ADOPTION OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) AND BUSINESS PERFORMANCE: AN INVESTIGATIVE STUDY ON SELECTED SMEs IN BENIN CITY

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A PROJECT WRITTEN IN THE DEPARTMENT OF BUSINESS ADMINISTRATION AND SUBMITTED TO THE DEPARTMENT OF BUSINESS ADMINISTRATION IN PARTIAL FULFULLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE IN BUSINESS ADMINISTRATION OF UNIVERSITY OF BENIN, BENIN CITY.

SEPTEMBER, 2023

DECLARATION

I, John Tobi AINA do hereby declare that:

1. This project report is based on a study undertaken by me in the Department of Business Administration, University of Benin, under the Supervision of **Mr. A. B. Lawal**
2. This work has not been previously submitted for the award of degree elsewhere.
3. All ideas and views are product of my personal research and where the views of others have been expressed, they have been duly acknowledged.

_____

John Tobi AINA

Date:_____

CERTIFICATION

We certify that John Tobi AINA with the Matriculation Number MGS1908025 submitted this research work to the Department of Business Administratio, Faculty of Management Sciences, University of Benin, Benin City.

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DR O. OMORODION ***Head of Business Administration***	**Date**

DEDICATION

I dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this program and on His wings only have I soared.

I also dedicate this to my Family who encouraged me all the way, they instilled in me a desire to learn and made sacrifices so I would have access to high quality education from an early age, and whose encouragement have made sure that I give it all it takes to finish that which I have started. May the blessing of God be with them now and always "Amen"

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ABSTRACT

This study examined the impact of Information and Communication Technology (ICT) adoption on the business performance of Small and Medium-sized Enterprises (SMEs) in the context of the COVID-19 pandemic. To address its objectives, the research formulated four research questions, four objectives, and two hypotheses. A sample of 100 respondents was surveyed using questionnaires. Data analysis was conducted using SPSS version 20.0 and Eviews 10, with descriptive statistics presenting the results and regression tests assessing the research hypotheses.

The findings highlighted the substantial influence of ICT adoption on SMEs' business performance during the COVID-19 crisis. Various ICT tools were adopted, including telecommuting options, virtual communication platforms, cloud computing, CRM software, and e-commerce platforms. Regression analysis confirmed the positive relationship between ICT adoption and improved business performance. However, SMEs encountered challenges during this transition, such as limited internet access, financial constraints, power outages, inadequate employee technical skills, and a lack of awareness regarding ICT benefits. Notably, the study revealed that while resources and technological capability significantly influenced ICT adoption, perceived usefulness did not.

The study recommends several actions based on these findings. Businesses should promote the use of ICT tools to enhance productivity, particularly during crises. Efforts should focus on improving internet infrastructure and affordability for SMEs, with a stronger allocation of resources toward ICT adoption and employee skill development. Comprehensive awareness programs should educate stakeholders on ICT benefits, and businesses should prioritize resource allocation and technological capability enhancement for successful ICT adoption. These recommendations can help SMEs leverage ICT effectively for sustained business performance.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Covid-19 pandemic has created unprecedented challenges for Small and Medium-sized Enterprises globally (Zahoor, Golgeci, Haapanen, Ali & Arslan, 2022). The pandemic has disrupted supply chains, decreased demand, and resulted in the closure of many businesses, particularly SMEs (Ali, Suleiman, Khalid, Tan, Tseng & Kumar, 2021). In Nigeria, SMEs contribute significantly to the economy and provide employment opportunities. However, the pandemic has adversely affected their business operations and performance (Bularafa & Adamu, 2021).

The application of Information Communication Technologies (ICTs) has been identified as a key driver of business performance in the 21st century (Héry, Malenfer, Devel & Levert, 2021). ICTs adoption can lead to improved business performance, especially in the areas of efficiency, effectiveness, and innovation (Al-Qirim, 2017). Similarly, Wang, Liang, Li and Li (2018) found that ICT adoption positively impacts organizational performance, including financial performance, customer satisfaction, and operational efficiency. Moreover, Aremu and Adeyemi (2017) noted that ICT adoption can enhance the competitiveness of SMEs and improve their survival rates.

However, the Covid-19 pandemic has created new challenges for SMEs, requiring them to adopt and implement new ICT tools and strategies to maintain business operations and performance (Akpan, Udoh & Adebisi, 2022). The use of ICT tools such as video conferencing and online collaboration software can help SMEs maintain business operations during the pandemic (Duan, Wang & Yang, 2021). Similarly, Ahmed *et al.* (2021) argued that ICT adoption was critical for business sustenance and continuity during the pandemic by facilitating visual interactions between employees and organisations, as well as between organisations and customers. The pandemic has accelerated the adoption of ICT tools such as e-commerce, online marketing, and remote work, among others (Ahmed *et al.*, 2021).

Despite the benefits of ICT adoption on business performance, SMEs in Nigeria face several challenges in adopting and implementing ICT (Oyelere, Sholarin & Akinwale, 2021; Okundaye, Fan & Dwyer, 2019). SMEs in Nigeria have limited access to resources, lack of technical expertise, and inadequate infrastructure, which hinder their adoption and implementation of ICT (Oyelere, Sholarin & Akinwale, 2021). Furthermore, the high cost of ICT infrastructure and services is a major barrier for SMEs in Nigeria. Consequently, the adoption of ICT by SMEs in Nigeria has been relatively low, compared to other countries (Okundaye, Fan & Dwyer, 2019).

In Nigeria, the government has recognized the importance of ICT in enhancing business performance and has implemented various policies and initiatives to promote ICT adoption among SMEs. The National Information Technology Development Agency (NITDA) has

launched several initiatives to promote the adoption of ICT, including the Nigeria e-Government Master Plan, the National Broadband Plan, and the e-Nigeria conference (Ugwuanyi, Martin & Chukwuemeka, 2017). Furthermore, the Central Bank of Nigeria (CBN) has introduced various funding schemes to support SMEs in the adoption and implementation of ICT (Joseph, Obikaonu, Ariolu, Nwolisa & Aderohunmu, 2021).

Despite the government's efforts to promote ICT adoption among SMEs in Nigeria, there is a lack of empirical evidence on the impact of ICT adoption on business performance amidst the Covid-19 pandemic. Therefore, this study seeks to investigate the impact of ICT adoption on business performance amidst the Covid-19 pandemic.

1.2 Statement of the Research Problem

The Covid-19 pandemic has created significant challenges for Small and Medium-sized Enterprises (SMEs) in Nigeria, particularly in terms of their business operations and performance. The application of Information Communication Technology (ICT) has become increasingly important for SMEs to mitigate the negative effects (such as disruption of supply chains, decreased consumer demand, closure of businesses, among others) of the pandemic on their business operations and performance (Aremu & Adeyemi, 2017). However, the extent to which ICT adoption has influenced business performance amidst the pandemic remains largely unknown. Several academic studies (Al-Qirim, 2017; Wang *et al.*, 2018; Aremu & Adeyemi, 2017) have explored the role of ICT in business performance. Wang *et al.* (2018) argues that ICT

adoption improves organizational performance, including financial performance, customer satisfaction, operational efficiency and sustainability. Furthermore, Aremu and Adeyemi (2017) noted that ICT adoption can enhance the competitiveness of SMEs and improve their survival rates.

In the context of the Covid-19 pandemic, several studies (Duan *et al.*, 2021; Ahmed *et al.*, 2021) have examined the impact of ICT adoption on business performance. Duan *et al.* (2021) found that the use of ICT tools such as video conferencing and online collaboration software can help SMEs maintain business operations during the pandemic. Similarly, Ahmed *et al.* (2021) argued that ICT adoption is critical for business continuity during the pandemic. However, few studies (Akpan, Udoh & Adebisi, 2022; Aladejebi, 2020) have specifically investigated the application of ICT on business performance amidst the Covid-19 pandemic in SMEs in Nigeria. This study seeks to fill this gap on how ICT adoption affect SMEs business performance in Nigeria amidst the pandemic.

1.3 Research Aim and Objectives

The aim of this study is to explore the impact of ICT adoption on business performance amidst the Covid-19 pandemic. Specifically, this study seeks to:

i. assess the level of ICT adoption among SMEs in Nigeria during the Covid-19 pandemic;
ii. examine the impact of ICT adoption on the business performance of SMEs in Nigeria during the pandemic;

iii. identify the challenges and barriers that SMEs in Nigeria face in adopting and implementing ICT during the pandemic; and

iv. explore the key factors that influence the adoption and implementation of ICT by SMEs in Nigeria during the pandemic.

1.4 Research Questions

The study shall provide answers to the following research questions:

i. What is the current level of ICT adoption among SMEs in Nigeria during the Covid-19 pandemic?

ii. How has the dimension of adoption of ICT affected the business performance of SMEs in Nigeria during the pandemic?

iii. What are the challenges and barriers that SMEs in Nigeria face in adopting and implementing ICT during the pandemic?

iv. What are the key factors that influence the adoption and implementation of ICT by SMEs in Nigeria during the pandemic?

1.5 Research Hypotheses

The following hypotheses stated in their null form shall be tested in this study:

H_1: The current level of ICT adoption does not influence SMEs' performance during the Covid-19 pandemic.

H_2: Dimension of ICT adoption does not influence SMEs' performance during the Covid-19 pandemic.

H_3: Challenges towards ICT implementation does not influence SMEs' performance during the Covid-19 pandemic.

H_4: Key factors does not influence SMEs' performance during the Covid-19 pandemic.

1.6 Scope of the Study

This study attempts to investigate the influence of ICT adoption on business performance amidst the Covid-19 pandemic. Geographically, the study will focus on SMEs in Benin City, Edo State. The study will employ a survey research design which will focus on determining: the current level of ICT adoption among SMEs in Nigeria during the Covid-19 pandemic; how the adoption of ICT affected the business performance of SMEs in Nigeria during the pandemic; the challenges and barriers that SMEs in Nigeria face in adopting and implementing ICT during the pandemic; and the key factors that influence the adoption and implementation of ICT by SMEs in Nigeria during the pandemic. The study is expected to be completed in 2023.

1.7 Significance of the Study

The study on the application of ICT on business performance amidst the Covid-19 pandemic in SMEs in Nigeria has significant implications for various stakeholders, including SME owners and managers, policymakers, academic researchers, and the wider society.

SME owners and managers in Nigeria can benefit from the findings of this study by gaining insights into the extent to which ICT adoption can enhance their business performance during a crisis such as the Covid-19 pandemic. The study can help SME owners and managers to identify the ICT tools and strategies that are most effective in improving their business performance and ensuring continuity during a crisis. The study can also highlight the challenges and barriers that SMEs face in adopting and implementing ICT, enabling SME owners and managers to make informed decisions about their ICT investments.

Policymakers in Nigeria can use the findings of this study to inform their policies and programs aimed at supporting SMEs in the country. The study can provide policymakers with evidence-based recommendations on how to promote ICT adoption among SMEs in Nigeria and how to address the challenges and barriers to ICT adoption. The study can also highlight the role of ICT in enhancing the competitiveness of SMEs and improving their survival rates, which can inform policies aimed at promoting SME development in Nigeria.

The wider society in Nigeria can benefit from the findings of this study by promoting economic growth and development in the country. SMEs play a critical role in the Nigerian economy, contributing to job creation, income generation, and poverty reduction. The study can help to strengthen the capacity of SMEs to withstand crises such as the Covid-19 pandemic, enhancing their resilience and contributing to the overall economic development of the country.

Researchers/scholars can benefit from the findings of this study by building on the existing body of knowledge on the role of ICT in enhancing business performance in the context of the Covid-19 pandemic. The study can provide a foundation for further research on the topic, including comparative studies across different countries and sectors. The study can also highlight the need for more research on the challenges and barriers to ICT adoption in SMEs in developing countries such as Nigeria.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter will take into consideration the different articles and studies conducted by other researchers and scholars in the area of ICT and on its effect on SMEs performance. This is apt because by taking into consideration these different articles this study will be built on a sound academic foundation and on the best authority in the field of learning.

2.2 Covid-19 Pandemic

The coronavirus is a virus that can lead to various illnesses such as the common cold, severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS) (David, 2020). In 2019, a new coronavirus emerged in China, causing a disease outbreak. This virus, known as the coronavirus or SARS-CoV2, was responsible for severe acute respiratory syndrome (SARS) (Mayoclinic, 2020). The disease caused by this novel coronavirus is called coronavirus disease 2019 (COVID-19) and was first reported to the World Health Organization (WHO) on December 31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency, and on March 11, 2020, it was declared a global pandemic, the first since the Swine flu influenza in 2009 (David, 2020).

COVID-19 is an infectious disease caused by a newly discovered virus. Most people infected with this virus experience mild to moderate respiratory illness and recover without requiring

special treatment. However, older adults and individuals with underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer are at a higher risk of developing severe illness (Mayoclinic, 2020).

The transmission of the COVID-19 virus occurs primarily through respiratory droplets released when an infected person coughs, sneezes, or talks. Therefore, it is crucial to practice respiratory etiquette, such as coughing into a flexed elbow. To prevent and slow down the spread of the virus, it is important to educate oneself about COVID-19, its transmission, and the disease it causes. Regularly washing hands, using alcohol-based hand sanitizers, and avoiding touching the face are effective measures to protect oneself and others from infection. Currently, there are no specific vaccines or treatments available for COVID-19, but several clinical trials are underway to evaluate potential treatments (World Health Organization, 2020).

