**Master’s Thesis**

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**ABSTRACT**

This thesis examined the impact of digitalization and technological advancement on the sustainability of business organizations in Lagos, Nigeria. This research was carried out to help bridge information gap concerning digitalization and its effect on small to medium sized organizations in Nigeria, and to help researchers, government and business owners in Africa gain more understanding on how digitalization and technological advancements has affected businesses in Africa as this will help researchers to determine where future research efforts should be directed. In addition, it will help business practitioners to understand how to utilize digitalization and other emerging technologies, while it will help government officials when formulating policies to ensure business sustainability in Africa.

The aim of the study was to determine how digitalization and technological advancements has affected the various dimensions of sustainability such as employee engagement, organizational profitability, customer satisfaction and retention, work culture and environmental impact on organizations in Lagos, Nigeria.

The study was conducted between the months of January 2021 and April 2022. Three medium sized organizations in Lagos were selected as the case study. A qualitative research approach was adopted to enable the researcher to extensively explore how sustainability has affected the various dimensions of sustainability at the three organizations chosen as case studies.

A semi-structured questionnaire was used to collect primary data by conducting an interview with the CEO and employees of the selected organization. The questionnaire served as a guide for the researcher during the interview. The interviews conducted with employees of each of the organizations documented their opinions concerning work culture, customer satisfaction and retention, as well as employee engagement, while the interview with the CEOs documented their opinions concerning work culture, customer satisfaction and retention, employee engagement, organizational profitability, and environmental impact.

The results of the study showed that digitalization and technological advancement has had a significant impact on all the dimensions of sustainability measured by the study and among all the organizations involved in the study. However, the nature and extent of the impact varies with the nature of business of each of the organizations.

The thesis was divided into four chapters. The first chapter which is the introductory chapter introduces the subject matter and provided detailed background on the subject matter. The second chapter review existing literature conceptually, theoretically and empirically, while also identifying gaps in literature. Chapter three shows the methods that were adopted in the study, the philosophy behind the methods and also provides solid justification for the methods and methodology adopted. Furthermore, chapter three identifies the specific research objectives and question while it also shows the study hypothesis. Lastly, chapter four collates and presents the data collected in the study. The results were presented in a textual format and the presented results while analysed and appropriate inferences were drawn from the analysis.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background to the Study**

To understand the research topic properly, defined terms like what is business sustainability, digital technology, and technology. Business sustainability is a system of doing business. For the sole aim of keeping the environment clean and making money.

A sustainable business is any organization that participates in environmentally friendly or green activities to ensure that all processes, products, and manufacturing activities adequately address current environmental concerns while maintaining a profit. In other words, it is a business that “meets the needs of the present [world] without compromising the ability of future generations to meet their own needs.”[[1]](#footnote-1) It is the process of assessing how to design products that will take advantage of the current environmental situation and how well a company’s products perform with renewable resources.

The Bruntland Report emphasized sustainability as a three-legged stool of people, planet, and profit. Sustainable businesses with the supply chain try to balance all three through the triple-bottom-line concept—using sustainable development and sustainable distribution to affect the environment, business growth, and society[[2]](#footnote-2).

Everyone affects the sustainability of the marketplace and the planet in some way. Sustainable development within a business can create value for customers, investors, and the environment[[3]](#footnote-3). A sustainable business must meet customer needs while, at the same time, treating the environment well. To succeed in such an approach, where stakeholder balancing and joint solutions are key, requires a structural approach. One philosophy, that includes many different tools and methods, is the concept of Sustainable Enterprise Excellence[[4]](#footnote-4). Another is the adoption of the concept of responsible growth[[5]](#footnote-5).

Sustainability is often confused with corporate social responsibility corporate social (CSR), though the two are not the same. Often times, the notion of ‘time’ discriminates sustainability from CSR and other similar concepts[[6]](#footnote-6). Whereas ethics, morality, and norms permeate CSR, sustainability only obliges businesses to make intertemporal trade-offs to safeguard intergenerational equity[[7]](#footnote-7). Short-termism is the bane of sustainability. While CSR and sustainability are not the same, they are related to each other. Determining salaries, implementing new technology, and retiring old plants all have an impact on the firm’s stakeholders and the natural environment. Green business has been seen as a possible mediator of economic-environmental relations. If proliferated, it would serve to diversify our economy, even if it has a negligible effect on lowering atmospheric CO2 levels[[8]](#footnote-8). The definition of "green jobs" is ambiguous, but it is generally agreed that these jobs, the result of green business, should be linked to clean energy and contribute to the reduction of greenhouse gases. These corporations are generators of not only "green energy", but as producers of new "materiality" that are the product of the technologies, these firms developed and deployed[[9]](#footnote-9).

