. To the best of the researcher's knowledge, no study conducted in Nigeria has explored the factors affecting the intention to adopt cloud computing. Therefore, to fill this gap this study aims to investigate how cloud relative advantage, cloud flexibility, the quality of service provided by Cloud computing, Cloud security, Cloud privacy and the awareness of Cloud computing affect the intention to use cloud computing in Nigerian SMEs.

3. METHODOLOGY AND RESEARCH DESIGN

3.1 Overview

This chapter discusses the philosophy that drives the research approach, data sources, data collection methods, research architecture, access and ethics, and data analysis approaches.

3.2 Research Philosophy and Approach

A researcher's philosophical view would guide the conduct of research(Žukauskas *et al.*, 2018). According to Saunders and Lewis, (2012), research philosophy can be defined as "the development of knowledge and the nature of that knowledge". Assumptions are the first step in research and these assumptions stem from the researchers' personal views on the environment. Positivism, Realism, Interpretivism, and Pragmatism are the four main research philosophies. The positivism philosophy follows that only factual information gained by observation is reliable. The positivism philosophy is also concerned with the formulation of hypotheses and testing of those hypotheses either to be confirmed or rejected. As opposed to the interpretivism model, positivism is the dominant study paradigm in acceptance and diffusion studies. In a positivism research philosophy, the researcher is independent of the data collected and the role of the researcher is limited only to data collection and interpretation. It is also regarded as the most suitable philosophy for quantitative studies(Bessant *et al.*, 2003). This is consistent with the aim of this research which is to contribute to the body of knowledge on Cloud computing adoption by developing and quantitatively testing the hypotheses with

acceptable sample size. Technology adoption is a mature research area that has been extensively studied in the field of information systems. In the investigation of different aspects of technological innovations, a large number of theoretical structures and models have been used and there have been several empirical studies in this field. As a result, a variety of constructs (dependent and independent variables) have been established that can be used to investigate the adoption of new technologies. It is worth noting that, while this study used a positivist approach to explain what happens in the social system by analysing patterns and a network of relationships among its components, it could not have been fully developed without the examination and understanding of the individual factors discovered in the preliminary investigation.

A deductive approach would be used to supplement the positivism philosophy. This is because the deductive research strategy tries to find an explanation for an association between variables by proposing a theory (Blaikie 2009). This study is explanatory as it aims to explain the causal relationship between variables (factors affecting cloud computing and intention to adopt cloud computing). The generalization of observations is improved by the deductive method. Furthermore, the use of structured questions and quantitative data improves research validity. Robson (2002) described the deduction process in four steps. First, hypotheses are derived from theories. The second step is to identify the hypothetical relationships between the constructs. The third step is to put the hypotheses to the test. Fourth, determine whether or not the ideas or hypotheses are endorsed.

3.3 Research Strategy

Understanding the essence and criteria of the research issue is essential for developing a research strategy (Noor 2008). Five main study techniques have been established in social research: Case studies, experiments, surveys, histories, and archival data analysis (Yin 1994). According to Guba and Lincoln (1994), researchers have two approaches or methods at their disposal: quantitative and qualitative. A qualitative approach seeks insight by a more in-depth investigation than a quantitative method. The researcher who uses a qualitative approach attempts to analyze the inner phenomenon that frequently involves case studies and in-depth interviews without particular questions or alternatives. Quantitative analysis is more often found in the research of explicitly stated and testable hypotheses. It focuses on specific, limited research. A quantitative approach examines the issue from a wider viewpoint, often by offering concrete solutions (Merriam 1998). It was determined that the best approach to use for this study is a survey; therefore, this study would be conducted using a survey data collection method, with data obtained by managers or decision-makers in SMEs across Nigeria.

Since longitudinal study takes years to complete, a longitudinal design would not have been suitable for answering the research questions promptly. Interviews and direct assessments are expensive, time-consuming, and challenging to arrange. An in-depth review of previous studies revealed that quantitative survey methods had been successfully applied in each research sample(Oliveira *et al.*, 2014; Gangwar *et al.*, 2015; Gutierrez *et al.*, 2015; Senarathna *et al.*, 2018). As a result, the survey approach was selected as an easy way to easily access a greater number of SMEs while maintaining their privacy.

3.4 Collection of data

3.4.1 Data source

To gather primary data from respondents, a survey data collection approach was used following the positivist paradigm perspective and quantitative analysis method. For the collection of data from respondents, self-administered questionnaires were used. When compared to other survey methods, online surveys have several advantages (Evans & Mathur 2005). They are very adaptable and can be delivered in a variety of formats, such as email with a connection to a survey URL or email with an embedded survey. Surveys can be easily customized by showing only the respective sections for their demographics or experience. Any respondent will then see only the relevant questions. Online surveys may be conducted in a timely way, reducing the time spent in the field and collecting data. The researcher started by sharing the link with Oyo's government signage and advertising department, a government agency that is in constant communication with small industries. The purpose of this was to ensure that the questionnaire was sent to the required population and to increase the probability that the survey would be filled. In addition, the researcher used professional networks such as LinkedIn and other social media sites to invite respondents to complete the survey.

3.4.2 Research population and sampling

This study’s focus is on small and medium enterprises across Nigeria. This research focuses on the use of cloud computing by small and medium-sized enterprises across Nigeria. As a result, the decision-makers were the target demographic for this quantitative analysis as they could have significant influence over technology acquisition and decision-making in the business.

3.4.3 Sample Size

The general goal of the survey study is to pick a suitable sample from which any findings collected can be used inferentially. According to Saunders et al. (2011), the resources available usually determine the sampling method and sample size to be used for analysis. A random sampling technique was used. Also, similar works of literature used sample sizes ranging

anywhere from 100-200 respondents. Tehrani and Shirazi, (2014) used a sample size of 101 respondents, Le and Cao, (2020) used a total of 112 respondents and Senarathna *et al.*, (2018) used a sample size of 149. As a result of this, the researcher in this study believed that respondents above 150 would be suitable for this research. A total of 217 valid response was gotten and was believed to be more than sufficient for the intended analysis.

3.4.4 Access and Ethical Issues

When developing the research design and methods, ethical considerations were carefully considered. In this respect, the study followed the recommended practices and protocols, such as informed consent, the right of respondents to withdraw, the security of privacy, participant-research questions, and the personal welfare of the research participants. A brief overview of the research purpose, the type of questions to be answered, and the estimated completion period was given to each respondent. All respondents were also informed that the survey would be performed anonymously. To safeguard the lives of various stakeholders, including the researcher, possible respondents, and research assistants needed for face-to-face administration, survey administration was also conducted according to the Covid-19 guidelines.

3.4.5 Nature of Data

To assess the research model, a survey was conducted in Nigeria, targeting SMEs from various industries. To ensure validity, the variables in this analysis were operationalized based on previous relevant literature. Some of the relevant literature to this study used the 7point Likert scale to assess the variables(Isma'ili, 2017; Senarathna *et al.*, 2018). The 7-point Likert scale could be seen to have some benefit over the 5-point scale as respondents might be hesitant to choose extreme values, resulting in a limited range of scores that makes measuring disparities challenging. However, there is usually not much of a significant difference between both scales, and also a 5-point scale would be quicker for the respondents to answers, which could potentially increase the response rate. The constructs were assessed using a five-point Likert scale with intervals varying from "strongly disagree" to "strongly agree." A one-to-five scale is the most often used scale in survey instruments. In this survey, a control measure (screening question) was used; the question was concerning the size of the organizations to ensure that organizations with over 200 employees were not allowed to participate.