COVID-19 was first identified in humans on January 7, 2020, in Wuhan, China (Nigeria Centre for Disease Control, 2020). The virus spreads through respiratory droplets released by infected individuals when they cough, sneeze, or talk. Close contact with an infected person or touching surfaces contaminated with the virus can lead to infection. On February 27, 2020, the first case of COVID-19 in Nigeria was confirmed in Lagos (Nigeria Centre for Disease Control, 2020).

Symptoms of COVID-19 include cough, shortness of breath, difficulty breathing, fever, and muscle pain, usually appearing within 14 days after exposure (Mayoclinic, 2020). This period between exposure and symptom onset is known as the incubation period. Other common signs and symptoms include fatigue, sore throat, loss of taste or smell, headache, and chest pain. Less

common symptoms such as rash, nausea, vomiting, and diarrhea have also been reported. Children generally experience mild illness similar to adults, and the severity of symptoms can vary from mild to severe. Individuals with pre-existing chronic medical conditions or weakened immune systems are more vulnerable to serious illness, similar to other respiratory diseases like influenza. In some cases, COVID-19 symptoms may worsen around a week after their onset, leading to shortness of breath and pneumonia (Mayoclinic, 2020).

The virus is highly transmissible among individuals, and ongoing research continues to shed light on its mode of transmission. According to the Nigeria Centre for Disease Control, the virus spreads through close contact with an infected person within a distance of about 6 feet (2 meters) (NCDC, 2021). Transmission occurs primarily through respiratory droplets produced during coughing, sneezing, or speaking. Although it is possible to contract the virus by touching surfaces contaminated with the virus and then touching the face, this is not considered the primary mode of transmission.

Risk factors for COVID-19 include recent travel to or residence in areas with ongoing community spread, close contact with infected individuals for more than 5 minutes, or exposure to coughing or sneezing from an infected person. While most individuals experience mild to moderate symptoms, the disease can lead to severe complications and even death, particularly in older adults and those with chronic medical conditions.

Complications associated with COVID-19 include pneumonia, organ failure, heart problems, acute respiratory distress syndrome, blood clots, acute kidney injury, and susceptibility to additional viral and bacterial infections (Mayoclinic, 2020).

2.3 SMEs and Nigerian Experience

The way small and medium-sized enterprises (SMEs) are defined varies greatly across and even within nations, commonly depending on factors such as the number of employees, annual revenue, and fixed assets, excluding land (Fatai, 2011; Khan & Dalu, 2015). In Nigeria, for instance, the Federal Ministry of Commerce and Industry (2015) describes SMEs as businesses with a total investment up to 750,000 naira (excluding land expenses but inclusive of capital) and employing up to fifty individuals.

Moreover, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2017) provides a more detailed classification. It differentiates small scale businesses as those employing ten to forty-nine individuals and generating an annual revenue of five to forty-nine million naira, while medium-sized businesses have fifty to ninety-nine employees and an annual turnover of fifty to four hundred and ninety-nine million naira.

Gulani and Usman (2018) offer another perspective, considering SMEs as organizations with at least five employees and a minimum capital of 5,000,000 naira. These various classifications align with the views presented by other researchers such as Fatai (2011), Khan and Dalu (2015), Peter *et al.* (2018), and Bakhtiari *et al.* (2020), acknowledging that the definitions of SMEs are

influenced by numerous factors like the country's level of trade, economic growth, and the unique challenges faced by the SMEs.

Ogechukwu (2009) also suggests additional criteria for SMEs classification, including capital expenditure, employee count, asset turnover, fixed capital investment, availability of plant and machinery, market share, and growth rate, among others. In the Nigerian context, SMEs are typically characterized based on an asset base (excluding land expenses), employee count, and yearly turnover. Therefore, for this study, the parameters set out by SMEDAN (2017) and CBN (2018) were applied to define SMEs.

In both the developed and developing world, Small and Medium-sized Enterprises (SMEs) form a crucial sector of the economy (Oyelarin-Oyeyinka, 2010). According to the International Finance Corporation (IFC), SMEs represent approximately 96% of all businesses in Nigeria (Oyelarin-Oyeyinka, 2010). Gbandi and Amissah (2014) supported this claim, stating that SMEs make up nearly 90% of the industrial and manufacturing businesses in Nigeria. However, despite their significant presence, SMEs contribute only around 1% to the nation's GDP (Gbandi & Amissah, 2014).

Geographically, SMEs in Nigeria are spread across different zones, forming clusters (Oyelarin-Oyeyinka, 2010). Notable clusters include Aba's fabric and leather industry in Abia State (East), the Nnewi vehicle cluster in Anambra State (East), and the Ikeja ICT cluster in Lagos State

(West), among others. Despite their geographical distribution, the majority of SMEs are located in the East, West, and North and are generally underfunded (Oyelarin-Oyeyinka, 2010). Notably, Anambra State in the East has the highest number of SMEs, particularly in the automobile industry, compared to other regions (Vanguard Newspaper, 2012).

Recognizing the significant role of SMEs in Nigeria's economy, numerous government administrations have initiated programs aimed at spurring SME growth since the country's independence. These efforts have led to considerable resource allocation aimed at advancing this sector (Taiwo, Falohun & Agwu, 2016). However, despite the substantial investment, SMEs' contribution to Nigeria's GDP remains minimal, and their growth has been less than robust (Taiwo, Falohun & Agwu, 2016). Factors such as difficulty accessing credit, unstable economic conditions due to inconsistent government policies, infrastructure deficiency, soaring operating costs, and lack of government support contribute to the high volatility and limited survival of Nigerian SMEs (Taiwo, Falohun & Agwu, 2016).

2.4 SMEs Business Performance

During the 16th century, the term "performance" held a different meaning as it pertained to military instructions and orders (Malik, Budhwar, Patel & Laker, 2021). However, in present times, performance is defined as the achievement of specific goals through the implementation of planned actions. In simpler terms, performance refers to the outcomes attained by employees

when they successfully complete assigned tasks within designated timeframes (Kaplan & Kaplan, 2018).

Measuring performance is crucial for effective organizational management. It serves as an indicator of how well an organization is progressing towards its goals and mission (Anwar & Abdullah, 2021). Organizational performance provides a comprehensive assessment of overall accomplishments over a specific period, facilitating comparisons among organizations within the same industry and over time (Saruchera & Asante-Darko, 2021). A business's performance validates its financial statements and acts as a gauge of its financial stability and productivity (Yang & Basile, 2022).

The purpose of performance evaluation is to provide valuable information to various stakeholders of an organization (Almashhadani, 2021). These stakeholders can include trade creditors, bondholders, lenders, investors, and employees, each with differing information requirements, leading to continuous monitoring of a company's performance (Kaur, 2022). While there are various methods to evaluate and compute business performance, each measure captures a distinct aspect of financial performance (Hamann & Schiemann, 2021).

The term "firm performance" refers to a business's ability to meet its financial objectives and market standards (Latifi, Nikou & Bouwman, 2021). It encompasses both the achievement of market-oriented and financial goals. Maduenyi, Oke, Fadeyi, and Ajagbe (2015) define firm performance as a combination of financial and nonfinancial indicators that reflect the degree of

goal attainment and results. A business's performance is determined by its effectiveness, efficiency, and the quality and quantity of work performed (Sitopu, Sitinjak & Marpaung, 2021). Examples of relevant metrics used to measure firm performance include increased sales, improved cost accuracy, enhanced interdepartmental coordination, better coordination with suppliers, and improved customer relations. Ultimately, any business initiative, including supply chain management, should contribute to enhanced firm performance (Maduenyi *et al.*, 2015).

Firm performance can be assessed in various ways, depending on the purpose of the evaluation. Kusumawati and Saputra (2022) employ the Balanced Scorecard framework to categorize firm performance into financial and non-financial components. Additionally, Marjan, Hasanah, Muliatie, and Usman (2022) note that firm performance can be measured using both financial and nonfinancial criteria. Financial goals encompass profitability, return on investment, sales growth, business performance, and overall effectiveness. Non-financial criteria include measures such as innovation performance and market share (Tuffour, Amoako & Amartey, 2022), as well as quality improvement, innovativeness, and resource planning. Most businesses evaluate their performance based on their "effectiveness" in achieving their mission, purpose, or objectives (Nduati & Wanyoike, 2022). Performance is a combination of the quantity and quality of work accomplished, taking into account resource utilization. It can be measured at the individual, group, or organizational level. Success is quantifiable in terms of a firm's productivity, effectiveness, and efficiency (Abdurrachman, Givan, Amalia, Riesmiyantiningtias, Kusuma &

Putra, 2022). Understanding the key elements that define each area of responsibility is crucial in defining the concept of performance. Additionally, firm performance can encompass any job-related activities that an employee is expected to perform and the level of proficiency demonstrated in those activities.

2.5 Maintaining Performance in a Post COVID Era Among SMEs

The global surge of the COVID-19 pandemic has prompted organizations to adopt novel approaches to conducting their operations. While the virus continues to spread worldwide, its impact on the workforce remains a significant concern, with a multitude of people being affected to varying degrees. The implementation of preventive measures such as face masks, physical distancing, lockdowns, and other interventions to curb the transmission of COVID-19 has resulted in adverse consequences for many employees, including job loss, salary reductions, uncertainty regarding leave duration, and even business closures (ILO, 2020).

According to the International Labour Organization (ILO) (2020), the pandemic has not only affected the remaining employees in organizations but has also brought about changes in employment arrangements, such as the introduction of part-time workers and telecommuters. Enabled by information and communication technology (ICT), some employees are now able to carry out their job responsibilities from the comfort of their homes. However, research conducted by the ILO (2020) indicates that employees who work from home with the aid of ICT tend to work longer hours, even during nighttime. This finding aligns with a study by McCulley (2020),

who observed that working from home often leads employees to dedicate extra hours to organizational projects.

As a result of the work-from-home policy adopted by most organizations, work groups have become fragmented. Reisenwitz (2020) noted that employees now spend more time engaging in team check-ins and one-on-one meetings. Additionally, according to Spataro (2020), employees who bear the responsibility of caring for dependent family members may find themselves with additional time to fulfill their organizational duties. However, Spataro (2020) also warns that this situation may exert mounting pressure on already overworked employees, potentially leading to disengagement from their tasks due to fatigue.

Furthermore, Bick (2020) highlights that employees relying on ICT to carry out their assigned responsibilities may lack the necessary experience, particularly in the context of working from home during and after the COVID-19 crisis. This "new normal" requires employees to adapt and master new practices over time. The study also emphasizes that employees utilizing ICT in isolation may encounter uncertainties regarding crucial organizational matters and may face delays in executing their assigned tasks due to a lack of immediate technical support.

To ensure employee performance in the COVID-19 and post-COVID-19 era, the ILO (2020) proposes several recommended actions for organizations. Firstly, organizations should consult with employees regarding their familiarity with existing ICT plans and their willingness to adapt. This consultation aims to preserve the organizational culture, relevant work plans, and

procedures, as ICT plans can be further adjusted to meet evolving organizational needs. Secondly, managers need to communicate the priorities of the digitization plan and discard ideas that are irrelevant or unrealistic given the organization's current circumstances. Thirdly, if an organization adopts telecommuting as its ICT plan, it must decide on a unified signal or network provider and ensure that all members of the organization are aligned with this choice. Fourthly, larger work groups should be divided into smaller units, each with a clear mission and defined goals. Managers must establish effective communication and reporting channels to facilitate the smooth execution of assigned tasks. Fifthly, employees should be encouraged to promptly report any feelings of stress resulting from their workload, enabling the organization to monitor and address signs of work burnout. Sixthly, conducting skill-mapping among employees can ensure that energetic workers are deployed as substitutes for those who are overstretched, creating a sense of balance. Seventhly, clear procedures for carrying out assigned tasks should be communicated to employees to provide a sense of certainty. Additionally, employees should be asked to share examples of how they intend to structure their daily routines to accommodate the new telecommuting schedule. Finally, managers of telecommuters must recognize that when an employee is offline, it may be an opportune time for them to attend to other tasks.

According to Sorenson (2016), one approach utilized by managers to evaluate the performance of employees who utilize information and communication technology (ICT) in their job responsibilities, including telecommuters, is through the implementation of management by

results. This entails managers clearly identifying the prioritized objectives of a given task, assessing the progress made, and granting employees the autonomy to organize their work plans without constant interference. To effectively implement the management by results strategy, Sorenson (2016) suggests that managers should take the following actions: ensure that expected outcomes are unambiguous, clearly define the criteria for satisfactory work, provide regular and timely feedback on employees' performance, objectively highlighting areas of improvement, and offer recognition for exemplary work.

In accordance with the International Labour Organization (ILO, 2020), the COVID-19 pandemic has accelerated the widespread adoption of ICT in the economic and operational processes of organizations globally. This has led to an increased utilization of ICT technology in employees' work patterns, enabling some individuals to work remotely. Prior to the pandemic, ICT within organizations significantly contributed to enhancing employment processes and workplace conditions (ILO, 2019). However, as pointed out by Gomez-Jordana Moya (2020), the distribution of ICT is not equitable, particularly in Sub-Saharan regions where frequent power outages may pose challenges in engaging in ICT-based work processes.