**1.2 Theoretical Framework**

As stakeholders demand more environmental, social, and governance (ESG) efforts, regulations tighten and consumers increasingly expect brands to take action, organizations must now demonstrate that they are purposeful about sustainability, hold strong ethical standards and operate responsibly in everything they do. Companies and brands are increasingly turning to their partners and technology and innovation to integrate sustainability and create meaningful change that’s good for business, society, and the planet. Consumers contribute to causes they care about by “voting” with their Euros and by making their choices on purchase of products and services from brands working toward environmental and social sustainability, consumers can make a significant impact. For instance, following the death of George Floyd and the new wave of Black Lives Matter protests in June 2020, Yelp reported a 7,043 percent increase in support for Black-owned businesses on its platform. This creates a unique opportunity for businesses to pivot their strategies to reflect their values and use budget, resources, and influence to make positive change.

It is of necessity to understand that sustainability is a wise investment for any organization that seeks to follow this path. It is supposed to be a way of life that we should exhibit just as we don't leave our values at home when we go to our various places of work. When we practice this culture of taking care of the big problems, it opens up opportunities that can enable a successful and great business career and allow for a stable world. The COVID-19 pandemic as therefore showed us how we should be more cautious of the future and the predictions by researchers. Engagements of assets that will revolutionize the models of doing business are therefore paramount. Digital technology and environmental sustainability should be at the forefront of any strategic thinking business that wants to survive in this modern era especially this post-pandemic as competitors are woke to using these models to improve their business. Digital innovation has radically changed the nature and structure of new products and services, spawned novel value creation and value appropriation pathways, enabled innovation collectives that involve dynamic sets of actors with diverse goals and capabilities, produced a new breed of innovation processes, and, more broadly, transformed entire industries in its wake e.g.,[[10]](#footnote-10). As the distinction between innovation processes and outcomes recede in a digital world and as (digital) tools both shape and are shaped by digital products and services, it becomes imperative to develop a deeper understanding of their intermingling. Technology affordances and constraints theory[[11]](#footnote-11) offers a promising lens that is particularly well suited to help IS scholars build new theories in this regard. An affordance (or a constraint) is defined as an action potential offered by the digital technology; it is a relation between technology with certain features and a users’ intent or purpose to which this technology is to be used[[12]](#footnote-12). Thus, the focus is not on what features digital tools or artifacts possess, but on how actors’ goals and capabilities can be related to the inherent potential offered by the features. By looking at technology use assets of affordances and constraints for particular innovating actors, IS researchers can explain how and why the same technology can be repurposed by different actors or has different innovation outcomes in different contexts. Affordances also enable separating digital innovations that emerge while connecting use contexts and features through constant problem–solution matching and innovation within specific features of technologies located in specific layers of the architecture stack[[13]](#footnote-13). This helps deepen and enrich general and substantive theories of digital innovation.

How customers use new product features, the combinatorial nature of software modules, platforms that facilitate stakeholder collaboration, and flexible modularization for a platform affording to change platform design constraints more quickly are the focus that every business should look into. More broadly, how do affordances associate with specific nonfunctional features of digital technology such as the scale and speed of computation, differences in cost and geographical distribution, etc., and how do they, in combination, enable digital innovation? What generic technology affordances are enabled by new digital technologies and how do they influence innovation trajectories and outcomes? Overall, the technology affordance theory helps us to address the challenged assumption regarding the differentiation between innovation process and outcome and, specifically, the important research questions that underlie the emerging complex, dynamic interactions (and duality) between digital innovation processes and outcomes

The convergence of the sustainability and digital imperatives is beginning to gain traction in the private and public sectors[[14]](#footnote-14), but has yet to galvanize systematic and rigorous academic research. While a growing cadre of social scientists attends to inclusion[[15]](#footnote-15), natural resource management[[16]](#footnote-16), and societal grand challenges[[17]](#footnote-17) management scholars have yet to embrace the urgency of climate change and sustainable development in their work.