3.4.6 Measures

The measures and method of analysis are consistent with previous literature. The reason for this is to allow for the findings to be compared. In this study, the dependent variable is The Intention to Adopt cloud computing. this variable was measured with 4 questions consistent

with that of Senarathna *et al.*, (2018), Tehrani and Shirazi, (2014) and Isma'ili, (2017). the Cronbach alpha reported by Senarathna *et al.*, (2018) was 0.922. this is well above the recommended 0.71 thresholds.

Independent variables

Cloud relative advantage: to measure this variable, a 5-point Likert scale was used. this variable consisted of 4 questions adopted from (Senarathna *et al.*, 2018). The validity of the questions was 0.771 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

Cloud flexibility: to measure this variable, a 5-point Likert scale was used. this variable consisted of 4 questions adopted from (Tehrani and Shirazi, 2014; Senarathna *et al.*, 2018). The validity of the questions was 0.820 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

Quality of service: to measure this variable, a 5-point Likert scale was used. this variable consisted of 4 questions adopted from (Senarathna *et al.*, 2018). The validity of the questions was 0.797 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

Cloud security: to measure this variable, a 5-point Likert scale was used. this variable consisted of 3 questions adopted from (Senarathna *et al.*, 2018) and (Isma'ili, 2017). The validity of the questions was 0.709 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

Cloud privacy: to measure this variable, a 5-point Likert scale was used. this variable consisted of 3 questions adopted from (Tehrani and Shirazi, 2014; Isma'ili, 2017; Senarathna *et al.*, 2018). The validity of the questions was 0.746 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

Awareness of cloud services: to measure this variable, a 5-point Likert scale was used. this variable consisted of 4 questions adopted from (Dillon and Vossen, 2014; Isma'ili, 2017; Senarathna *et al.*, 2018). The validity of the questions was 0.930 as reported by Senarathna *et al.*, (2018) and this was above the required 0.7 thresholds.

3.5 Approach to Data Analysis

As previously stated, this is a quantitative research and as such, statistical tools were needed for the analysis. IBM SPSS 26 statistics was used. The data collected were analyzed using both descriptive and inferential statistics. The data was coded as necessary and some item in the

questionnaire was reverse coded. The descriptive analysis was done in the first section which included questions such as the position of the respondent, the number of employees, and the length of operation. For the inferential statistics, Multiple Regression analysis was conducted to estimate the relationship between the dependent and independent variables. Multiple regression has several assumptions that needed to be checked to proceed. These assumptions include Sample size; Independence of observations; Multicollinearity; Homoscedasticity and linearity; Outliers; Normal distribution. All the above-listed assumptions were checked, and they met the requirements to conduct a multiple regression. A one-way between-groups Analysis of variance was also done to check for differences in the intention to adopt cloud services based on business size and length of operation.

4. PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Overview

This chapter showed the findings of several statistical analyses performed with IBM SPSS. To understand the characteristics of companies, descriptive statistics were carried out. Following that, to carry out the Multiple regression analysis, the necessary assumptions of Multiple regression were checked to ensure the suitability of the analysis model. The Multiple regression was then done using the entry method to test hypotheses investigating the relationship of each variable. One-way between-group ANOVA was finally done to check for differences across groups based on 2 controls. The two control variables were: the size of the organization and the length of the business operation.

4.2 Finding

4.2.1 Response

The questionnaire was administered for 10 days, between the 8th of May and the 15th of May 2021. A total of 231 responses were gathered, 14 responses were screened out, and a total of 217 valid responses were used for the descriptive analysis and for the inferential statistics a total of 172 was used. The 172 respondents accounted for non-users, and it was believed their response would be more beneficial to the study.

4.2.2 **Descriptive** statistics of the organizations

Position in the organisation

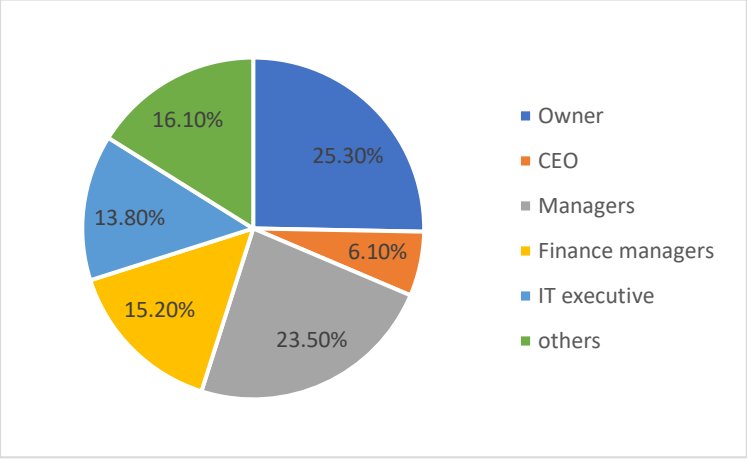


Figure **6 Position in the organization (n=217)**

In figure 6 above owners accounted for 25.3%(n=55) of the total respondents which was the highest among all six groups. Managers of SMEs were 23.5% (n=51) of the sample, finance managers accounted for 15.2%(n=33), IT executives were 13.8% (n=30), CEO (6.1%) with n=13, and others accounted for 16.10% (n=35).

Size of organization

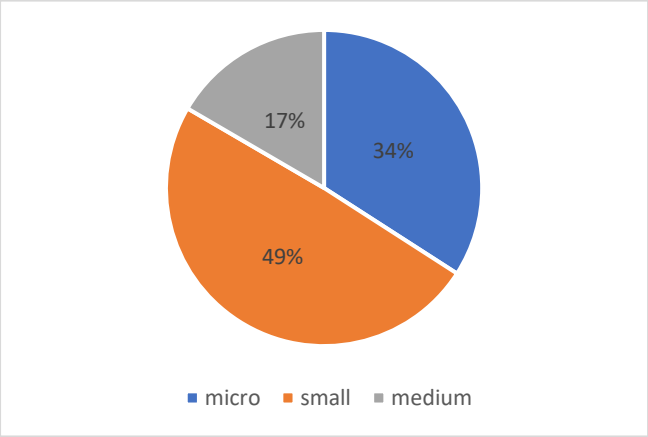


Figure 7: Size of the organization based on the number of employees **(n=217)**

Figure 7 above shows the sizes of the organization by number of employees. It is shown that the majority of the organization (small enterprises n=107) have the number of staffs within 11 to 50 with a percentage of 49.3%, micro enterprises(n=74) accounted for 34.1% of the population and medium enterprises were the least in the sample accounting for 16.6% (n=36).

Duration of the organization

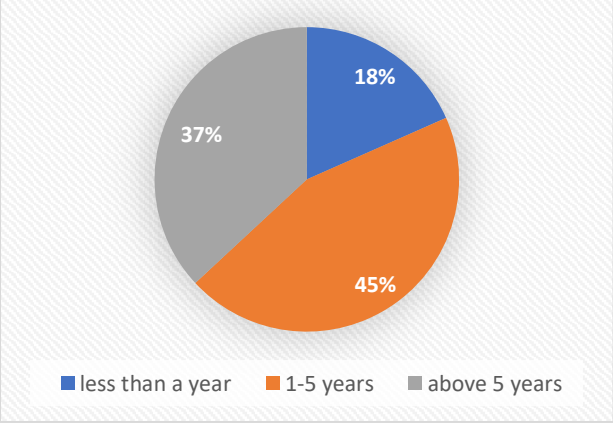


Figure 8: Length of operation of the businesses **(n=217)**

Figure 8 above shows the number of years the organizations have been in operation for. The majority of organizations (44.7 per cent) had been in existence between one and five years

(n=97), while 36.9% (n=80) had been in existence for more than five years and just 18.4 % (n=40) had been in existence for less than a year.