2.6 Concept of Information Communication Technologies (ICTs)

Legner *et al.* (2017) state that Information and Communication Technology (ICT) encompasses technological advancements at the individual, organizational, and societal levels, facilitating seamless operations for organizations and individuals. Gbadegeshin (2019) further defines ICT

as the application or adoption of modern ICT in various human activities, encompassing personal, economic, social, and political spheres. Urbach and Ahlemann (2019) provide a broader definition of ICT, highlighting its utilization of technological innovations in the business environment to positively impact processes, supply chains, and sales. This comprehensive definition integrates the primary objectives of organizations adopting ICT, including productivity, value creation, increased sales, and improved customer interaction.

ILO (2019) emphasizes that ICT adoption in an organization's business processes may involve a range of technologies, some of which are still in early stages of development and use. Regarding the organizational workplace, De Bruyne and Gerritse (2018) suggest that the ICT working environment influences how individuals engage and collaborate with others, including stakeholders. As ICT remains a dynamic and significant aspect of global business, it continues to reshape and redefine the way organizations operate (Michael, 2018). Consequently, the adoption of ICT may lead to changes in employees' roles and responsibilities, necessitating the acquisition of new competencies to remain productive (Brennen & Kreiss, 2016).

To fully leverage the benefits of ICT, organizations must ensure the integration of ICT technology across all areas and aspects of their operations, encompassing technological, cultural, and service delivery changes (Hewlett Packard, 2020). This holistic process is known as ICT transformation. Savic (2019) explains that ICT transformation involves digitizing an

organization's information capacity, procedures, and strategy, representing a comprehensive overhaul that aligns with the organization's goals and objectives.

2.7 Effect of ICT Innovation on SMEs

Fichman, Dos Santos, and Zheng (2014) posit that the world is embarking on a prosperous era characterized by ICT technology, as there is a continuous rise in the development of novel ICT solutions. Nylen and Holmstrom (2015) suggest that the significant growth of ICT can be attributed to its fundamental nature and ease of adaptability, setting it apart from the industrial era. Tilson, Lyytinen, and Sorensen (2012) express the view that ICT profoundly impacts society by fostering convergence across all sectors of the economy. This notion is rooted in the belief that digitized media drives transformative changes in production across social, cultural, and political structures (Brennen & Kresis, 2016). Hence, Oblak and Petric (2005) propose that to effectively address the issue of ICT convergence, the changes resulting from ICT innovation must be seamlessly integrated into every facet of SMEs' information infrastructure. Watson (2012) identifies the necessary infrastructures for such integration as network, device, functional, and market convergence.

In the context of work, technologies play a supportive role in accomplishing employees' tasks, thereby influencing the nature of those tasks (Cascio & Montealegre, 2016; Parker, Van den Broeck, & Holman, 2017). For example, assembly line technology was designed to enhance productivity in manufacturing, but it also brought about significant changes in the nature of work

tasks (Forman, King, & Lyytinen, 2014). Similarly, the transition from the industrial age to the current information age highlights the prominence of ICT, defined as "any electronic device or technology capable of gathering, storing, or transmitting information" (Day, Paquet, Scott, & Hambley, 2012, p.473). Most scholars have primarily explored the direct relationship between ICT and individual behaviors and outcomes, often overlooking its impact on work itself. Consequently, one line of research has focused on the "potential actions facilitated by new technologies for users" (Leonardi & Vaast, 2017, p. 152), such as the ability of ICT to enable knowledge sharing online (Haas, Criscuolo, & George, 2015). Another line of inquiry has examined the direct psychological effects of ICT use, including psychological gratification (e.g., meeting the needs for autonomy, relatedness, and competence; Cascio & Montealegre, 2016) or the cognitive biases induced by ICT (e.g., Clark, Robert, & Hampton, 2016; Elsbach & Stigliani, 2019).

Research has also explored how changes in work design act as a mechanism linking technology use and employee outcomes (e.g., Bala & Venkatesh, 2013; Gibson, Gibbs, Stanko, Tesluk, & Cohen, 2011). For instance, drawing upon work design theories, Wall *et al.* (1990) introduced a theoretical framework that elucidates how advanced manufacturing technology can influence critical work characteristics, subsequently impacting employee outcomes. We leverage such perspectives to examine which elements of an individual's job or role are influenced by ICT use,

thereby shedding light on the underlying processes that connect ICT use and employee performance (Grant & Parker, 2009; Parker, 2014; Parker, Morgeson, & Johns, 2017).

Schmidt, Drews, and Schirmir (2017) contend that with the exponential growth of ICT, businesses face immense pressure to adapt and outperform competitors by embracing technological change and shifting their focus from traditional and outdated services to more automated approaches. Apart from facilitating automated production processes, SMEs ICT may also encompass mediums that enable employees to carry out their job responsibilities remotely.

2.8 Significance of ICT application on SMEs

Information and Communication Technology (ICT) has ushered in a profound transformation within the workplace, fundamentally altering the operations of Small and Medium-sized Enterprises (SMEs) and redefining the nature of tasks performed by employees. To comprehend the multifaceted impact of ICT on the workplace, it is essential to examine it through various lenses.

Firstly, ICT has facilitated a surge in connectivity and collaboration among employees, fostering seamless interactions both within and beyond SMEs. This heightened connectivity has led to improved productivity and efficiency as teams employ online collaboration tools and platforms to work together, irrespective of geographical distances (Davenport, 2013; Laudon & Laudon, 2016).

Secondly, ICT has given rise to flexible work arrangements, such as telecommuting and remote work, granting employees the freedom to work from any location. This shift has resulted in benefits such as enhanced work-life balance and increased job satisfaction, while SMEs have leveraged ICT to attract and retain top talent (Golden, 2017; Frost, 2020).

Thirdly, the automation of tasks through ICT and the integration of artificial intelligence (AI) have reduced the need for manual labor and enhanced operational efficiency (Brynjolfsson & McAfee, 2014). Automation and AI also have transformative potential, necessitating ongoing upskilling and reskilling efforts within SMEs to adapt to evolving job roles (Bessen, 2020).

Fourthly, ICT has ushered in an era of data-driven decision making, as digitalization generates vast quantities of data in the workplace. This wealth of data is harnessed through technologies like big data analytics and data visualization tools, allowing SMEs to make informed choices and gain valuable insights (Marr, 2015; Lohr, 2019).

Moreover, ICT has significantly boosted workplace efficiency and productivity by streamlining processes and reducing manual labor. Automation and the adoption of digital tools enable employees to concentrate on value-added activities, while enterprise resource planning (ERP) systems optimize operations and resource allocation (Brynjolfsson & McAfee, 2014; O'Brien & Marakas, 2018).

Furthermore, the introduction of ICT has reshaped job design and skill requirements within SMEs. Certain tasks have become obsolete, necessitating a blend of technical proficiency and cognitive abilities in modern job roles (Levy & Murnane, 2017). Continuous learning and adaptability are now paramount.

The seventh lens reveals that ICT has blurred the boundaries between work and personal life. While employees can work remotely, it may pose challenges in maintaining clear distinctions between work and personal time. SMEs must provide support and solutions to help employees effectively manage work-life integration (Golden, 2017; Shockley et al., 2017).

Additionally, as ICT's influence in the workplace has grown, so have concerns about cybersecurity and data privacy. SMEs must prioritize robust security measures to safeguard sensitive information and protect against cyber threats, ensuring compliance with data privacy regulations to maintain trust with stakeholders (Dhillon & Moores, 2019; Schreider, 2019).

Furthermore, ICT has deeply influenced organizational culture within SMEs. Digital communication tools have introduced more informal and rapid modes of interaction, altering traditional hierarchical communication structures (Laudon & Laudon, 2016). SMEs must foster a culture that embraces digital transformation and harnesses ICT effectively (Kane et al., 2015).

Lastly, the abundance of information made possible by ICT has led to the challenge of information overload, impacting employees' ability to filter and process information effectively.

SMEs must provide training and tools to assist employees in managing information and avoiding cognitive overload (Eppler & Mengis, 2004; Marr, 2015).

In sum, ICT's impact on the workplace is multifaceted, encompassing connectivity, flexibility, automation, data-driven decision-making, efficiency, job design, work-life integration, cybersecurity, organizational culture, and the challenge of information overload. SMEs must navigate these various dimensions to fully harness the benefits of ICT while addressing associated challenges.

2.9 Challenges Facing SMEs toward ICT Adoption/Application

Small and Medium Enterprises (SMEs) are pivotal components of the Nigerian economy, contributing significantly to employment generation, poverty alleviation, and overall economic advancement. Nevertheless, the incorporation and effective utilization of Information and Communication Technology (ICT) in SMEs confront multifaceted challenges and impediments, which have been exacerbated by the ongoing global pandemic. This section endeavors to provide an encompassing examination of the primary hurdles and obstacles faced by SMEs in Nigeria as they grapple with the adoption and implementation of ICT during the pandemic.

A primary issue that hampers SMEs in Nigeria is their constrained financial resources, which limits their ability to invest in ICT infrastructure, hardware, software, and skilled personnel. As elucidated by Adeyinka et al. (2020), SMEs often grapple with insufficient capital to procure and

maintain ICT equipment, consequently hindering the effective adoption and implementation of ICT solutions.

Furthermore, the deficiency of ICT skills and awareness among SME owners and employees in Nigeria presents a significant impediment. The limited digital literacy among these individuals obstructs the successful integration of ICT tools and technologies into business operations, as emphasized by Yusuf (2018).

Another noteworthy challenge is the inadequate state of ICT infrastructure in Nigeria, which poses a substantial barrier to SMEs during the pandemic. Issues such as inconsistent electricity supply, subpar internet connectivity, and outdated telecommunications infrastructure impede the seamless incorporation of ICT systems into SME operations, as outlined by Omolara and Waziri (2019).

Cybersecurity concerns loom large over SMEs in Nigeria, with the absence of robust security measures leaving them susceptible to cyberattacks, data breaches, and financial losses, as pointed out by Okeke and Obiekwe (2021). Addressing these concerns is pivotal for enhancing ICT adoption and implementation among SMEs during the pandemic.

Resistance to change is another common hurdle encountered by SMEs in Nigeria, with business owners and employees often hesitant to embrace new technologies due to fears of job displacement, workflow disruption, or a perception that ICT implementation is unnecessary, as

highlighted by Okuboyejo et al. (2020). This resistance hampers the successful integration of ICT into SME operations.

Furthermore, the exorbitant cost of internet connectivity in Nigeria acts as a substantial barrier to SMEs, hindering their ability to adopt and effectively utilize ICT. High data charges, limited broadband coverage, and the need for consistent internet access impede the seamless integration of ICT solutions into SME operations, as indicated by Owusu-Ansah et al. (2020).

Moreover, the lack of trust in e-commerce platforms and online transactions is a significant challenge for SMEs in Nigeria. Concerns related to online security, fraudulent activities, and consumer protection hinder the adoption and implementation of e-commerce and online payment systems by SMEs, as noted by Ukpabi et al. (2020).

Additionally, the absence of standardized ICT solutions and interoperability among different systems creates barriers for SMEs in Nigeria. Incompatibility between various hardware, software, and ICT platforms inhibits seamless data exchange and collaboration among SMEs, impeding their capacity to leverage ICT for growth and efficiency, as elucidated by Obidike et al. (2020).

Insufficient government support and policies tailored to the specific needs of SMEs also contribute to the challenges of ICT adoption in Nigeria. Inadequate funding, limited access to

ICT training programs, and a lack of supportive regulations hinder SMEs' ability to harness ICT for business growth and competitiveness, as highlighted by Olatokun and Salimon (2020).

Furthermore, the lack of proper maintenance and support services for ICT infrastructure adds to the challenges faced by SMEs. Without regular maintenance and technical support, SMEs experience system breakdowns, reduced efficiency, and increased downtime, as emphasized by Onuoha et al. (2020).

Moreover, the absence of locally relevant ICT content and applications tailored to the Nigerian market is a significant obstacle for SMEs. Many off-the-shelf ICT solutions may not align with the specific needs and operational processes of Nigerian SMEs, making it difficult for them to fully adopt and implement ICT tools, as discussed by Eze et al. (2020).

Lastly, SMEs in remote or underserved areas encounter difficulties in accessing reliable ICT infrastructure, further hindering ICT adoption. The unequal distribution of ICT facilities, particularly in rural areas, exacerbates the digital divide and impedes inclusive growth, as observed by Osondu-Oti (2020).

2.10 Factors Affecting ICT Adoption Among SMEs

The adoption and utilization of Information and Communication Technology (ICT) among Small and Medium-sized Enterprises (SMEs) in Nigeria have gained increasing significance, especially in the context of the COVID-19 pandemic. ICT presents opportunities for improving business

operations, enhancing efficiency, and adapting to evolving market conditions. Nevertheless, a multitude of factors significantly influence the adoption and implementation of ICT by SMEs in Nigeria, necessitating a comprehensive understanding of these factors to effectively support SMEs in harnessing ICT's benefits during the pandemic. This section delves into the major factors shaping the adoption and implementation of ICT by SMEs in Nigeria amid the pandemic.

One pivotal factor is infrastructure and connectivity, where limited access to reliable internet connectivity and insufficient ICT infrastructure can obstruct SMEs from effectively embracing and utilizing ICT tools and services. Inadequate infrastructure poses challenges related to accessing online platforms, engaging in e-commerce activities, and utilizing cloud-based services, highlighting the need for improved infrastructure and connectivity to facilitate seamless ICT integration (Kamel, 2019).