Digital sustainability activities are thus characterized by high scalability and ecosystem coordination. Together, these properties enable actors to break the trade-off between private and public value[[18]](#footnote-18). Specifically, through digitization, it becomes possible to coordinate investments across a wide array of ecosystem-level actors, appropriate a portion of the residual benefits of public goods, and enable the broader market to value the impacts of socioecological investments. A key challenge in economic exchange, especially in international trade, involves ensuring the quality and provenance of goods purchased from sellers on the far side of the world.

**1.3. Problem Statement**

## As the world recovers from a global pandemic, leaders face an unprecedented challenge: to identify what works for a new and evolving today and what will be required to thrive tomorrow. Rather than focus on the past for insights, leading organizations use data analytics and artificial intelligence (AI) to make decisions and define strategies that better anticipate the future. Rapid shifts in the operating environment and people’s behavior mean that the historical correlations some analytical models rely on have been challenged. Longstanding trends like the increasing importance of experiences, greater adoption of cloud, and dramatic changes in buying patterns have been interrupted, accelerated, or reversed during the global COVID-19 pandemic. Now is the time to capitalize on changes and seize the future as companies stand to benefit from being forward-thinking.

## Some organizations are capturing new data sets, including real-time data from inside and outside their organization and from across their value chain, that are then processed by new analytic approaches based on artificial intelligence (AI), to allow organizations to rapidly find new patterns in data and better anticipate future decisions. For instance, Facebook realizes how augmented realities will be the future of business and quickly seized the opportunity to be called the Meta Company which represents a fraction of the metaverse that will be a digitized technological form of doing business in a few years come.

## Analytics can similarly help sales organizations invest in the right opportunities. Traditional pipeline management relies heavily on a sales representative’s input; if a rep deems a deal to be high value and high probability, they will aggressively work that deal. By contrast, analytics embedded into lead generation can agnostically identify leads with the best conversion potential. Conversational chatbots can reach out to those leads, using AI to understand the contact’s response and further assess their willingness to buy. When there is clear buying interest, sales reps can step in, using a recommendation engine to determine the appropriate offer and communication cadence, based on the characteristics of the specific customer and opportunity. During discussions, AI can provide insights into whether customers’ responses are positive or negative based on their tone and emotional state. Once the sale is complete, AI can provide next-product-to-buy recommendations so reps can better cross-sell or upsell.

What is holding organizations back is not technology—at least not in the near term. Improved access to large, granular data sources and advances in AI modeling techniques (Digitization) means that the right predictive tools are increasingly available to businesses. The constraint organizations face in learning from the future is instead more fundamentally how they approach decision-making, with mindset, cultural and organizational challenges holding them back.

**1.4. Purpose of the Study**

In business, **sustainability** refers to doing business without negatively impacting the environment, community, or society. This addresses the effect business has on the environment and society. The sole aim of a sustainable business strategy is to make a positive impact on the environment or society while running the business. When companies fail to assume responsibility, the opposite can happen, leading to issues like environmental degradation, inequality, and social injustice. Sustainable businesses consider a wide array of environmental, economic, and social factors when making business decisions. These organizations monitor the impact of their operations to ensure that short-term profits don’t turn into long-term liabilities. Many successful organizations participate in sustainable business practices; however, no two strategies are the same. Sustainable business strategies are unique to each organization as they tie into larger business goals and organizational values. For instance, sustainability in business can mean[[19]](#footnote-19):

* Using sustainable materials in the manufacturing process
* Optimizing supply chains to reduce greenhouse gas emissions
* Relying on renewable energy sources to power facilities
* Sponsoring education funds for youth in the local community

Beyond helping curb global challenges, sustainability can drive business success. Several investors today use **environmental, social, and governance (ESG)** metrics to analyze an organization’s ethical impact and sustainability practices[[20]](#footnote-20). Investors examine factors such as a company’s carbon footprint, water usage, community development efforts, and board diversity. Research shows that companies with high ESG ratings have a lower cost of debt and equity, and that sustainability initiatives can help improve financial performance while fostering public support[[21]](#footnote-21). According to Bernow, the strongest motivating factors for adopting a sustainable mindset in 2017 were to align with a company’s goals, missions, or values; build, maintain, or improve reputation; meet customer’s expectations; and develop new growth opportunities[[22]](#footnote-22). The overlap between social and environmental progress and financial gain is called the **shared value opportunity**. In other words, “doing good” can have a direct impact on your company’s ability to “do well.” Due to this opportunity, it’s clear why many businesses have adopted these practices