Cloud computing usage

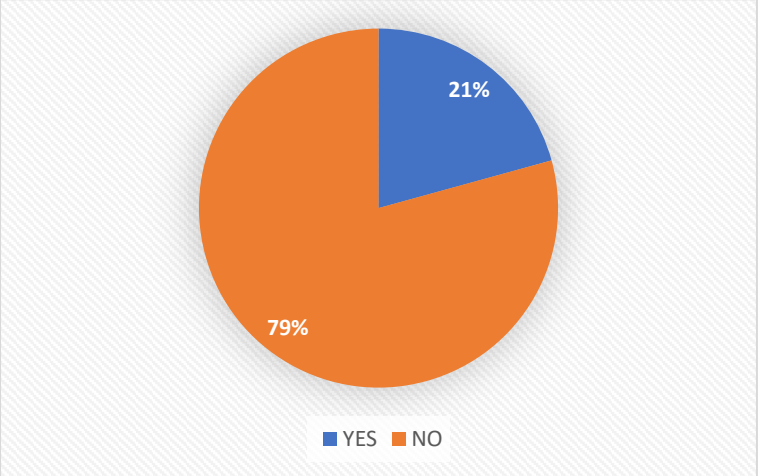


Figure 9: current cloud computing usage distribution **(n=217)**

The pie chart in fig 4.4 above shows that the number of businesses that currently make use of cloud computing is relatively low as they accounted for 20.7% (n=45) of the respondents. Nonusers of cloud computing on the other hand was 79.3% (n=172) of the respondents. The non-users are likely using traditional forms of record keeping.

4.2.3 Descriptive Analysis of the Variables

Dependent variable

Table 1: frequency distribution of the Adopt variable

Item	SME response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
AD1	0	0	1	4	11	4.8	111	48.1	49	21.2	1.79	575
AD2	0	0	8	3.5	24	10.4	119	51.5	21	9.1	2.11	662
AD3	0	0	4	1.7	12	5.2	106	45.9	50	21.6	1.83	652
AD4	0	0	20	8.7	46	19.9	85	36.8	2	9.1	2.38	846

	overall mean	2.02

Table 1 above shows the frequency distribution of the four questions used to access the dependent variable (Intention to adopt). From the table, it is evident that the majority of the respondents have a strong intention to adopt cloud computing services in the nearest future. The only question that showed a slight deviation in the overall trend of adoption was AD4 it showed that 8.7% of the respondents were not likely to adopt cloud computing within the next 12 months.

Independent Variables

Table 2: frequency distribution of Cloud relative advantage

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
CRA1	16	6.9	0	0	53	22.9	69	29.9	34	14.7	2.39	1.095
CRA2	2	9	2	9	24	10.4	102	44.2	42	18.2	1.95	732
CRA3	7	3.0	11	4.8	53	22.9	75	32.5	26	11.3	2.41	960
CRA4	0	0	0	0	23	10.0	98	42.4	51	22.1	1.84	637
CRA5	0	0	9	3.9	30	13.0	104	45.0	29	12.6	2.11	737
CRA6	0	0	5	2.6	26	12.9	26	16.8	3	8.1	2.08	546
overall mean											2.13	

Table 2 above shows the frequency distribution of the four questions used to access the independent variable (Cloud relative advantage).

Table 3: frequency distribution cloud flexibility

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
CF1	0	0	6	2.6	23	10.0	114	49.4	29	12.6	2.03	666
CF2	1	4	4	1.7	39	16.9	99	42.9	29	12.6	2.12	727
CF3	0	0	1	4	28	12.1	111	48.1	32	13.9	1.99	612
CF4	0	0	9	3.9	26	11.3	115	49.8	22	9.5	2.13	689
overall mean											2.06	

Table 3 above shows the frequency distribution of the four questions used to access the independent variable (Cloud flexibility).

Table 4: frequency distribution of the Adopt variable

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
QOS1	0	0	3	1.3	18	7.8	112	48.5	39	16.9	1.91	629
QOS2	0	0	14	6.1	45	19.5	93	40.3	19	8.2	2.43	1.690
QOS3	0	0	3	1.3	41	17.7	109	47.2	19	8.2	2.16	628
QOS4	0	0	3	1.3	38	16.5	106	45.9	25	10.8	2.11	653
overall mean											2.15	

Table 4 above shows the frequency distribution of the four questions used to access the independent variable (quality of service).

Table 5: frequency distribution of the cloud security variable

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		

CS1	26	11.3	54	23.4	8	3.5	66	28.6	18	7.8	3.02	1.315
CS2	0	0	12	5.2	26	11.3	97	42.0	37	16.0	2.08	802
CS3	0	0	21	9.1	34	14.7	95	41.1	22	9.5	2.31	848
overall mean											2.47	

Table 5 above shows the frequency distribution of the four questions used to access the independent variable (Cloud security).

Table 6: frequency distribution of the Cloud privacy Adopt variable

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
CP1	0	0	9	3.9	11	4.8	120	51.9	32	13.9	1.98	679
CP2	5	2.2	87	37.7	31	13.4	44	19.0	3	1.3	3.28	942
CP3	7	3.0	94	40.7	26	11.3	12	5.2	9	3.9	3.53	936
overall mean											2.93	

Table 6 above shows the frequency distribution of the three questions used to access the independent variable (Cloud privacy).

Table 7: frequency distribution of the cloud awareness variable

Item	SME Response										Mean	Std. dev.
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree			
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%		
CA1	0	0	3	1.3	6	2.6	111	48.1	52	22.5	1.77	596
CA2	0	0	36	15.6	43	18.6	79	34.2	12	5.2	2.61	899
CA3	0	0	7	3.0	13	5.6	95	41.1	57	24.7	1.83	737
CA4	0	0	28	12.1	48	20.8	75	32.5	18	7.8	2.51	894
overall mean											2.18	

Table 7 above shows the frequency distribution of the four questions used to access the independent variable (cloud awareness).

Multiple Regression Analysis

4.2.4 Testing the assumptions of Multiple regression

To conduct a Multiple regression, regression, several assumptions need to be checked.