Affordability and cost are equally critical determinants, with many SMEs constrained by limited financial resources, making it challenging to invest in costly ICT equipment and software. During periods of economic uncertainty, such as the pandemic, the expenses associated with ICT hardware, software, and maintenance become particularly prohibitive, underscoring the importance of government incentives, subsidies, and partnerships with ICT providers to alleviate the financial burden on SMEs and promote broader adoption (Olawumi, 2020).

Digital skills and literacy levels among SME owners and employees have a profound impact on ICT adoption. Limited digital literacy can hinder effective ICT tool utilization and the realization

of potential benefits. Therefore, SMEs must invest in training and capacity-building programs to enhance the digital skills of their workforce. Collaborative efforts with educational institutions and government initiatives can further support the development of digital skills and literacy within the SME sector (Adelakun et al., 2020).

The regulatory environment surrounding ICT adoption represents another crucial factor influencing SMEs. Complex regulations, bureaucratic obstacles, and inconsistent policies can discourage SMEs from embracing ICT. A clear and supportive regulatory framework, which promotes digital innovation, safeguards data privacy, and facilitates e-commerce, can create a favorable environment for ICT adoption among SMEs (Braun and Thomas, 2021).

Trust and security concerns stand as significant barriers to ICT adoption, with SMEs apprehensive about cyber threats, data breaches, and privacy violations. Building trust in ICT systems and addressing security issues are essential to enable SMEs to effectively adopt and implement ICT solutions. Measures such as cybersecurity awareness campaigns, data protection regulations, and the availability of reliable security solutions can help mitigate these concerns (Ifeachor, 2021).

Access to finance is a vital determinant of SMEs' ability to invest in ICT. Limited access to capital and high-interest rates can impede SMEs' efforts to acquire necessary ICT infrastructure and upgrade existing systems. Enhancing SMEs' access to affordable financing options through

financial institutions, government initiatives, and venture capital support can empower them to invest in ICT solutions (Ifeachor, 2021).

Understanding market demand and customer behavior is crucial for SMEs contemplating ICT adoption, especially in light of pandemic-induced shifts in consumer behavior. The emphasis on online presence, e-commerce capabilities, and digital marketing strategies requires SMEs to align their ICT adoption with evolving market dynamics to remain competitive (Kamel, 2019).

Effective technical support and maintenance services are vital for SMEs embarking on ICT adoption. SMEs often lack internal expertise to handle technical issues, maintain ICT systems, and execute upgrades. The availability of reliable technical support services, both from ICT vendors and external consultants, can facilitate the adoption and smooth functioning of ICT solutions (Olawumi, 2020).

Interorganizational collaboration between SMEs and ICT providers, industry associations, and government agencies can expedite ICT adoption. Joint initiatives, knowledge-sharing platforms, and partnerships can help SMEs access resources, share best practices, and surmount barriers to ICT adoption. Such collaborations also enable SMEs to leverage collective expertise and stay updated with emerging technologies and trends (Adelakun et al., 2020).

Perception and attitude towards ICT adoption significantly influence SMEs' decision-making processes. Resistance to change, technological apprehension, and skepticism about ICT benefits

can obstruct adoption efforts. To address these perceptual barriers, it is essential to raise awareness about the potential advantages of ICT, showcase success stories, and provide support networks that encourage SMEs to embrace ICT (Braun and Thomas, 2021).

Lastly, cultural factors, including traditional business practices and organizational culture, can impact ICT adoption within SMEs. Businesses entrenched in traditional practices may resist change and prefer conventional methods over digital solutions. Recognizing and addressing cultural factors through targeted interventions, training programs, and gradual transition strategies are vital to facilitate successful ICT adoption (Ifeachor, 2021).

2.11 Theoretical Review

Resource Based Theory (RBT)

Birge Wenefeldt introduced this theory in 1984, proposing that companies gain a competitive edge and achieve superior performance by strategically combining valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). The Resource-Based Theory (RBT) highlights the utilization of these resources to implement effective strategies and develop capabilities that sustain competitive advantage (Barney, 1991). Additionally, RBT emphasizes the examination of a firm's unique amalgamation of assets, skills, capabilities, and intangibles to identify its strategic advantages as an organization. Proponents of RBT argue that it is more practical to exploit external opportunities by leveraging existing resources in novel ways rather than

acquiring new skills for each opportunity. In the RBT model, resources play a crucial role in driving organizational performance. These resources can be categorized as tangible and intangible. Tangible assets include physical items like land, buildings, machinery, equipment, and capital, which offer limited advantage in the long run as rivals can easily acquire similar assets. On the other hand, intangible assets, such as brand reputation, trademarks, and intellectual property, provide unique advantages that cannot be readily purchased in the market. Building brand reputation takes time and cannot be easily replicated by other companies. The core principle of RBT is that each firm possesses a distinct combination of resources, both tangible and intangible, along with organizational capabilities, which contribute to its fundamental differences (Anand, Wamba & Sharma, 2013). Competencies developed from these resources serve as the foundation for a firm's competitive advantage (Pearce & Robinson, 2007). Consequently, the theory places emphasis on internal resources rather than the external environment as the primary drivers of performance and competitive advantage. In the context of this study, the following factors are considered crucial firm assets to be included in the framework: computing resources and capabilities, top management support, ICT skills, and human capital. By adopting ICT and effectively utilizing these resources, competencies can be developed, ultimately enhancing the performance of SMEs.

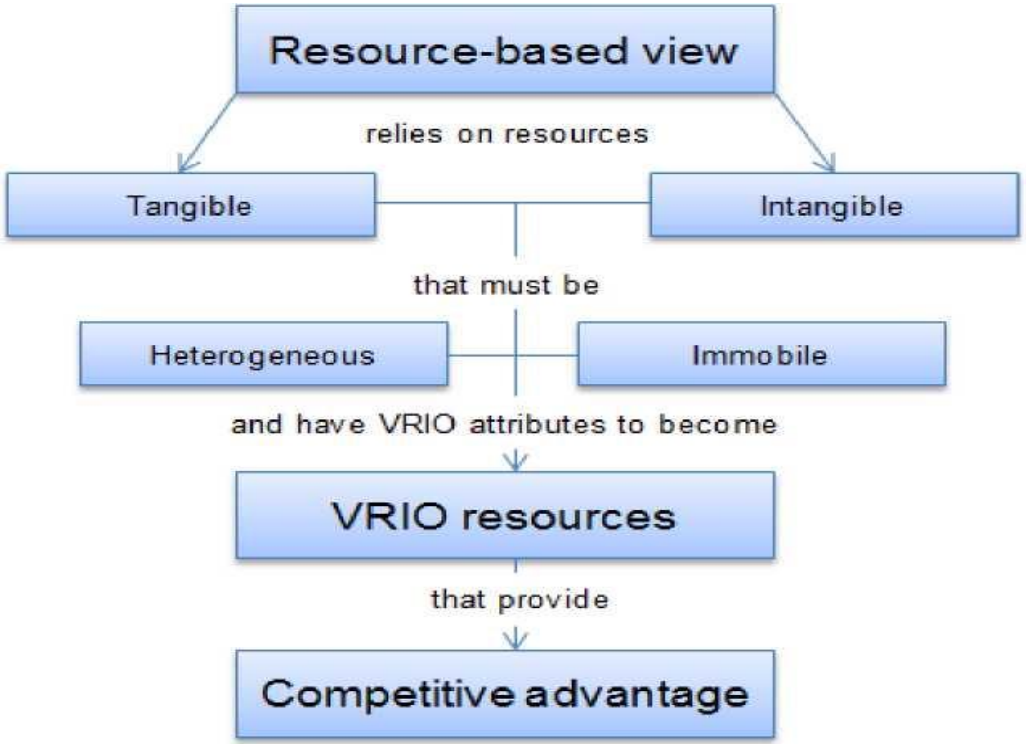


Figure 2.1 Resource Based Theory (**Barney, 1991)**

Task-Technology Fit Theory (TTF)

The theory presented by Goodhue and Thomson (1995) introduced the TTF theory, which posits that the impact of information technology on individual performance and its usage depends on how well the features of the technology align with the tasks performed by the users (Goodhue & Thompson, 1995). They developed a conceptual model called the technology-to-performance chain to elucidate the relationship between information technology utilization and individual performance. This framework was built upon two distinct research streams: the utilization of information technology in relation to attitude and behavior, and the examination of "fit" in

studies investigating the performance of individual information technology users.

Venkatraman (1989) extensively discussed the concept of "fit" assessment in strategy research, presenting six alternative perspectives and approaches. These include fit as a moderation perspective, where fit acts as a moderating variable between an independent variable (predictor) and a dependent variable (criterion). Fit can also be viewed as a mediation perspective, indicating the existence of indirect effects between antecedent and consequent variables. Fit can be seen as a matching perspective, representing a theoretical alignment between two related variables. Additionally, fit can be understood as gestalts, which refer to the internal coherence among a set of theoretical attributes. Fit can also be perceived as profile deviation, representing the degree of adherence to a specified profile. Lastly, fit can be viewed as co-variation, which refers to the pattern of internal consistency among a set of theoretically related variables.

Goodhue and Thompson (1995) suggest that the alignment between task characteristics and information system features serves as the foundation for evaluating individual decision-making quality. Information systems provide users with the necessary information to perform their tasks effectively. Thus, the close relationship between information technology and individual performance (Teo & Men, 2008) or utilization (Strong *et al.*, 2006) stems from the fit between information technology, which supplies users with relevant information, and the task requirements.

The TTF theory proposes that a stronger alignment between technology and tasks leads to

improved performance. Goodhue and Thomson (1995) note in their study that there is supporting evidence for TTF in relation to system and task characteristics, as well as substantial evidence regarding performance that necessitates the inclusion of TTF and utilization. In line with the TTF theory and the aforementioned explanations, the adoption of ICT by SMEs can enhance performance. The fit between the task and technology in the study refers to the relevant ICT skills and appropriate ICT resources implemented to enhance performance.

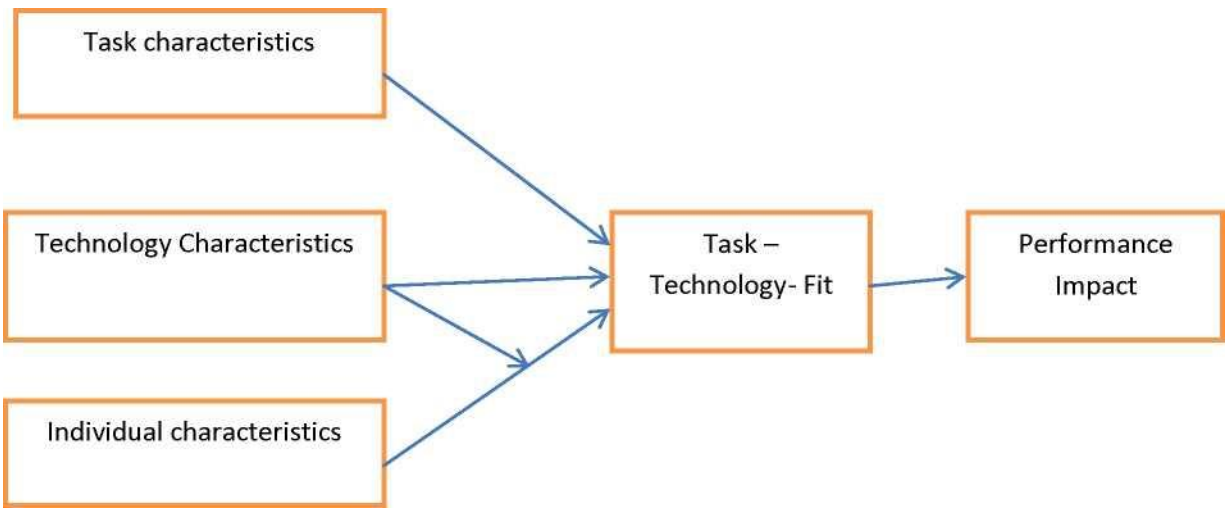


Figure 2.2 Tasks -Technology Fit Theory **(Goodhue and Thomson, 1995).**

Decomposed Theory of Planned Behavior (DTBP)

This theory, proposed by Taylor and Todd in 1995, builds upon the Theory of Planned Behavior by breaking down attitudinal belief, normative belief, and control belief into multiple dimensional constructs. This approach enhances the descriptive power and provides a more accurate understanding of the factors influencing behavior. Koeder *et al.* (2011) conducted a

study focusing on normative factors to identify what encourages consumers to purchase e-book readers in Japan. Their findings revealed that attitudes towards connected e-book readers played a crucial role in purchase behavior. Goodhue and Thompson (1995) conducted research exploring the relationship between user task requirements, system functionality, and utilization. They argued that utilization should be measured as the proportion of times users choose to utilize the system.

Regarding this study, the attitudinal beliefs, normative belief, and control beliefs of SME members can drive them to utilize ICT in order to enhance their performance. The impact of SME performance occurs when the technology aligns with user needs and offers features that support task requirements. The concept of Perceived Behavior Control is rooted in the Self-Efficacy Theory (SET) established by Bandura (1986). Self-efficacy refers to individuals' judgments of their ability to execute actions required to handle potential situations. The ICT infrastructure described in the conceptual framework represents the features that facilitate the alignment of requirements. In this study, ICT skills refer to individuals' judgments of their ability to execute actions required to handle potential situations.