When objectives become a purpose, a powerful story is established. That story will drive your mission and allow you to create an actionable plan. Don’t worry if results don’t come immediately; the road to 100 percent sustainability is long and may require testing a few different approaches for you to make the greatest impact. The more companies resist the digital era, the greater the likelihood of falling behind their competitors and closing their doors for good. To develop a long-lasting business, one must embrace the digital age over pulling against it otherwise be forced to chase your more forward-thinking competitors. To push a business into the future, some effective ways to take a company digital were considered[[23]](#footnote-23):

## Change the Company’s Point of View

Running a relatively traditional business, it can be difficult to convince members of management or stakeholders to go digital. To ensure everyone is on the same wavelength, you need to map out the areas you intend to take digital and the benefits it will have on the business. For a digital transformation to work, everyone must share the same vision and goals for the company. While it might be a difficult challenge, it’s critical for your business’s growth and longevity.

## Knowledge of Modern Customers’ needs

The review of business tools like the website and social media profiles’ analytics to identify where the users are coming from, the technology they like, and how they use the business tools, which will in turn allow for proper optimization of the business tools.

## Create a Paperless system

With many software programs available, it’s time to develop a paperless business. For example, switch from paper to digital contracts, and only use e-statements and invoices. Going paperless can also improve storage and security across the business, as you can store your trade secrets, important documents, and contracts in secure, password-protected files, which you should routinely backup on an external hard drive or in the cloud. What’s more, it can save your business money on printers, paper, and ink.

## Streamline Tasks

Automation can simplify various manual processes and decrease the likelihood of mistakes, utilizing modern HR tools and storing data in a central location for quick and easy development of accurate and real-time reporting like Apps Anywhere.

## Embrace the Latest Technologies

To continually stay one step ahead of rival businesses, one must be willing to embrace the latest technologies to boost the company’s efficiency and revenue. For example, a virtual assistant could potentially improve your brand’s order fulfillment, while automation could increase manufacturing productivity while reducing business overheads. To develop an innovative company that never disappoints its customers, continue to monitor the latest technology trends to secure your company’s growth.

To better understand how organizations’ desire to predict the future more accurately was impacting demand for different areas of sustainability, digitization, and technology.

(a) The importance of understanding how theories on the organizational level work cannot be overlooked (e.g., dynamic capabilities, ambidextrous organization, and disruptive innovation), on the individual level (e.g., responsible leadership and entrepreneurship), or on both levels (e.g., structuration theory, organizational learning, organizational change, and organizational culture) explain the transformation of business models of established firms.

(b) There’s need to know how business models for sustainability coevolve leading to industry transformations, both via market interaction alone or through system transitions;

(c) Which learning-action networks and cooperative arrangements, but also political power struggles between stakeholder groups, are involved in the creation of business models for sustainability within or across sectors; and

(d) Which management instruments enable the management of or transition to business models for sustainability. For instance, which tools support innovation (e.g., design thinking, The Natural Step framework, biomimicry) and strategy implementation (e.g., Business Model Canvas) for business models for sustainability, and how can performance and societal impacts be managed or even measured on the business model level (e.g., Sustainability Balanced Scorecard; cf. Lüdeke-Freund, Freudenreich, Saviuc, Schaltegger, & Stock, in press).

**1.5 Rationale for the Study**

This thesis posed the research question of how businesses can adapt sustainability development goals, digitization, and technology. In seeking to understand this, the study sought to answer how business owners are integrating social and environmental goals into the core of their business activities and business goals. To further understand the suitable business models for sustainable entrepreneurship reviews of organizations will be discussed in further chapters.

**1.6 Summary and Organization of the Remainder of the Study**

In summary, the findings suggested that organizations pursue profits to enable them to create positive social and/or environmental outcomes not forgetting that Success is not gauged by maximizing profits for owners/shareholders without impacting the community.