1. sample size

The sample size calculation formula provided by Green (1991) was utilized to determine the appropriate number of cases necessary for the MLR analysis. The suggested formula was:

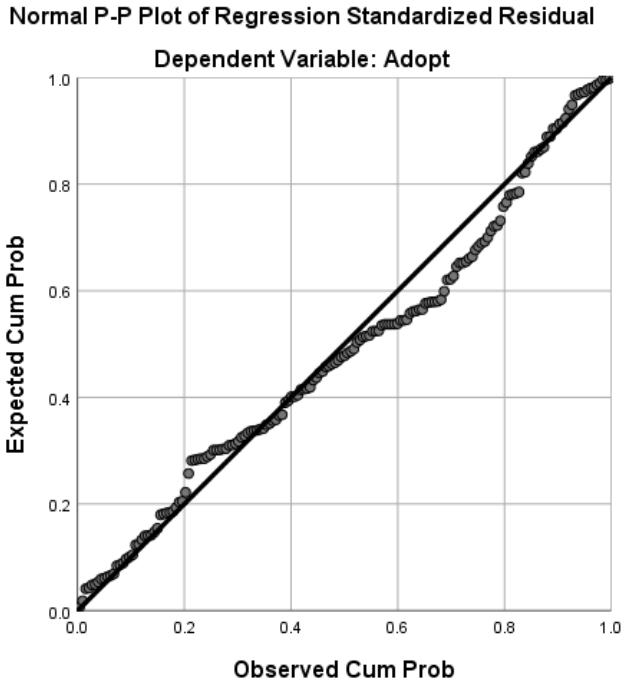
$N > 50 + 8p$

where p is the number of predictors. In this study, there are 6 predictor variables. therefore, the effective sample size should be $N > 50 + 8(6) = 98$ cases as a minimum. This assumption was met as a total of 172 cases were used for the MLR analysis. The non-users of cloud computing were used for the Multiple regression as the researcher believed they would give a better understanding on the factors affecting their intention to adopt. It was believed that the perception of current users could have changed as a result of usage and might not reflect their opinion prior to adoption.

2. Normality of distribution

This assumption implies that the model's residuals are random, normally distributed variables with a mean of 0. The probability plot (PP plot) for the variables was produced to see if the distribution is normal.

Figure 10: Normal P-Plot of regression standardized residual for Adopt



Because there was no dramatic deviation from the straight diagonal line, no severe deviations from normalcy were presumed.

3. Outliers

Case-wise diagnostics was performed to identify any outliers that could affect the data. In table 8 below, case number 130 was found to be an outlier as the item found had a standard residual of above 3 hence it was an outlier and was removed.

Table 8: Casewise diagnostic for Adoption scale

Casewise Diagnostics

Case Number	Std. Residual	Adopt	Predicted Value	Residual
130	3.181	4.00	2.6509	1.34906

a. Dependent Variable: Adopt

4. Independence of observation

This assumption implies that the observations in your sample are independent of one another, which means that the measurements for each sample subject are not impacted or connected to the measurements of other respondents. The Durbin-Watson statistics can be used to test this assumption. The test statistic has a range of 0 to 4, and the rule of thumb is that numbers between 0 and 2 indicate a positive correlation, while numbers between 2 and 4 indicate a negative correlation.

Table 9: Independence of observation

Model Summary

Model	Durbin-Watson
1	1.627[a]

a. Predictors: (Constant), AW, CF, CP, QOS, CS, CRA

b. Dependent Variable: ADOPT

From the above table 9, The Durbin–Watson values were not more than 2, indicating that the residues were independent and that the responses were not identical.

5. Homoscedasticity and Linearity

The residual scatterplot was used to validate this assumption. Because the scatterplot had an approximately rectangular shape and the majority of the data is focused towards the centre, it was assumed that the data was homoscedastic.

6. Multicollinearity

Multicollinearity often occurs when two or more predictor variables have significant correlations. In other words, you can use one variable for predicting the other. One technique to test this is to run a correlation matrix of all independent variables and look for correlations significantly greater than .70. Although the correlation between cloud advantage and cloud flexibility was .708, this was considered acceptable as it was not significantly over 0.70. No other correlation above .70 between independent variables as can be seen in **Table 10**. Alternatively, collinearity diagnostics can be performed to determine the Variance Inflation Factor (VIF). A rule of thumb commonly used in practice is if a **VIF** is > 10 and Tolerance is below 0.1, you have high multicollinearity. According to **Table 11** below, the VIF is less than 10 and the tolerance is greater than 0.1, indicating that there was no multicollinearity concern.

Table 10: Multicollinearity diagnostics

Correlations

		ADOPT	CRA	CF	QOS	CS	CP	AW
ADOPT	Pearson Correlation	1	.346**	.247**	.294**	.318**	.220**	.472**
	Sig. (2-tailed)		.000	.001	.000	.000	.004	.000
	N	171	171	171	171	171	171	171
CRA	Pearson Correlation	.346**	1	.708**	.670**	.581**	.463**	.338**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	171	171	171	171	171	171	171
CF	Pearson Correlation	.247**	.708**	1	.638**	.490**	.391**	.276**
	Sig. (2-tailed)	.001	.000		.000	.000	.000	.000
	N	171	171	171	171	171	171	171
QOS	Pearson Correlation	.294**	.670**	.638**	1	.553**	.387**	.285**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	171	171	171	171	171	171	171
CS	Pearson Correlation	.318**	.581**	.490**	.553**	1	.625**	.321**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	171	171	171	171	171	171	171
CP	Pearson Correlation	.220**	.463**	.391**	.387**	.625**	1	.306**
	Sig. (2-tailed)	.004	.000	.000	.000	.000		.000
	N	171	171	171	171	171	171	171
AW	Pearson Correlation	.472**	.338**	.276**	.285**	.321**	.306**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	171	171	171	171	171	171	171

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

Table 11: collinearity statistics (VIF)

Coefficients

Model		Collinearity Statistics	
		Tolerance	VIF
1	CRA	.377	2.654
	CF	.448	2.232
	QOS	.467	2.141
	CS	.468	2.137
	CP	.585	1.709
	AW	.849	1.178

a. Dependent Variable: ADOPT

4.2.5 Hypotheses testing

In this section, the findings of the analysis are presented. The hypotheses developed were tested using the relevant analysis. Hypotheses 1 to 6 were tested using the Multiple regression analysis and hypotheses 7 and 8 were tested using the one-way between-groups analysis of variance. In the conduct of the Multiple regression analysis, all the necessary assumptions were checked to ensure the suitability of the analysis. All the necessary assumptions were met.

Table 12: Regression model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.523[a]	.274	.247	.41104	.274	10.293	6	164	.000	1.627

a. Predictors: (Constant), AW, CF, CP, QOS, CS, CRA

b. Dependent Variable: ADOPT

The R (.523) is the multiple correlation coefficient, which examines the relationship between all of the independent variables. The R2 (.274) indicates that the six independent variables may predict 27.4 percent of the variation in Intention to adopt cloud computing. The six predictors explain 27.4 percent, leaving 72.6 percent to be explained by something else. The adjusted R2 (.247), which is important in multiple regression, is lower than the R2. It considers the number of observations (sample size) in the number of predictor variables to ensure they are not overly

inflated because it must be an accurate representation of the percentage of variance accounted for.

Table 13: Regression Anova table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.435	6	1.739	10.293	.000[b]
	Residual	27.709	164	.169		
	Total	38.143	170			

a. Dependent Variable: ADOPT

b. Predictors: (Constant), AW, CF, CP, QOS, CS, CRA

The ANOVA in Table 13 above shows if the overall model is significant and predicts the dependent variable. From the above table, it is evident that the model worked and predicts the dependent variable as the Sig or P-value = .000, F (6,164) =10.293.