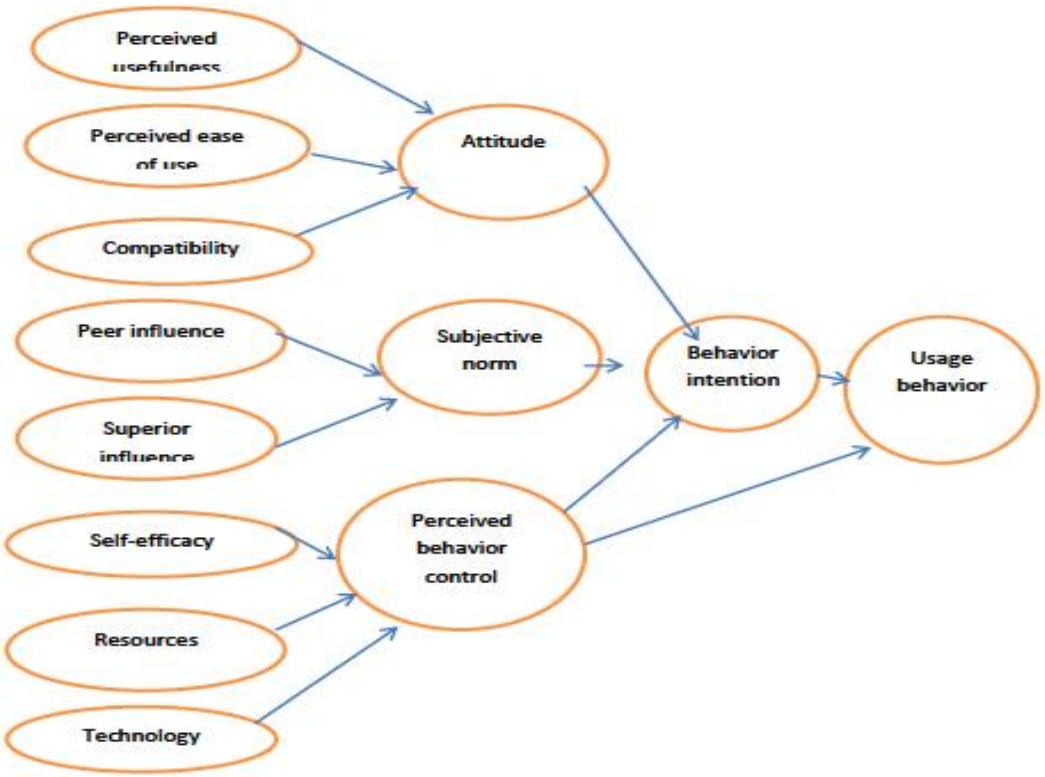


Figure 2.3 Decomposed Theory of Planned behavior (**Goodhue Thomson, 1995**)

2.12 Theoretical Framework

This research will be hinged on the resource based theory. Resource-Based Theory (RBT) offers an insightful lens for understanding how the internal resources of an organization, such as Information and Communication Technology (ICT), can confer sustainable competitive advantage, especially in dynamic environments. Amidst the COVID-19 pandemic, the external environment of Small and Medium-sized Enterprises (SMEs) underwent significant upheaval, necessitating swift operational adjustments. By employing RBT as the theoretical framework,

researchers can dissect how SMEs leveraged ICT capabilities as strategic resources to adapt, innovate, and maintain or enhance their business performance. This perspective not only underscores the intrinsic value of ICT resources but also emphasizes how their effective management and deployment can shape the resilience and competitiveness of SMEs during unprecedented challenges.

2.13 Empirical Review

Enomate and Audu (2021) conducted a study in Nigeria to investigate the impact of information and communication technology (ICT) on the financial performance of non-financial service firms listed on the Nigeria Stock Exchange. The data for the study was collected from a sample of twenty non-financial service companies listed in the Nigeria Stock Exchange within the period of 2016-2020, specifically from industries such as foods and beverages, pharmaceuticals, footwear, chemicals, and paints. The researchers employed an ex post facto research design and analyzed the data using descriptive and inferential statistics, including measures like arithmetic mean, standard deviation, minimum and maximum values, and the Ordinary Least Squares (OLS) regression technique. The findings revealed a positive effect of investment in ICT infrastructure on the financial performance of the listed non-financial firms, while the impact of ICT personnel on financial performance was positive but insignificant.

Akinboade (2020) conducted a study in Lagos State, Nigeria, to explore the usage of ICT and its impact on the financial performance of manufacturing companies. The study focused on quoted

manufacturing companies in Lagos State and employed a survey design. The primary and secondary data were collected, with primary data obtained through interviews and questionnaires, and secondary data retrieved from the published annual reports of the companies over a period of 10 years. A total of 44 companies were sampled, but only 31 companies returned the questionnaires. The results indicated that the sampled quoted companies had implemented ICT in various departments, with varying levels of usage. The study found a positive relationship between investment in ICT and financial performance, as evidenced by significant differences in sales turnover, profit before tax, profit after tax, and net assets/shareholders' fund. However, there was no significant difference in earnings per share.

Al-Qudah (2019) examined the relationship between information technology and the financial performance of Jordanian industrial companies listed on the Amman Financial Market. The study employed descriptive and analytical statistical techniques and included participants such as company managers, financial managers, and IT managers. Out of 120 distributed questionnaires, 100 were returned and considered valid for analysis. The results indicated a positive relationship between the financial performance of Jordanian industrial companies and information technology.

Penalba *et al.* (2015) conducted a study in Panama to analyze the effects of information and communication technology on the level of innovation in small and medium-sized enterprises (SMEs). The study included a sample of 615 micro, small, and medium-sized enterprises. The findings demonstrated that information and communication technologies play a crucial role in

fostering innovation, not only in large corporations but also in SMEs. The study highlighted the significant positive effects of information and communication technologies on innovation activities within companies.

Tanaka and Sithole (2015) investigated the impact of information technology knowledge and skills required by accounting graduates. The research focused on assessing the proficiency of accounting graduates in various IT skills and knowledge areas relevant to their roles. The study gathered data from employers regarding ten specific IT skills and knowledge areas expected from accounting graduates. The results revealed a discrepancy between the training provided to students and the expectations of employers, indicating a need for adjustments in academic curricula to align with industry requirements.

Saban and Efeoglu (2015) examined the effects of information technology on managerial accounting in the Turkish iron and steel industry. The study aimed to understand the changes brought about by information technologies in managerial accounting practices and the role of managerial accountants in Turkish iron and steel businesses. The researchers employed a survey method, collecting data from managerial accountants in Turkish iron and steel production companies to determine the extent of these changes.

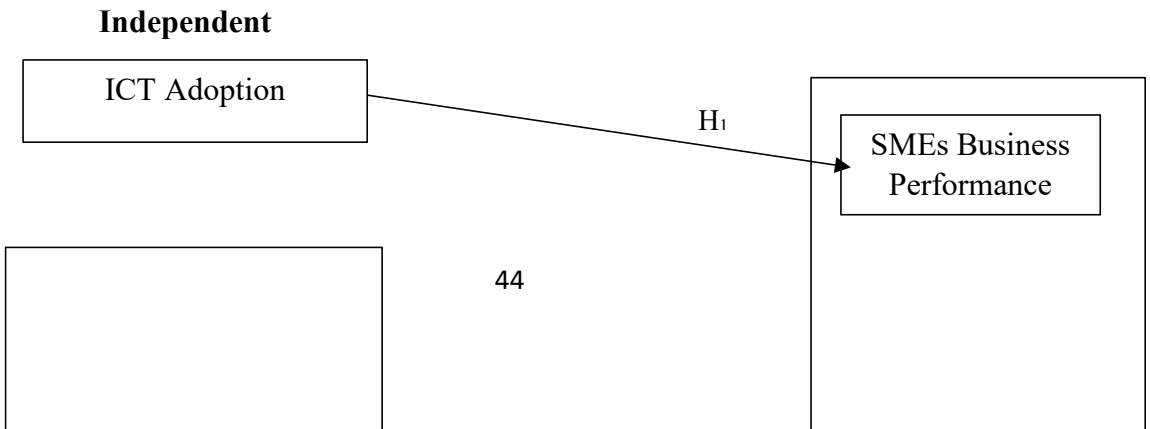
Adekunle and Rafiu (2014) explored the impact of Information and Communication Technology Cost Efficiency (ICTCE) on the performance of banks in South Africa. The study utilized annual data from 1990 to 2012 obtained from Bank scope – World banking information source. The

researchers analyzed the data using a dynamic panel environment and confirmed the robustness of the results through residual cointegration regression analysis. The findings indicated that ICT usage enhances the return on capital employed and return on assets in the South African banking industry.

Sadeghimanesh and Samadi (2013) investigated the effect of information technology on the financial performance of banks listed on the Tehran Stock Exchange. The study involved 183 staff experts from information technology and finance departments of these banks. The data collected through questionnaires were analyzed using two-variable linear regression tests. The results demonstrated significant effects of IT knowledge, IT operations, and IT infrastructures on the financial performance of the banks.

2.14 Conceptual Framework

In the framework conceptual framework of the study, ICT adoption is hypothetically linked to SMEs business performance, while the factors; access to resources, technological capability, and perceived usefulness of ICT, are hypothetically linked to the level of ICT adoption by SMEs. The conceptual framework is presented in figure 2.4 below.



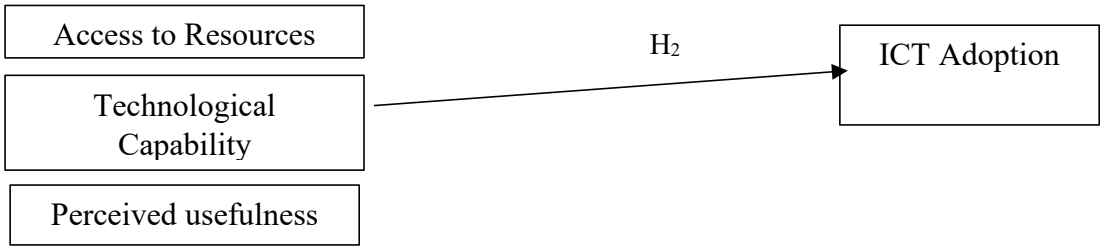


Figure 2.4: Conceptual Framework (Author's Construction, 2023)

2.15 Research Gap

Based on the review of related literature, in the context of the Covid-19 pandemic, several studies (Duan *et al.*, 2021; Ahmed *et al.*, 2021) have examined the impact of ICT adoption on business performance. Duan *et al.* (2021) found that the use of ICT tools such as video conferencing and online collaboration software can help SMEs maintain business operations during the pandemic. Similarly, Ahmed *et al.* (2021) argued that ICT adoption is critical for business continuity during the pandemic. However, few studies (Akpan, Udoh & Adebisi, 2022; Aladejebi, 2020) have specifically investigated the application of ICT on business performance amidst the Covid-19 pandemic in SMEs in Nigeria. This study seeks to fill this gap on how ICT adoption affect SMEs business performance in Nigeria amidst the pandemic.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter will focus on the approach adopted by the researcher in conducting the study. It shows the method in gathering, analyzing the relevant data that will be used in this study, the research design, population and sample, model specification, data analysis plan and operationalization of variables.

3.2 Research Design

This study will utilise the descriptive survey research design. The descriptive design portrays the relationship between variables as they exist. It distinguishes and acquires data on the qualities of a specific issue or inquiry (Bryman, 2015). The study utilizes descriptive research designs because according to Bushiri (2015), descriptive research design enjoys the benefit of delivering

great measure of reactions from a wide scope of individuals. Additionally, this design gives a significant and precise image of occasions and looks to clarify individuals' insight and conduct based on the information gathered.

3.3 Population and Sample of the Study

The population of this study will consist of owners of selected SMEs in Benin City, Edo State. However, the researcher assumes an infinite population as the researcher cannot determine the actual number of SMEs in Benin City, Edo State due to the complexities involved.

3.4 Sample Size Determination and Sampling Techniques

Due to the difficulty associated with ascertaining the exact population of the study, a sample size of one hundred (100) owners and managers of selected business organisations in Benin City will be adopted. The sample size is deemed adequate for the study and it is also in agreement with the view of Dilman, (2000); Hill, Briely & Macdougall, (2013) who stated that a sample of 100 and above is sufficient to provide good representation of the population or any subject investigated. Furthermore, the simple random sampling technique which will give every unit and element in the population equal chance of being selected will be adopted in the distribution of the questionnaires to the respondents.

3.5 Operationalization of Variables

The study will assess the effect of ICT adoption on business performance amidst the Covid-19 pandemic. The study will focus on determining: the current level of ICT adoption among SMEs

in Nigeria during the Covid-19 pandemic; how the adoption of ICT affected the business performance of SMEs in Nigeria during the pandemic; the challenges and barriers that SMEs in Nigeria face in adopting and implementing ICT during the pandemic; and the key factors that influence the adoption and implementation of ICT by SMEs in Nigeria during the pandemic. The study will adopt Likert-type questions. The items for operationalization variables will be sub-sectionalized along the identified objectives of this study and will be measured accordingly with the use of five points Likert-type questions. The responses will be evaluated and used to compute descriptive statistics (frequency and percentage). Section A will be on personal data of the respondents while in section B, the respondents will be asked the extent to which they agree or disagree to the questions using five point Likert-type questions. In summary, the table below provides explanation on the operationalization of the variables of the study.

Table 3.1 Operationalisation of Variables

S/N	Statement	Operational Definition	Question Number	Scale
1	Business Performance	This operationally refers to SMEs business performance in terms of meeting customer demands, maintaining competitive edge, adapting to changing marketing conditions, operational efficiency, and overall business performance.	Question 1-5	Five point Likert scale of SA/A/U/D/SD
2	ICT Adoption	The operationally refers to the extent of SMEs adoption of various ICTs during the pandemic.	Question 6-10	Five point Likert scale of SA/A/U/D/SD
3	Challenges	The operationally refers to the	Question 11-15	Five point Likert

		various challenges and barriers faced by SMEs in the adoption and implementation of ICT.		scale of SA/A/U/D/SD
4	Factors	The operationally refers to the factors influencing ICT adoption which is essentially sub-sectionalised into access to finance, technological capability and perceived usefulness.	Question 16-30	Five point Likert scale of SA/A/U/D/SD

Author's Compilation (2023)

3.6 The Research Instrument

The instrument of data collection is a questionnaire structured in line with the objectives of this study. The questionnaire will be used to obtain information about the study by linking all the items to the specific objectives. It will contain items with a combination of closed-ended questions. The Likert's five-point scale and summated scale will be used for measuring responses (Kothari, 2009).

The questionnaire will be in two sections. Section A will solicit information on the respondents' demography while section B will consist of questions formulated in relation to the objectives of the study. Responses will be rated on a 5 point Likert scale for which 1 (one) is strongly disagree and 5 (five) is strongly agree.

3.6.1 Validity of the Research Instrument

The validity tests will be conducted by use of face validity and content validity. Face validity tests if the questions appear to be measuring the intended sections. On the other hand, content

validity tests whether all the important aspects of the sections are measured. The content validity of the instrument (questionnaires) will be affirmed by the researcher's supervisor who is an expert in the field of business administration. His opinion, suggestions and recommendation will be used to produce the final instrument.

3.6.2 Reliability of the Research Instrument

Reliability is the extent to which a given measuring instrument produces the same results each time it is used. Cronbach's alpha, a coefficient of reliability that gives an unbiased estimate of data generalizability will be used to test reliability of the answered questionnaires. Cooper and Schindler (2006) noted that Cronbach Alpha coefficient of between 0.7 and above to be acceptable because random error will always exist regardless of the procedure used in the study. However, Mugenda and Mugenda (2003), noted that an alpha of 0.6 to be poor. The result of the cronbach alpha and its implications were presented in table 3.2 below

Table 3.2 Cronbach's alpha Reliability Test Results for the Variables under Consideration

VARIABLES	QUESTIONS	CRONBACH ALPHA
Business Performance	1-5	0.815
ICT Adoption	6-10	0.734
Challenges	11-15	0.822
Factors	16-30	0.734

Source: Researcher's Fieldwork, (2023)

The values of Cronbach's alpha derived from the table provided in section 3.2 demonstrate that both the individual variables and the overall questionnaire score surpass the threshold of 0.70. These results highlight a strong degree of internal consistency within both the individual variables and the entire questionnaire, affirming their statistical reliability.

3.7 Sources of Data

The nature of this study demands the use of primary data. The data will be collected through the administration of questionnaires to owners and managers of selected SMEs in Benin City, Edo state.

3.8 Method of Data Analysis

The responses from the questionnaire administered will be analyzed using descriptive statistics and Ordinary Least Square Regression. The descriptive method will describe the demography and social characteristics of respondents, as well as answer research question one and three using mean, frequency and percentage. The ordinary least square regression will be conducted to test the two research hypotheses and draw inferences from therein. The analysis will be conducted using the Statistical Packages for the Social Sciences software (SPSS 22).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter focused on the analysis and presentation of data. The questionnaire was the instrument used to retrieve data. The data collected were analyzed using SPSS version 22.0 and eviews 10, the results were presented in descriptive format while regression analysis was emloyed to make findings on the research hypotheses. The study targeted a sample of 100 respondents who were owners of SMEs Benin City, Edo State, in which same number (100) of questionnaire was distributed, filled, retrieved, cleaned and used for this study. This therefore indicates that 100.0% response rate was achieved for this study.

4.2 Demographic Profiles

This section presents the demographic profiles of the respondents/firms in the study below.

Table 4.1: Demographic Profile of the Respondents/Firms

S/n	Variables		Frequency (N)	Percentage (%)
1	**Gender**	Male	63	63.0
		Female	37	37.0
		Total	**100**	**100.0**
2	**Years of Business Experience**	1-5	32	32.0
		6-10	35	35.0
		11-15	14	14.0
		15years and above	19	19.0
		Total	**100**	**100.0**
3	**Number of Employees**	1-5	18	18.0
		6-10	24	24.0
		11-20	47	47.0
		21 and above	11	11.0
		Total	**100**	**100.0**
4	**Income Level**	100,000-200,000	51	51.0
		200,001-300,000	37	37.0
		300,001 and above	12	12.0
		Total	**100**	**100.0**
5	**Educational Qualification**	Diploma	2	2.0
		OND	6	6.0
		HND	27	27.0
		B.SC	51	51.0
		Postgraduate	5	5.0
		Others	9	9.0
		Total	**100**	**100.0**

Source: Author's Computation (2023)

Gender

In terms of the gender of the respondents, the above table shows that majority of the respondents were male. This category of respondents accounts for 63(63.0%) of the total respondents while 37(37.0%) were females.

Years of Business Experience

On the years of existence of the SMES, Table 4.1 indicates that most of the SMEs have been in existence for 6-10years. This category of respondents accounts for 35(35.0%) of the total SMEs while 32(32.0%) have been in existence for 1-5years, 14(14.0%) have been in existence for 11-15years, and 19(19.0%) were aged 15 years and above.

Number of Employees

On the issue of number of employees, Table 4.1 shows that majority of the SMEs had between 11-20 employees. This category of SMEs accounts for 47(47.0%) of the total respondents while 18(18.0%) of the SMEs had between 1-5 employees, 24(24.0%) had between 6-10 employees and 11(11.0%) had 21 and above employees.

Income Level

On the income level category, Table 4.1 shows that majority of the SMEs had an income level of 100,000-200,000. This category of respondents accounts for 51(51.0%) of the total SMEs while 37(37.0%) had an income level of between 200,001-300,000, and 12(12.0) had an income level of between 300,001 and above.

Educational Qualification

On the category of educational qualification, Table 4.1 indicates that majority of the respondents were B.SC holders. This category accounts for 51(51.0%) of the total respondents while 2(2.0%)

were Diploma holders, 6(6.00%) were OND holders, 5(5.0) were Postgraduate degree holders and 9(9.0%) fell under qualifications not captured.

4.3 Descriptive Statistics of ICT Adoption and Business Performance.

This section presents the descriptive analysis of effect of ICT adoption on business performance.

Table 4.2 Descriptive Statistic of Business Performance

	Descriptive Statistic of Business Performance						
S/N	**STATEMENTS**	**SA (%)**	**A (%)**	**N (%)**	**D (%)**	**SD (%)**	**Mean**
6	The adoption of ICT has improved our ability to meet customer demands and enhance business performance during the Covid-19 pandemic.	41 (41.00)	35 (35.00)	13 (13.00)	6 (6.00)	5 (5.00)	4.01
7	The utilization of ICT has been a crucial factor in maintaining our competitive edge and business performance during the Covid-19 pandemic.	76 (76.00)	10 (10.00)	7 (7.00)	7 (7.00)	0 (0)	4.55
8	The adoption of ICT has helped us adapt to changing market conditions and improve our business performance during the Covid-19 pandemic.	5 (5.00)	6 (6.00)	5 (5.00)	74 (74.00)	10 (10.00)	2.22
9	The utilization of ICT has positively influenced our	51 (51.00)	30 (30.00)	10 (10.00)	5 (5.00)	4 (4.00)	4.19

	operational efficiency and productivity during the Covid-19 pandemic.						
10	Our business performance has significantly improved due to the effective implementation of ICT tools and technologies during the Covid-19 pandemic.	39 (39.0)	31 (31.0)	20 (20.0)	5 (5.0)	5 (5.0)	3.94
	Overall mean (Grand mean)						**3.78**

Source: Researcher's Fieldwork (2023)

Table 4.2 above revealed that in relation to business performance, majority of the respondents 76(76%) agreed (strongly agreed + agreed) that the adoption of ICT has improved their ability to meet customer demands and enhance business performance during the Covid-19 pandemic (=4.01), while majority of them 86(86.0%) expressed that the utilization of ICT has been a crucial factor in maintaining their competitive edge and business performance during the Covid-19 pandemic (=4.55). Furthermore, 84(84%) of the respondents expressed disagreement that the adoption of ICT has helped them adapt to changing market conditions and improve their business performance during the Covid-19 pandemic (=2.22) while 81(81%) agreed that the utilization of ICT has positively influenced their operational efficiency and productivity during the Covid-19 pandemic (=4.19). Finally, majority of the respondents 70(70%) agreed that their business performance has significantly improved due to the effective implementation of ICT tools and technologies during the Covid-19 pandemic (=3.94)). Essentially, the grand mean of 3.78 implies that ICT high adoption have had a high impact on every facet of business performance

stated excluding their adaptation to changing market conditions.

Table 4.3 Descriptive Statistic of ICT adoption

	Descriptive Statistic of ICT adoption						
S/N	**STATEMENTS**	**SA (%)**	**A (%)**	**N (%)**	**D (%)**	**SD (%)**	**Mean**
11	Telecommuting (allowing employees to work remotely) has positively impacted the efficiency and productivity of our business operations.	67 (67.00)	18 (18.00)	5 (5.00)	5 (5.00)	5 (5.00)	4.37
12	Our SME effectively utilizes virtual apps and platforms for communication and collaboration among employees.	69 (69.00)	11 (11.00)	7 (7.0)	8 (8.0)	12 (12.0)	4.38
13	The integration of cloud computing services has improved the accessibility and storage of our business data.	56 (56.00)	24 (24.00)	5 (5.00)	6 (6.00)	9 (9.00)	4.12
16	Our SME actively employs customer relationship management (CRM) software to enhance customer satisfaction and retention.	74 (74.00)	6 (6.00)	6 (6.00)	6 (6.00)	8 (8.00)	4.32
17	E-commerce platforms have facilitated the expansion of our customer base and increased sales.	61 (61.00)	19 (19.00)	5 (5.00)	10 (10.00)	5 (5.00)	4.21
	Overall mean (Grand mean)						**4.28**

Source: Researcher's Fieldwork (2023)

Table 4.3 above revealed that in relation to ICT adoption, majority of the respondents 85(85%) agreed that telecommuting (allowing employees to work remotely) has positively impacted the

efficiency and productivity of their business operations (=4.37), majority of them 80(80%) also expressed that their SME effectively utilizes virtual apps and platforms for communication and collaboration among employees (=4.38). Furthermore, 80(80%) of the respondents expressed that the integration of cloud computing services has improved the accessibility and storage of their business data (=4.12) while 80(80%) agreed that their SME actively employs customer relationship management (CRM) software to enhance customer satisfaction and retention (=4.32). Finally, majority of the respondents 80(80%) agreed that e-commerce platforms have facilitated the expansion of their customer base and increased sales (=4.21). Essentially, the grand mean (4.28) signifies that sampled SMEs significantly adopted various ICT mechanisms as indicated in Table 4.3 above.

Table 4.4 Descriptive Statistic of Challenges and barriers of ICT adoption

	Descriptive Statistic of Challenges and barriers of ICT adoption						
S/N	**STATEMENTS**	**SA (%)**	**A (%)**	**N (%)**	**D (%)**	**SD (%)**	**Mean**
18	Limited access to reliable and affordable internet connectivity has hindered our SME's ICT adoption and implementation during the pandemic.	86 (86.00)	4 (4.00)	3 (3.00)	4 (4.00)	3 (3.00)	4.66
19	Insufficient financial resources have prevented our SME from investing in necessary ICT infrastructure and tools during the pandemic.	77 (77.00)	7 (7.00)	6 (6.00)	5 (5.00)	5 (5.00)	4.46
20	Inadequate technical skills and knowledge among our employees have posed challenges in effectively utilizing ICT solutions during the pandemic.	49 (49.00)	29 (29.00)	12 (12.00)	6 (6.00)	4 (4.00)	4.13

21	Lack of awareness and understanding of the benefits of ICT adoption has resulted in resistance and reluctance among our SME's stakeholders.	15 (15.00)	5 (5.00)	22 (22.00)	42 (42.00)	16 (16.00)	3.45
22	Inconsistent power supply and frequent electricity outages have disrupted the smooth operation of ICT systems and tools in our SME during the pandemic.	63 (63.0)	9 (9.00)	15 (15.00)	5 (5.00)	8 (8.0)	4.24
	Overall mean (Grand mean)						**4.19**

Source: Researcher's Fieldwork (2023)

Table 4.4 above revealed that in relation to the challenges and barriers of ICT adoption, majority of the respondents 90(90%) agreed that limited access to reliable and affordable internet connectivity has hindered their SME's ICT adoption and implementation during the pandemic (=4.66), majority of them 84(84%) also expressed that insufficient financial resources have prevented their SME from investing in necessary ICT infrastructure and tools during the pandemic (=4.46). Furthermore, 78(78%) of the respondents expressed that inadequate technical skills and knowledge among their employees have posed challenges in effectively utilizing ICT solutions during the pandemic (=4.13) while majority of them 58(58%) disagreed that lack of awareness and understanding of the benefits of ICT adoption has resulted in resistance and reluctance among their SME's stakeholders (=3.45). Finally, majority of the respondents 72(72.0%) stated that inconsistent power supply and frequent electricity outages have disrupted the smooth operation of ICT systems and tools in their SME during the pandemic (=4.24).