Table 14: Regression coefficients table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.877	.187		4.680	.000					
	CRA	.172	.111	.168	1.546	.124	.346	.120	.103	.377	2.654
	CF	-.060	.106	-.056	-.568	.571	.247	-.044	-.038	.448	2.232
	QOS	.061	.100	.059	.606	.545	.294	.047	.040	.467	2.141
	CS	.077	.060	.125	1.283	.201	.318	.100	.085	.468	2.137
	CP	-.045	.069	-.056	-.648	.518	.220	-.051	-.043	.585	1.709
	AW	.315	.058	.391	5.419	.000	.472	.390	.361	.849	1.178

a. Dependent Variable: ADOPT

We look at the Unstandardized Coefficients B rather than the Standardized Coefficients Beta for the Coefficient table. The constant value under the B is an intercept with a point where all of the predictor variables are Zero (0), indicating that the level of intention to adopt cloud computing

adoption with an average of.877. cloud relative advantage is positive.172, which means that for every unit increase in Cloud relative advantage, there is an increase in the intention to adopt cloud computing of.172. Cloud flexibility is negative. -.060, which suggests that for every unit increase in cloud flexibility, there is a -.60 decline in the desire to adopt cloud computing services. Quality of services is positive, which indicates that for every unit improvement in Quality of service, there is a.061 rise in the desire to use cloud computing. Cloud security and cloud awareness are likewise positive, indicating that for every unit rise in Cloud security and Awareness, there is a.077 and.315, respectively, rise in intention to adopt cloud computing services. Cloud privacy is negative -.045, which implies that for every unit gain in cloud privacy, there is a -.045 decline in the intention to use cloud computing services.

Hypothesis 1

H0: There is no significant relationship between cloud relative advantage and the intention to adopt cloud computing in Nigerian SMEs

H1: There is a significant relationship between cloud relative advantage and the intention to adopt cloud computing in Nigerian SMEs

		ADOPT	CRA
ADOPT	Pearson Correlation	1	.346**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	CRA	.172	.111	.168	1.546	.124	.346	.120	.103

The relative advantage of Cloud computing was hypothesized to have a major impact on SMEs' choice to use Cloud computing. This theory was not supported. The MLR result revealed a non-significant association between CRA and intention to adopt, p> .05. As a result, we accept the Null hypothesis. Looking at Pearson correlation in the table above, Cloud relative advantage has a correlation with Adopt of .346, CRA has a value of .346 but drops to .103. This shows there is a correlation between CRA and Adopt but might not be considered as significant enough.

Hypothesis 2

H0: there is no significant relationship between cloud flexibility and the intention to adopt cloud computing in Nigerian SMEs

H1: there is no significant relationship between cloud flexibility and the intention to adopt cloud computing in Nigerian SMEs

		ADOPT	CF
ADOPT	Pearson Correlation	1	.247**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-orde	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	CF	-.060	.106	-.056	-.568	.571	.247	-.044	-.038

Cloud flexibility was hypothesized to have a substantial impact on Cloud Computing adoption for SMEs. This hypothesis has not been supported. The MLR result revealed a non-significant link between Cloud Flexibility and Intention to Adopt, with p> .05. As a result, we accept the Null hypothesis. Looking at the Pearson correlation in the table above, Cloud flexibility has a correlation with the intention to Adopt of .247. this correlation drops significantly to -.038 in the part correlation. This shows there is no positive correlation between CRA and intention to Adopt.

Hypothesis 3

H0: there is no significant relationship between the quality of service of cloud computing and the intention to adopt cloud computing in Nigerian SMEs

H1: there is a significant relationship between the quality of service of cloud computing and the intention to adopt cloud computing in Nigerian SMEs

		ADOPT	QOS
ADOPT	Pearson Correlation	1	.294**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-orde	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	QOS	.061	.100	.059	.606	.545	.294	.047	.040

Cloud service quality was hypothesized to have a significant impact on the decision of SMEs for cloud computing. This hypothesis has not been supported. The MLR's result revealed that the association between cloud service quality and intention to accept was not significant as this had a significance value of (P) =.0545 which is >.05. As a result, we accept the Null hypothesis. Looking at the Pearson correlation in the table above, Quality of service has a correlation with the intention to Adopt of .294. this correlation drops significantly to .040 in the part correlation. This shows there is no significant correlation between QOS and intention to Adopt

Hypothesis 4

H0: there is no significant relationship between cloud security and the intention to use cloud computing in Nigerian SMEs

H1: there is a significant relationship between cloud security and the intention to use cloud computing in Nigerian SMEs

		ADOPT	CS
ADOPT	Pearson Correlation	1	.318**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-orde	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	CS	.077	.060	.125	1.283	.201	.318	.100	.085

Cloud security was hypothesized to have a substantial impact on SMEs' choice to adopt Cloud

computing. This hypothesis was not supported. The MLR result revealed a non-significant link between Cloud security and desire to adopt, with a significance (P) value of.201, which is more than.05 As a result, we accept the Null hypothesis. Looking at the Pearson correlation, Cloud security has a correlation with the intention to Adopt .318. this correlation drops significantly to .085 in the part correlation. This shows there is no significant correlation between cloud security and intention to Adopt

Hypothesis 5

H0: there is no significant relationship between cloud privacy and the intention to adopt cloud computing in Nigerian SMEs

H1: there is a significant relationship between cloud privacy and the intention to adopt cloud computing in Nigerian SMEs

		ADOPT	CP
ADOPT	Pearson Correlation	1	.220**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-orde	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	CP	-.045	.069	-.056	-.648	.518	.220	-.051	-.043

Cloud privacy was hypothesized to have a substantial impact on SMEs' choice to adopt Cloud computing. This hypothesis was not supported. The MLR result revealed a non-significant association between Cloud privacy and intention to adopt, with a significance value of.518 (more than.05). As a result, we accept the Null hypothesis. Looking at the Pearson correlation, Cloud privacy has a correlation with the intention to Adopt of .220. this correlation drops significantly to -.043 in the part correlation. This shows there is no positive correlation between privacy and intention to Adopt

Hypothesis 6

H0: there is no significant relationship between the awareness of cloud computing and the intention to use cloud computing in Nigerian SMEs

H1: there is a significant relationship between the awareness of cloud computing and the intention to use cloud computing in Nigerian SMEs

ADOPT	Pearson Correlation	1	.472**

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations		
		B	Std. Error	Beta	t	Sig.	Zero-orde	Partial	Part
1	(Constant)	.877	.187		4.680	.000			
	AW	.315	.058	.391	5.419	.000	.472	.390	.361

It was hypothesized that SMEs' adoption of cloud computing would be significantly influenced by their awareness of cloud services. This hypothesis was found to be correct. The MLR result revealed a strong association between awareness of cloud services and intention to adopt, $p < .05$. As a result, we accept the Null hypothesis. Looking at the Pearson correlation, Cloud awareness has a correlation with the intention to Adopt of .472. this correlation does not drop significantly in the part correlation 0.361. This shows there is a strong positive correlation between Awareness and intention to Adopt.

Testing for differences between groups

Hypotheses 7

H0: There is no significant difference in intention to adopt cloud computing in Nigerian SMEs based on the number of employees.

H1: There is no significant difference in intention to adopt cloud computing in Nigerian SMEs based on the number of employees.

A one-way between-groups analysis of variance was conducted to explore the effect of the number of employees on the intention to adopt cloud computing in Nigerian SMEs. Participants were divided into 3 groups (micro, small and medium) The Levene's test was used to test for homogeneity of variance between the groups and it revealed that the homogeneity of variance assumption was met, p=.917.

There was no statistically significant difference in the intention to adopt cloud computing for the 3 groups: F (2, 168) = .324, p=.723 which implies that the intention to adopt cloud computing

does not differ as a result of the number of employees within the organization. Therefore, the null hypothesis which states that "There is no significant difference in intention to adopt cloud computing in Nigerian SMEs based on the number of employees." is accepted.