Table 4.4.1 Ranking of Challenges and barriers of ICT adoption

Rank	Challenges and barriers of ICT adoption	Mean
1st	Limited access to reliable and affordable internet connectivity	4.66
2nd	Insufficient financial resources	4.46
3rd	Inconsistent power supply and frequent electricity outages	4.24
4th	Inadequate technical skills and knowledge among employees	4.13
5th	Lack of awareness and understanding of the benefits of ICT adoption among stakeholders.	3.45

Source: Researcher's Fieldwork (2023)

Based on the ranking above, the most significant challenge and barrier was limited access to reliable and affordable internet connectivity, quickly followed by insufficient financial resources, then inconsistent power supply and frequent electricity outages, then inadequate technical skills and knowledge among employees, and lastly lack of awareness and understanding of the benefits of ICT adoption among stakeholders.

Table 4.5 Descriptive Statistic of Key Factors that Influence the Adoption and Implementation of ICT by SMEs in Nigeria During the Pandemic.

	FACTOR ONE: ACCESS TO RESOURCES						
S/N	**STATEMENTS**	**SA (%)**	**A (%)**	**N (%)**	**D (%)**	**SD (%)**	**Mean**
23	Adequate financial resources are essential for SMEs to adopt and implement ICT solutions during the pandemic.	88 (88.00)	7 (7.00)	5 (4.00)	- (-)	- (-)	4.83
24	Access to reliable internet connectivity significantly impacts the ability of SMEs to adopt and effectively use ICT tools.	69 (69.00)	11 (11.00)	10 (10.00)	5 (5.00)	5 (5.00)	4.44
25	Availability of skilled human resources is crucial for SMEs to successfully adopt and integrate ICT solutions into their operations.	76 (76.00)	20 (20.00)	4 (4.00)	- (-)	- (-)	4.72

26	Limited access to ICT infrastructure, such as computers, servers, and networking equipment, hinders the adoption of ICT by SMEs during the pandemic.	64 (64.00)	24 (24.00)	2 (2.00)	8 (8.00)	2 (2.00)	4.56
27	The availability of technical support services plays a critical role in facilitating the adoption and troubleshooting of ICT solutions for SMEs.	64 (64.00)	19 (19.00)	10 (23.00)	4 (7.00)	3 (7.00)	4.45
	Grand mean						**4.6**
	FACTOR TWO: TECHNOLOGICAL CAPABILITY						
28	Our SME's existing technological infrastructure and resources were well-suited for the adoption and implementation of ICT during the pandemic.	41 (41.00)	35 (35.00)	13 (13.00)	6 (6.00)	5 (5.00)	4.13
29	The technical skills and knowledge of our employees were sufficient to effectively utilize ICT tools during the pandemic.	67 (67.00)	18 (18.00)	5 (5.00)	5 (5.00)	5 (5.00)	4.47
30	Our SME had access to reliable and high-speed internet connectivity, enabling smooth ICT adoption and implementation.	3 (3.00)	4 (4.00)	3 (3.00)	4 (4.00)	86 (86.00)	1.42
31	The availability of affordable and suitable ICT hardware (computers, devices, etc.) facilitated our SME's adoption and implementation of ICT.	57 (57.00)	7 (7.00)	12 (12.00)	13 (13.00)	11 (11.00)	4.12
32	Our SME had the financial resources to invest in upgrading and maintaining ICT infrastructure during the pandemic.	54 (54.00)	24 (24.00)	4 (4.00)	11 (11.00)	7 (7.00)	4.29
	Grand mean						**3.68**
	FACTOR THREE: PERCEIVED USEFULNESS						
33	The adoption of ICT tools during the pandemic has significantly improved the efficiency and productivity of our SME's operations.	56 (56.00)	25 (25.00)	9 (9.00)	5 (5.00)	5 (5.00)	4.22
34	ICT adoption has helped our SME overcome challenges related to physical distancing and remote work arrangements during the pandemic.	36 (36.00)	27 (27.00)	10 (10.00)	13 (13.00)	14 (14.00)	4.32

35	The use of ICT tools has enhanced our SME's ability to communicate and collaborate with employees, clients, and suppliers during the pandemic.	64 (64.00)	27 (27.00)	9 (9.00)	- (-)	- (-)	4.55
36	ICT adoption has enabled our SME to adapt quickly to changing market conditions and customer preferences during the pandemic.	56 (56.00)	25 (25.00)	9 (9.00)	5 (5.00)	5 (5.00)	4.22
38	ICT tools have provided our SME with valuable data and insights to make informed business decisions during the pandemic.	58 (58.00)	26 (26.00)	5 (5.00)	15 (15.00)	11 (11.00)	4.5
	Grand mean						**4.36**

Source: Researcher's Fieldwork (2023)

Table 4.5 above revealed that in relation to the first factor (access to resources), majority of the respondents 88(88%) agreed that adequate financial resources are essential for SMEs to adopt and implement ICT solutions during the pandemic (=4.83), majority of them 80(80%) also expressed that access to reliable internet connectivity significantly impacts the ability of SMEs to adopt and effectively use ICT tools (=4.44). Furthermore, 96(96%) of the respondents expressed that availability of skilled human resources is crucial for SMEs to successfully adopt and integrate ICT solutions into their operations (=4.72) while majority of them 88(88%) also asserted that limited access to ICT infrastructure, such as computers, servers, and networking equipment, hinders the adoption of ICT by SMEs during the pandemic (=4.56). Similarly, majority of the respondents 83(83%) stated that the availability of technical support services plays a critical role in facilitating the adoption and troubleshooting of ICT solutions for SMEs (=4.45). Essentially, majority of the respondents expressed agreement to all access to resources related statements in Table 4.5 above as indicated by the grand mean value of 4.6, implying that

access to resources is indeed a key factor to ICT adoption and implementation.

Furthermore, in relation to the second factor (technology capability), majority of the respondents 76(76%) agreed that their SME's existing technological infrastructure and resources were well-suited for the adoption and implementation of ICT during the pandemic (=4.13), majority of them 85(85%) also expressed that the technical skills and knowledge of their employees were sufficient to effectively utilize ICT tools during the pandemic (=4.47). Furthermore, 90(90%) of the respondents expressed disagreement that their SME had access to reliable and high-speed internet connectivity, enabling smooth ICT adoption and implementation (=1.42) while majority of them 64(64%) asserted that the availability of affordable and suitable ICT hardware (computers, devices, etc.) facilitated our SME's adoption and implementation of ICT (=4.12). Similarly, majority of them 78(78%) stated that their SME had the financial resources to invest in upgrading and maintaining ICT infrastructure during the pandemic (=4.29). Essentially, majority of the respondents expressed agreement to all statements except access to reliable and high-speed internet connectivity, enabling smooth ICT adoption and implementation.

Lastly, in relation to the third factor (perceived usefulness), majority of the respondents 81(81%) agreed that the adoption of ICT tools during the pandemic has significantly improved the efficiency and productivity of our SME's operations (=2.22), majority of them 63(63%) also expressed that ICT adoption has helped their SME overcome challenges related to physical distancing and remote work arrangements during the pandemic (=4.32). Furthermore, 91(91%) of the respondents expressed that the use of ICT tools has enhanced our SME's ability to

communicate and collaborate with employees, clients, and suppliers during the pandemic (=4.55) while majority of them 81(81%) also asserted that ICT adoption has enabled their SME to adapt quickly to changing market conditions and customer preferences during the pandemic (=4.22). Similarly, majority of the respondents 84(84%) stated that their ICT tools have provided their SME with valuable data and insights to make informed business decisions during the pandemic (=4.5). Essentially, the grand mean value of 4.36 reveals perceived as yet another major factor influencing the adoption and implementation of ICT by SMEs.

4.4 Regression Analysis

In other to actualize the objectives of the current study, the research hypotheses were tested using regression analysis. The hypotheses were tested using Alpha level of significance of 0.05. The decision rule for accepting hypothesis, is that we reject the null hypothesis when p-value (computed level of significance) is less than (<) 0.05 (alpha level of significance), while we accept the null hypothesis when p-value (computed level of significance) is greater than (>) 0.05 (alpha level of significance).

Table 4.7a Model Summary of the Relationship between ICT Adoption and Business Performance

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	. 957[a]	.917	.915	.16110	.917	647.822	5	94	.000	1.949

a. Predictors: (Constant), ICTA, FAC1, FAC2, FAC3

b. Dependent Variable: BPERF

Source: Statistical Package for social Sciences v.22

The table above shows the model summary result from the regression output. The Rsquare shows the extent at which the independent variables (ICT adoption, access to resources, technological capability and perceived usefulness) explains the changes (variations) in the dependent variable (business performance). The Rsquare value of .917 clearly indicates that the explanatory variables explain approximately 91.7 percent of the variations in the dependent variable. This is a good explanatory strength and it implies that the model was carefully and correctly formulated, thus its result can be relied upon for policy formulation. The Durbin Watson value shows whether there is an auto correlation problem in the model. Going by its rule, the value 1.949 is approximately equal to two (2) indicating that there is no autocorrelation problem in the model. This implies that the efficiency property of the model is guaranteed.

Table 4.7b Analysis of Variance (ANOVA) on the Relationship between ICT Adoption and Business Performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84.066	5	16.813	33.727	.000[b]
	Residual	7.630	94	.026		
	Total	91.697	99			

a. Dependent Variable: BPERF
b. Predictors: (Constant), ICTA, FAC1, FAC2, FAC3
Source: Statistical Package for social Sciences v.22

The table above shows the analysis of variance (ANOVA) result of the effect of ICT adoption on business performance. The F statistics value of 33.727 is significant at 0.000 (5% significance level). This therefore signifies that the explanatory variables (ICT adoption, access to resources,

technological capability and perceived usefulness) are significant determinants of the dependent variable (business performance).

4.4.1 Test of Hypotheses

The hypotheses that are stated in the chapter one of the study are tested in this section using 5% level of statistical significance. The probability values for the test of hypotheses are derived from the regression result presented in Table 4.9.

Hypothesis One

There is no significant relationship between ICT adoption and business performance of SMEs in Nigeria during the Covid-19 pandemic.

Table 4.7c Regression Output on the Relationship between ICT Adoption and Business Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. (P. value)	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	Constant)	1.554	0.235		6.623	0.000	.243	.742
	ICTA	0.250	.038	.015	6.533	0.000	-.143	.813

Dependent Variable: BPERF

The regression results in Table 4.7c revealed that we fail to accept the null hypothesis that ICT adoption has no significant effect on the business performance and accept the alternative hypothesis which states that ICT adoption has a significant effect on business performance (ICTA Prob. 0.0000 < 0.05).

Hypothesis Two

The level of ICT adoption among SMEs in Nigeria is not significantly influenced by factors such as access to resources, technological capability, and perceived usefulness of ICT.

Table 4.7d Regression Output on the Level of ICT Adoption and Key Factors (Access to Resources, Technological Capability and Perceived usefulness)

Regression Output

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. (P. value)	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	Constant)	.457	.083		5.540	0.000	.295	.620
	FAC1	.003	.023	.003	2.130	0.004	-.042	.048
	FAC2	.003	.020	.004	2.001	0.041	.042	.035
	FAC3	.038	.019	.043	.162	0.872	.001	.075

Source: Statistical Package for social Sciences v.22

The result from the Table above showed that FAC1 (access to resources) and FAC2 (technological capability) has a significant relationship with ICT adoption as their P.values(t-stat) were .004(2.130) and .041(2.001) respectively. However, the result from the Table above showed that AFF3 (perceived usefulness) does not have a significant relationship with ICT adoption by SMEs. The researcher therefore concludes that we reject the null hypothesis and accept the

alternative hypothesis in relation to FAC1 and FAC2, while we accept the null hypotheses of non-significance in relation to FAC3

4.5 Discussion of Findings

The purpose of the study was to the impact of ICT adoption on business performance amidst the COVID-19 pandemic. The study's main objective was encapsulated into four sub-objectives which serviced as guidance to the study. The descriptive statistics and regression analytical techniques were used to carry out the study's analysis.

In relation to the first objective, the descriptive statistics revealed that they were a wide range of ICT adoption amidst the COVID-19, including telecommuting (allowing employees to work remotely), virtual apps and platforms for communication and collaboration among employees, integration of cloud computing services, customer relationship management (CRM) software to enhance customer satisfaction and retention, and e-commerce platforms. This finding align with existing literature, highlighting the increased use of ICT and digital platforms during the COVID-19 pandemic to facilitate remote working, customer management, and commercial transactions. Several studies have documented the surge in telecommuting, often supported by collaborative virtual apps and platforms (Brynjolfsson et al., 2020; Belzunegui-Eraso & Erro-Garcés, 2020). Cloud computing adoption has been identified as a key enabler for remote work and business continuity (Gupta et al., 2020). Similarly, the use of CRM software to improve customer satisfaction and retention during this period corroborates the findings of Sigala (2020),

who asserted that CRM plays a crucial role in managing customer relationships in times of crisis. The rise in e-commerce platforms aligns with the observed shift in consumer behavior towards online shopping during the pandemic (Donthu & Gustafsson, 2020).

Furthermore, in relation to the second objective, the regression analysis revealed that there was a significant relationship between ICT adoption and business performance amidst the COVID-19. Similarly, prior research has outlined the importance of ICT in promoting business resilience and continuity (Mithas et al., 2013), particularly in the face of disruptive events (Bharadwaj et al., 2013). The pandemic significantly disrupted conventional business operations, which has underscored the relevance of ICT adoption (Queiroz & Ivanov, 2020). These findings are consistent with the work of Nicola et al. (2020), who identified that businesses leveraging digital platforms witnessed less impact from COVID-19 and were able to maintain or even increase their performance levels.

Also, in relation to the third objective, it was found that whilst adopting and implementing ICT, SMEs diverse range of challenges and barriers which included limited access to reliable and affordable internet connectivity, quickly followed by insufficient financial resources, then inconsistent power supply and frequent electricity outages, then inadequate technical skills and knowledge among employees, and lastly lack of awareness and understanding of the benefits of ICT adoption among stakeholders. Consistent with this study's findings, limited access to affordable and dependable internet connectivity has been cited as a considerable hurdle in various geographical contexts, particularly in developing regions (Makoza & Chigona, 2012).

The issue of financial constraints also echoes earlier observations where lack of financial resources is often found to be an inhibiting factor for SMEs in ICT adoption (Ojukwu, 2006). Similarly, inconsistent power supply represents a common challenge in certain locales, impacting the reliability of ICT usage (Aker & Mbiti, 2010). The findings additionally align with existing literature addressing the importance of employee technical skills and knowledge, confirming that these are essential for successful ICT implementation (Chibelushi & Costello, 2009). The importance of awareness and understanding of ICT benefits among stakeholders, as identified in the current research, also resounds with studies noting that the perceived benefits of ICT significantly influence its adoption (Migiro & Magangi, 2011).

The last objective sought to discover the effect of three key factors (access to resources, technological capability and perceived usefulness). It was discovered that FAC1 (access to resources) and FAC2 (technological capability) has a significant relationship with ICT adoption, whereas, FAC3 (perceived usefulness) was found not to have a significant relationship with ICT adoption by SMEs. The present findings align with previous studies indicating a strong correlation between access to resources (FAC1) and technological capability (FAC2) with the adoption of ICT in SMEs (Rogers, 2003; Zhu, Dong, Xu & Kraemer, 2006). Rogers (2003) posits that resources such as funding, infrastructure, and skilled manpower are integral to the successful adoption of ICT, while Zhu et al. (2006) argue that the level of technological expertise significantly impacts ICT adoption. Conversely, the absence of a significant relationship between perceived usefulness (FAC3) and ICT adoption contradicts the Technology Acceptance Model

(TAM) proposed by Davis (1989), which states that perceived usefulness is a primary determinant for technology acceptance and use.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter encompassed the summary of findings, conclusion and recommendations of this study. It is a section which pointed out the major discovery of the study, suggested possible action to the identified and perceived potential problems and where the conclusion is drawn from.

5.2 Summary of Findings

The study focused on the effect of ICT adoption on business performance of SMEs amidst COVID-19. However, to achieve the broad objective of the research the study raised four research questions, four objectives and two hypotheses which tended to the actualization of the study's overall objectives. The study targeted a sample of one hundred (100) respondents, in which a total of 100 questionnaires was distributed and same number (100) of questionnaires was filled, retrieved, cleaned and used for this study. The data collected was analyzed using SPSS version 20.0 and Eview 10, descriptive statistics was used to present the results while regression test was employed to make findings on the research hypotheses.

These are the findings on the assessment of the effect of ICT adoption on business performance amidst COVID-19:

i. The descriptive statistics revealed that they were a wide range of ICT adoption amidst the COVID-19, including telecommuting (allowing employees to work remotely), virtual apps and platforms for communication and collaboration among employees, integration of cloud computing services, customer relationship management (CRM) software to enhance customer satisfaction and retention, and e-commerce platforms.

ii. Furthermore, the regression analysis revealed that there was a significant relationship between ICT adoption and business performance amidst the COVID-19.

iii. Also, it was found that whilst adopting and implementing ICT, SMEs diverse range of challenges and barriers which included limited access to reliable and affordable internet connectivity, quickly followed by insufficient financial resources, then inconsistent power supply and frequent electricity outages, then inadequate technical skills and knowledge among employees, and lastly lack of awareness and understanding of the benefits of ICT adoption among stakeholders.

iv. Finally, it was discovered that access to resources and technological capability has a significant relationship with ICT adoption, whereas, perceived usefulness was found not to have a significant relationship with ICT adoption by SMEs.

5.3 Conclusion

This study sought to examine the effect of ICT adoption on business performance of SMEs amidst COVID-19. The research findings underscore the significant impact of Information and Communication Technology (ICT) adoption on business performance in the wake of COVID-19. It was evident from the descriptive statistics that there was a broad range of ICT tools adopted during the pandemic, such as telecommuting options, virtual platforms for communication, cloud computing services, CRM software, and e-commerce platforms. The regression analysis further substantiated the crucial relationship between ICT adoption and improved business performance during this challenging period. However, SMEs faced considerable hurdles during this digital transition, such as limited internet access, financial constraints, electricity outages, insufficient technical skills among employees, and a general lack of awareness regarding the benefits of ICT. It was also discovered that while the availability of resources and technological capability was significantly linked with ICT adoption, the perceived usefulness of the technology did not significantly influence its adoption among SMEs. These findings highlight the need for strategies aimed at improving digital literacy, infrastructural support, and financial access to facilitate smoother ICT adoption and harness its potential to boost business performance during crises like the COVID-19 pandemic.

5.4 Recommendations

Based on the findings of this study, the following is recommended:

i. Encourage ICT adoption: The research highlighted a significant relationship between ICT adoption and improved business performance, suggesting that businesses should promote the use of various ICT tools such as telecommuting solutions, virtual apps and platforms, cloud computing, CRM software, and e-commerce platforms to boost productivity and performance, especially in times of crisis like the COVID-19 pandemic.

ii. Improve internet connectivity: Since limited access to reliable and affordable internet connectivity was found to be a significant barrier to ICT adoption, efforts should be made to improve the internet infrastructure and provide affordable and reliable internet connectivity to SMEs.

iii. Allocate more resources to ICT adoption: Financial constraints were highlighted as a key challenge. Therefore, businesses should be encouraged to allocate more resources towards the adoption and implementation of ICT to enhance their performance.

iv. Invest in capacity building: Given the inadequate technical skills and knowledge among employees, businesses should invest in regular capacity building programs to improve their employees' ICT skills.

v. Enhance stakeholders' awareness: Lack of awareness and understanding of the benefits of ICT adoption among stakeholders was another challenge discovered. Businesses should, therefore, develop and implement comprehensive awareness programs to enlighten stakeholders about the benefits of ICT adoption.

vi. Prioritize resources and technological capability: It was found that access to resources and technological capability significantly influenced ICT adoption. As such, businesses should prioritize resource allocation and technological capability enhancement to ensure successful ICT adoption. Perceived usefulness was found not to have a significant relationship with ICT adoption, implying that businesses should focus more on practical benefits rather than perceived usefulness when advocating for ICT adoption.

5.5 Contribution to Knowledge

The study adds to knowledge by developing and implementing a set of dimensions for the relationship between ICT adoption and business performance of SMEs. In addition, the study adds to our understanding by determining the extent of individual relationship (significant or insignificant) and direction of association (direct or inverse) between ICT adoption and business performance of SMEs. Finally, the study contributes to knowledge by adding to existing literature on the challenges and key factors influencing IC adoption by SMEs.

5.6 Area for Further Research

The researcher has recommended area for further research on this study as follows:

1. A holistic study of ICT adoption in larger firms.
2. Assess the impact of ICT adoption on operational efficiency covering a much larger scope than this current study.

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APPENDIX

DEPARTMENT OF BUSINESS ADMINISTRATION

FACULTY OF MANAGEMENT SCIENCES

UNIVERSITY OF BENIN

Dear Sir/Madam,

REQUEST FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE

I am an undergraduate of the above named Institution and Department. I am currently carrying out a research on **"ICT Adoption and Business Performance Amidst the Covid-19 Pandemic".**

In this regard, you have been duly selected as a member of the sample.

I wish to appeal to you to you to kindly assist this study by sparing a few minutes to complete this questionnaire. Please, be assured that that your answers will be treated in strict confidence and used for the academic purpose only.

Thank you for your cooperation

SECTION A: PERSONAL DATA

Please tick [√] the option that applies to you

1. Gender: Male [ ], Female [ ]
2. Years of Business Existence: 1-5 [ ], 6-10 [ ], 11-15 [ ], 16 and above [ ]
3. Number of Employees
   1-5 Employees [ ]
   6-10 Employees [ ]
   11-20 Employees [ ]
   Above 20 Employees [ ]
4. Income Level: 100,000-200,000 [ ], 200,001-300,000 [ ], 300,001 and above [ ]
5. Educational Qualification: Diploma [ ], OND [ ], HND [ ], B.SC [ ], Postgraduate Degree [ ], Others [ ]

SECTION B: GENERAL

Please tick in the appropriate box after each question as an indication of your choice using Likert scale: Strongly Agree=SA; A= Agree; Undecided=U; Disagree= D; Strongly Disagree= SD.

S/N	PARTICULARS	SA	A	U	D	SD
	Business Performance					
1	The adoption of ICT has improved our ability to meet customer demands and enhance business performance during the Covid-19 pandemic.					
2	The utilization of ICT has been a crucial factor in maintaining our competitive edge and business performance during the Covid-19 pandemic.					
3	The adoption of ICT has helped us adapt to changing market conditions and improve our business performance during the Covid-19 pandemic.					
4	The utilization of ICT has positively influenced our operational efficiency and productivity during the Covid-19 pandemic.					
5	Our business performance has significantly improved due to the effective implementation of ICT tools and technologies during the Covid-19 pandemic.					
	ICT adoption	**SA**	**A**	**U**	**D**	**SD**
6	Telecommuting (allowing employees to work remotely) has positively impacted the efficiency and productivity of our business operations.					
7	Our SME effectively utilizes virtual					

	apps and platforms for communication and collaboration among employees.					
8	The integration of cloud computing services has improved the accessibility and storage of our business data.					
9	Our SME actively employs customer relationship management (CRM) software to enhance customer satisfaction and retention.					
10	E-commerce platforms have facilitated the expansion of our customer base and increased sales.					
	Challenges and barriers of ICT adoption	**SA**	**A**	**U**	**D**	**SD**
11	Limited access to reliable and affordable internet connectivity has hindered our SME's ICT adoption and implementation during the pandemic.					
12	Insufficient financial resources have prevented our SME from investing in necessary ICT infrastructure and tools during the pandemic.					
13	Inadequate technical skills and knowledge among our employees have posed challenges in effectively utilizing ICT solutions during the pandemic.					
14	Lack of awareness and understanding of the benefits of ICT adoption has resulted in resistance and reluctance among our SME's stakeholders.					
15	Inconsistent power supply and frequent electricity outages have disrupted the smooth operation of ICT systems and tools in our SME during the pandemic.					

THE KEY FACTORS THAT INFLUENCE THE ADOPTION AND IMPLEMENTATION OF ICT BY SMES IN NIGERIA DURING THE PANDEMIC.

	Access to resources	**SA**	**A**	**U**	**D**	**SD**
16	Adequate financial resources are essential for SMEs to adopt and implement ICT solutions during the pandemic.					
17	Access to reliable internet connectivity significantly impacts the ability of SMEs to adopt and effectively use ICT tools.					
18	Availability of skilled human resources is crucial for SMEs to successfully adopt and integrate ICT solutions into their operations.					
19	Limited access to ICT infrastructure, such as computers, servers, and networking equipment, hinders the adoption of ICT by SMEs during the pandemic.					
20	The availability of technical support services plays a critical role in facilitating the adoption and troubleshooting of ICT solutions for SMEs.					
	Technological capability	**SA**	**A**	**U**	**D**	**SD**
21	Our SME's existing technological infrastructure and resources were well-suited for the adoption and implementation of ICT during the pandemic.					
22	The technical skills and knowledge of our employees were sufficient to effectively utilize ICT tools during the					

	pandemic.					
23	Our SME had access to reliable and high-speed internet connectivity, enabling smooth ICT adoption and implementation.					
24	The availability of affordable and suitable ICT hardware (computers, devices, etc.) facilitated our SME's adoption and implementation of ICT.					
25	Our SME had the financial resources to invest in upgrading and maintaining ICT infrastructure during the pandemic.					
	Perceived usefulness	**SA**	**A**	**U**	**D**	**SD**
26	The adoption of ICT tools during the pandemic has significantly improved the efficiency and productivity of our SME's operations.					
27	ICT adoption has helped our SME overcome challenges related to physical distancing and remote work arrangements during the pandemic.					
28	The use of ICT tools has enhanced our SME's ability to communicate and collaborate with employees, clients, and suppliers during the pandemic.					
29	ICT adoption has enabled our SME to adapt quickly to changing market conditions and customer preferences during the pandemic.					
30	ICT tools have provided our SME with valuable data and insights to make informed business decisions during the pandemic.					