Table 15: Mean and standard deviation of size of the organization

	N	Mean	Std. Deviation
Micro	59	2.0551	.49145
Small	91	2.0000	.46398
medium	21	1.9762	.48027
Total	171	2.0161	.47368

Hypotheses 8

H0: There is no significant difference in intention to adopt cloud computing in Nigerian SMEs based on the length of business operation.

H1: There is no significant difference in intention to adopt cloud computing in Nigerian SMEs based on the length of business operation.

A one-way between-groups analysis of variance was conducted to explore the effect length of the business operation on the intention to adopt cloud computing in Nigerian SMEs. Participants were divided into 3 groups (less than a year, 1-5 years, and above 5) to test for homogeneity of variance, Levene's test was used, and it revealed that the homogeneity of variance assumption was met, p=.138.

There was no statistically significant difference in the intention to adopt cloud computing for the three groups: F (2, 168) =.469, p=.626 implying that the length of business operation did not affect the intention to adopt cloud computing. As a result, the null hypothesis, which asserts that "there is no significant difference in intention to use cloud computing in Nigerian SMEs depending on the period of business operation," is accepted.

Table 16: Mean and standard deviation of the duration of the business

	N	Mean	Std. Deviation
less than 1 year	32	1.9609	.44044

1-5 years	79	2.0063	.41598
Above 5 years	60	2.0583	.55876
Total	171	2.0161	.47368

4.3 Discussion

The purpose of this study was to assess the factors that affect the intention of SMEs to adopt cloud computing services and also to check if the intention to adopt cloud computing varied as a result of the number of employees and length of business operation. A total of 8 hypotheses was developed and tested. Hypotheses 1-6 were tested using multiple regression analysis and hypotheses 7 and 8 were tested using the one-way between-groups ANOVA.

4.3.1 What effect does relative advantage on the intention to use cloud computing in SMEs

In this, cloud relative advantage was defined as the degree to which a person perceives one innovation to be better than the existing innovation. As previously mentioned, Multiple regression was used to test this hypothesis. The result of the analysis concluded that Cloud relative advantage did not have a significant influence on the intention to adopt cloud computing as p =.124. This finding is consistent with the findings of (Low *et al.*, 2011; Lin and Chen, 2012; Tehrani and Shirazi, 2014). Tehrani and Shirazi, (2014) in their research found the relative advantage of cloud services as a non-significant influence on the intention to adopt cloud computing in North America. The study was done by (Low *et al.*, (2011) found the relative advantage of the cloud to have a negative significant effect on the intention to adopt cloud computing services. This finding in the Nigerian context might mean that SMEs do not perceive cloud computing as any better than already existing technology and do not feel the need to change. It could also imply that they are not fully aware of the benefits of cloud computing as cloud computing services could still be in its infancy. however, in contrast to the above findings, some other studies have found Cloud relative advantage as a significant predictor of the adoption of cloud computing(Yazan Alshamaila *et al.*, 2013; Oliveira *et al.*, 2014; Gangwar *et al.*, 2015; Senarathna *et al.*, 2018). However, something stood out to the researcher here. The studies that perceived Cloud relative advantage as a factor affecting adoption were developed countries such as Australia, England. Nigeria is considered a developing country and would not be as technological exposed as the advanced economies.

4.3.2 What effect does cloud flexibility have on the intention to adopt cloud computing in Nigerian SMEs

Cloud flexibility was hypothesized to have a substantial impact on Cloud Computing adoption for SMEs and a multiple regression analysis was done to test the hypotheses. The result of the analysis showed that cloud flexibility had a nonsignificant effect on the intention to adopt cloud computing services as p = .571. this finding was consistent with that of (Senarathna *et al.*, 2018) where cloud flexibility was found to have a nonsignificant negative effect on cloud computing adoption. This finding that flexibility was not a significant factor is rather surprising as this is one of the major advantages and arguments of cloud computing adoption. There could be a number of possible explanations for this finding. Firstly, Nigerian SMEs might not perceive the benefit of flexibility as an advantage as the businesses might not need the scaling up and down of resources according to business needs. Unless the business is dealing in cyclical goods and services there is a possibility that demand may remain constant or growing at a gradual pace and this might not necessitate the adoption of cloud service until significant growth is achieved. Secondly, Nigerian SMEs may not fully understand the advantage of flexibility in their business operations. Thirdly, it could be tied to the level of awareness of cloud computing services among Nigerian SMEs.

The findings of other studies such as those of (Chebrolu, 2011; Sahandi and Alkhalil, 2013) did not support these findings as they found flexibility to be a significant predictor towards the adoption of cloud computing services. According to Sahandi and Alkhalil (2013), cloud flexibility is one of the most important factors that affect SMEs perception of cloud computing.

4.3.3 What effect does Cloud quality service have on the intention to adopt cloud computing in Nigerian SMEs?

Quality of service was hypothesized to have a significant effect on the intention to adopt cloud computing services. Several previous pieces of works of literature identified quality of service as a possible factor affecting cloud adoption(Buyya *et al.*, 2008; Armbrust, Fox, Griffith, *et al.*, 2010). The hypothesis was tested using the MLR analysis and the result showed a sig value of .545. this means that this hypothesis was not supported. This finding is inconsistent with those of (Buyya *et al.*, 2008; Senarathna *et al.*, 2018) as they found that cloud computing adoption was significantly affected by the quality of cloud services. A possible reason for this finding could be that as most SMEs use traditional and other means of recording transactions, they might already be used to a level of service that is not high and are contempt with it. They might not perceive that any improvement to the quality of service as a result of cloud computing adoption could significantly impact their business operations. Another possible explanation could be tied to the level of adoption. If there is was increased level of adoption, they might understand how cloud

computing quality of service is an improvement over existing computing services.

4.3.4 What effect does cloud security have on the intention to adopt cloud computing in Nigerian SMEs

As cloud services are run using the internet, security has always been in question and has often yielded differing results. It was therefore hypothesized that security would significantly affect the intention to adopt cloud services. It was tested using the multiple regression analysis and the result showed a non-significant relationship as the sig value = .201. This meant that the intention to adopt cloud computing in Nigerian SMEs is not affected by the security concern of cloud services. This finding of this test was consistent with those of (Gupta *et al.*, 2013; Oliveira *et al.*, 2014; Senarathna *et al.*, 2018). Senarathna *et al.*, (2018) found that in Australian SMEs, Cloud security was not a significant predictor of their intention to adopt cloud services. A possible reason can be seen from the point of view of Molnar and Schechter (2010) where they stated that user data in the cloud are safer as cloud providers have greater economies of scale to enforce proper controls of access and In contrast, the same level of security measures could not be implemented by companies that host their IT infrastructure indoors.

This finding is not supported by every study such as that of (Dillon and Vossen, 2014) where they found security to be the primary concern of SMEs towards the adoption of cloud computing services.

4.3.5 What effect does cloud privacy have on the intention to use cloud computing in Nigerian SMEs

Cloud privacy just like cloud security has also been considered in many studies as a factor that could affect the intention to adopt cloud computing(Oliveira *et al.*, 2014; Ratten, 2014; Senarathna *et al.*, 2018; Le and Cao, 2020a). The risk of cloud privacy stems from the fear that SMEs could have in allowing third-party access and control of their confidential data. It was hypothesized that Cloud privacy could have a significant effect on the adoption of cloud services. This hypothesis was not supported (p= .518) meaning that SMEs ' intention to adopt cloud computing services was not affected by cloud privacy. This finding was consistent with several studies (Tehrani and Shirazi, 2014; Ratten, 2014; Senarathna *et al.*, 2018; Le and Cao, 2020a). However, the findings of (Gupta *et al.*, 2013) did not support this. Here it was found that the intention to adopt cloud computing increased with stronger privacy control measures. Similarly, the findings of the study by (Yazan Alshamaila *et al.*, 2013) highlighted privacy as the major concern for not adopting cloud services. Data privacy has always been a cause for debate for anything involving the use of the internet. In this study, it was not a factor affecting adoption and I believe possible explanations

could be given as to why. Firstly, although privacy has always been a concern for any internet service such as cloud computing, internet use is still increasing at a stunning rate. As a result of the way internet services have become integrated into our daily lives, it seems like most individuals are willing to take the risk of using internet services and accept that the technology itself has some inherent risks. The believe is that while there are risks, the benefits offset them significantly. Secondly, as a result of the increased data privacy legislations in most countries, SMEs might feel more protected if they adopt cloud computing and may not be too concerned about privacy infringements anymore.

4.3.6 What effect does the awareness of cloud computing have on the intention to use cloud computing in Nigerian SMEs

Cloud computing services have been gaining significant attention over the last decade and have seen a tremendous increase in adoption levels. Several researchers believed that this increased adoption could be a result of the increasing level of cloud awareness. To this effect, it was hypothesized that Awareness had a significant effect on Nigerian SMEs' intention to adopt cloud services. This hypothesis was tested using multiple regression analysis. The result from the analysis showed that this variable had a significant effect on the intention to adopt cloud computing in Nigerian SMEs (p=.000). This result means that Cloud awareness is an important factor in determining the SMEs' intention to adopt cloud computing. This finding is consistent with several previous studies(Gupta *et al.*, 2013; Tehrani and Shirazi, 2014; Dillon and Vossen, 2014; Senarathna *et al.*, 2018). Having established that cloud awareness is a significant predictor of cloud adoption, several easy steps could be taken to increase the level of awareness. The easiest and most cost-effective method would be to use social media. An Interesting way in which the researcher chose to look at this finding in the context of Nigeria was through the lens of the Service/product life cycle. According to the findings, it is consistent with the introductory phase of a service. In the introductory phase, not too much is known about the product or service and as such, cloud service providers would need to invest heavily into marketing, and this would drive up the cost of cloud services. If the awareness is raised, the market becomes more efficient, and this could spell the beginning of a growth stage for cloud computing adoption. In that growth stage, the cost of cloud services would become more reasonably priced according to forces of demand and supply and would be characterized by rapid levels of adoption.

4.3.7 What effect does the size and length of operation of the businesses have on the intention to adopt cloud computing services?

size of the organization

In this study, it was hypothesized that there was a significant difference in the intention to adopt cloud computing based on the size of the organizations. The respondents were grouped into 3 categories (micro medium and large) the criteria for classification were gotten from the Central bank of Nigeria definition and classification of SMEs. A one-way between-groups analysis of variances was conducted to test for differences between the three groups. The results of the analysis showed that there was no significant difference between the 3 groups' intention to adopt cloud computing.

The second hypothesis

Length of operation

In this study, it was hypothesized that there was a significant difference in the intention to adopt cloud computing based on the length of operation of the organizations. The respondents were grouped into 3 categories (less than a year, 1-5 years, above 5 years). A one-way between-groups analysis of variances was conducted to test for differences between the three groups. The results of the analysis showed that there was no significant difference between the 3 groups' intention to adopt cloud computing.

To summarize, there is no difference in the intention to adopt cloud computing services based on organizational size and length of operation. Also, the intention to adopt is significantly affected by Cloud awareness while cloud relative advantage, cloud flexibility, quality of service, cloud privacy, and cloud security do not affect their intention to adopt cloud computing in Nigerian SMEs.

5. CONCLUSIONS, IMPLICATIONS, LIMITATIONS, AND RECOMMENDATION FOR FUTURE RESEARCH

5.1 Implications of findings

Cloud computing services have immense benefits, particularly SMEs. But while the adoption process in developed countries is growing rapidly, it has not been so in developing economies such as Nigeria. Nigerian SMEs are regarded as the backbone of the economy as they account for over 80% of the total employment force (PWC 2020) but yet there has been slow growth in the sector, and this is evident in (PWC 2020) survey of Nigerian SMEs where it was found that only about 31% of the SMEs experienced positive growth over the last 3 years. The study by PWC went on to add that Internet services are likely to play a large role in their growth in the coming years. To support this, the Nigerian government recognized cloud computing could positively

impact the growth of SMEs since the cost of IT services that have to do with the recording of transactions, tax reconciliation and other business activities would be significantly lessened and also improving the quality of data. The Government then released the Nigeria Cloud Computing Policy (NCCP), with the aim of increasing cloud computing adoption by 30 per cent among Federal Public Institutions (FPI) and Small, Medium, and Enterprises (SMEs). This was the driving force behind the study where I set out to find what factors affected the intention of Nigerian SMEs to adopt cloud computing. Form reviewing previous works of literature, I selected 6 six possible factors which were Cloud relative advantage, flexibility, quality of service, security, privacy, and awareness. The intention to adopt cloud services among groups based on size and length of operation was also checked for differences. The findings of this study showed that among all six variables, only cloud awareness seemed to significantly affect the intention to adopt cloud computing services in Nigeria and also there seem to be no significant difference in the intention to adopt cloud computing among all groups. This finding of the result was somewhat surprising, but it brings into question the level of awareness of cloud computing services in Nigeria. From the researcher's point of view, this finding that cloud computing was affected by awareness could to an extent explain the reason why some of the other variables do not seem to affect the intention to adopt. If they are not fully aware of cloud computing services, they would not understand the relative advantage and the flexibility benefits of adopting cloud computing services. From the study, there is a strong reason to be optimistic about the future of cloud adoption in Nigerian as the majority of the respondents were open to open to or are already planning to adopt cloud computing. This can be considered as a positive sign for the cloud service providers and the Nigerian Government as would be interested in increasing the level of adoption. Going by this study, in theory, cloud adoption can be increased by raising the level of awareness of cloud computing. Efforts on educating SMEs on cloud computing is likely to improve their perception of Cloud relative advantage, flexibility, and other important attributes of cloud services.

5.2 Contributions and Limitations of the Research

5.2.1 Research limitations

It is important to recognize the limitations that were inherent in this study to allow for further improvements in future studies. These limitations are listed below

1. The variables and Model used to test the intention to adopt cloud computing are but a few of the possible factors that can explain intention to adopt. In the review of literature, a number of other factors were found such as external support, information intensity, innovativeness, compatibility, and others were found. But out of the need to make the survey as straightforward as possible for the respondents, they were not used. In future research, these

combined with the 6 variables used in this study could be explored as possible factors affecting cloud adoption.

2. In this study, a quantitative technique was used to test the hypotheses. While this approach did yield results, a mixed approach could be used in future studies. The reason for this is the nature of cloud computing. Qualitative data would give valuable insights outside of the questions asked in a questionnaire.
3. This study was conducted to gain insight into the factors affecting cloud computing in Nigerian SMEs and cannot be used to explain adoption in other countries. Future studies would benefit from multiple perspectives from different countries.
4. While the researcher believes that the population sample was sufficient for the study as it was consistent with previous studies, using a wider sample size in future studies could yield better results.
5. The entry technique was utilized in the multiple regression analysis to test all of the independent variables against the dependent variable. While the researcher believes this approach was adequate, future study might benefit from using alternative approaches, such as the stepwise technique, which entails adding or eliminating possible predictor variables in sequence and evaluating for statistical significance after each iteration.

5.2.2 Contributions of the research

This study can be seen to contribute to the literature in the following ways.

1. This study can be seen to contribute to the body of knowledge on understanding technology acceptance in SMEs.
2. This study can also be seen as a building block for future research as to what other factors affect cloud adopting asides awareness.
3. Based on the result of this study cloud service providers and the Nigerian government can achieve an increased level of adoption by raising awareness.

5.3 Recommendations for Practice

5.3.1 Recommendations for Cloud service providers and Nigerian government agencies

Cloud service providers are still business, and their end goal is to make profits as a result of their operations. To achieve the growth of their businesses in Nigeria, the slow rate of adoption needs to be tackled. The finding of this study showed that awareness would seem to significantly affect the intention to adopt cloud services. Cloud service providers should strive to increase the level of awareness, and this can be done using a number of mediums such as social media and educational seminars. The Nigerian government on the other hand is not a business as such they

are not concerned about profits but rather, their focus is on the growth of the economy and seeing at SMEs account for a large portion of the Nigerian economy, the Nigerian government is interested in ways of conducting businesses more efficiently to achieve the desired level of growth. The government can and should create policies targeted at increasing the level of awareness. These policies should also aim to keep the activities of the cloud service provider in check as they might start to oversell cloud computing services to SMEs.

5.3.2 Recommendations for SMEs

SMEs are in constant pursuit of growth and should always be looking for ways to conduct business more efficiently. Cloud computing is one such example of how they could conduct business more efficiently in a competitive environment. SME owners should always keep an open mind toward new innovations that could benefit them and should also strive to educate themselves on new innovations. They should not solely rely on 3rd parties such as cloud service providers to educate them. In doing this, they stand to gain greatly from innovations such as cloud computing.

5.4 Recommendations for Further Research

Some of the arrears for future research were already discussed in 5.2.1 above but these were specifically tied to the limitations of this study. the following are recommendations for future research in general.

1. Future studies cloud conduct longitudinal research on cloud computing adoptions as this could yield some interesting results
2. From the review of previous works of literature, it was seen that the intention to adopt cloud computing services varied with the countries this cloud be a result of the attitudes, beliefs, and way of life of different people from different countries. This was not considered in the study and might be worth exploring for future research.
3. This study focused mainly on non-adopters as it aimed to explain the reason for the slow adoption. future research could look at the current users of cloud service and how it has affected their business operations and also look at how their perspective of cloud computing has changed after adoption.
4. This study focused on SMEs, but future studies could look into the functioning of cloud service providers in increasing the level of adoption.

5.5 Conclusion

The integration of technological advancements such as cloud computing into business daily operations has become increasingly important. For a country like Nigeria where SMEs are believed to be underperforming, this need is further pronounced. This study by identifying awareness as a factor affecting cloud adoption could direct Government and cloud service

providers at educating potential customers on the benefits of cloud computing services. If increased adoption can be achieved this can be the spark that rejuvenates the SME sector of Nigeria.

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APPENDIX

Factors Influencing the Adoption of Cloud Computing by Small and Medium-Sized Enterprises

Dear Participants,

I trust you are doing well.

This questionnaire is being used as part of my research for my MSc Accounting and Finance Management Program at the Graduate Business School, Griffith College Dublin.

This project is being done, as part of the requirements, for a master's degree. The main purpose of this study is to determine the factors affecting cloud computing adoption in Nigerian SMEs (Small and Medium-sized Enterprises). This research is not industry-specific. SMEs from various industries can participate in this study. This questionnaire should be filled out by decision-makers of Small or Medium firms.
Participation in this research is completely voluntary. Your responses will remain fully anonymous and will be used exclusively for this research study only. The questionnaire consists of a few questions and would take no longer than 10 minutes to complete. The completion of the questionnaire will be taken as informed consent to use the information you provide for this study.

Thank you so much for taking the time to answer this questionnaire, your responses are highly valued.
If participants have concerns about this study and wish to contact an independent person, please contact Dr. Garrett Ryan at garrett.ryan@griffith.ie

Section 1

1. I have read and understood the above information, and I choose to participate in this research *

- Yes
- No

2. What best describes your position in the organization? *

- Owner
- CEO
- Manager
- Finance manager
- IT executive
- others

3. Number of employees within your organization *

- 0-10
- 11-50
- 51-200
- Above 200

4. Duration of the organisation *

- less than a year
- 1 - 5 years
- More than 5 years

5. Are you familiar with cloud computing services? *

- Yes
- No

6. Does your organization currently use any cloud computing services? *

- Yes
- No

Cloud Relative Advantage

Please indicate the extent to which you agree or disagree with each of the following statements by clicking on the appropriate boxes

9. Cloud Relative Advantage *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Adopting Cloud computing increases the profitability of our organisation	○	○	○	○	○
Adopting Cloud computing allows for reduced day to day costs	○	○	○	○	○
Adopting Cloud computing allows us to enter into new businesses or markets	○	○	○	○	○
Adopting Cloud computing allows better communication with our suppliers and customers	○	○	○	○	○
Adopting Cloud computing requires no upfront capital investment	○	○	○	○	○
Adopting Cloud computing provides access at any time	○	○	○	○	○

Cloud flexibility *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Adopting Cloud computing creates a flexible environment to operate	○	○	○	○	○
Adopting Cloud computing allows for increasing and reducing resources as needed	○	○	○	○	○
Adopting Cloud computing provides access to Cloud services from various client devices (eg- laptop, phone etc)	○	○	○	○	○
Adopting Cloud computing increases the ability of a business to adapt rapidly and cost efficiently in response to changes in the business environment	○	○	○	○	○

Quality of service *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Cloud computing is a reliable service	○	○	○	○	○
Cloud computing is highly available	○	○	○	○	○
Cloud computing provides an up-to-date service	○	○	○	○	○
Cloud computing responds quickly'	○	○	○	○	○

12. Cloud security *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Our organisation is concerned about the security of the technology used in Cloud Computing	○	○	○	○	○
Cloud Computing may be more secure than traditional computing	○	○	○	○	○
Our organisation is willing to use Cloud Computing to host sensitive information (financial information, personal information etc)	○	○	○	○	○

13. Cloud privacy *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Our organisation feels secure storing data in Cloud if the data centre is located in Nigeria	○	○	○	○	○
Our organisation feels a loss of privacy if Cloud services are from a different country (different privacy legislation applies)	○	○	○	○	○
Our organisation feels that Cloud computing is unreliable and can't be trusted	○	○	○	○	○

14. Cloud Awareness *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Our organisation is aware of Cloud Computing services	○	○	○	○	○
Our organisation understands the difference between Saas, Paas, and Iaas	○	○	○	○	○
Our organisation is aware that Cloud Computing is linked with other applications	○	○	○	○	○
Our organisation realises the difference between Public, Private and Hybrid Cloud services	○	○	○	○	○

15. Adopt *

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Our organisation intends to adopt Cloud computing	○	○	○	○	○
Our organisation feels that the organisation's needs can be met by Cloud computing	○	○	○	○	○
Our organisation will take steps to adopt Cloud computing in the future	○	○	○	○	○
Our organisation will adopt Cloud computing within the next 12 months	○	○	○	○	○