Shepherd and Patzelt[[24]](#footnote-24) define sustainable entrepreneurship as ‘focused on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where the gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society. Despite the assumption that self-interested profit-seeking motives drive entrepreneurial action,[[25]](#footnote-25) sustainable entrepreneurs contribute to solving social and environmental problems through the means of a successful for-profit business. Sustainability goals are integrated into the core of their businesses because their economic success is strongly linked to their environmental and/or social performance.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1. Introduction**

This chapter will extensively review the existing body of knowledge concerning business sustainability and the evolving technological and digital space and create a connection between both phenomena as available in the literature. With regards to the chapter organization, the thesis will discuss business sustainability as a concept and emphasize my discussion using a business model and business model innovation. The thesis will also discuss the emerging development in technology and how it affects sustainability in order to create a link between both concepts. After this, the thesis will discuss a suitable theoretical framework for the study and then review previous studies on sustainability to help identify the prevalent study design and the appropriate one to be employed for this study.

**2.2. Business Sustainability**

The fast pace of changes in the business world of today is not unconnected with the massive advancement in technology all across the globe[[26]](#footnote-26). New technological developments such as new product development and information application technologies have increased market competition in the business world both domestically and internationally[[27]](#footnote-27). As a result of these changes organizations are forced to strategically compete against each other in order for their products to survive in the market[[28]](#footnote-28). These scenario has led to the popularity of business sustainability as organizations now have to stay ahead of the competition while running their day to day business[[29]](#footnote-29)

The term sustainability has been a widely discussed phenomenon since the early parts of 1990[[30]](#footnote-30) and it has been given various definitions by different authors. One of the most acceptable definitions of sustainability was the definition proposed by the United Nations World Commission on Environment and Development (UNWCED) which states that “sustainability can be defined as a form of development which meets the target and needs of the existing generation without compromising the needs of the generations to come”[[31]](#footnote-31). This definition remains the most widely accepted definition of sustainability and it has been adopted in business and non-business-related fields. However, this study is more focused on the business perspective of sustainability hence we will review the major definitions of business sustainability as proposed by various authors.

Ma[[32]](#footnote-32) defined business sustainability as the ability of a business organization to maintain long-term viability. Sustainable organizations are involved in actions that ensure the sustenance of the organization for a very long period. Elliot[[33]](#footnote-33) defined business sustainability as the ability of a firm to maintain a competitive edge in the market for several generations. Funk[[34]](#footnote-34) submitted that a sustainable organization is one in which its activities and features are designed to foster a favourable future for all the stakeholders. A favourable future as described by Funk means that the organization stays viable and profitable for a very long period.

O’Gorman[[35]](#footnote-35) identifies the continuation of the same business and long-term viability as the two components of business sustainability. According to O’Gorman the first means of identifying a sustainable business is the continuation of the same business, as a cessation of such business would be seen as a failure. Meanwhile, the second component of sustainability deals with how viable an organization remains in the long run.

As described by Acquaah[[36]](#footnote-36), the ability of an organization to maintain a competitive edge in the market is dependent on the corporate management skills of such an organization. Business firms that possess valuable human and non-human resources which are rare and cannot be easily substituted by market rivals are more positioned to be more sustainable by maintaining viability and profitability for an extended period of time.

The concept of business sustainability can be well understood using the societal and enterprise sustainability perspective described by Mann and Gazarrin[[37]](#footnote-37). The main perspective of business sustainability that is very popular in management science is the perspective of enterprise sustainability which refers to all the business processes involved in ensuring the viability and profitability of an organization over a long period of time. The other perspective which is less popular is the societal perspective which deals with how the development of a business contributes to society usually in terms of Corporate Social Responsibility (CSR) and environmental management.[[38]](#footnote-38) Although most research works tend to focus on either of the two perspectives, this study will try to harmonize both perspectives when discussing business sustainability.

Over the years, the sustainability of an organization has been determined using several indicators such as Organizational performance[[39]](#footnote-39), Organizational growth[[40]](#footnote-40), competitive advantage[[41]](#footnote-41) and impact of change[[42]](#footnote-42). More recently, other indicators such as profitability, profit persistence and development of new product have been used to determine business sustainability[[43]](#footnote-43)

In summary, the concept of business sustainability is a very important one, especially in the face of the recent advancement in technology which has led to rapid changes in the business environment. Technology-dependent enterprises are more affected by the massive technological enhancement and the ability of such enterprises to continue to thrive in the market for a very long time is what is regarded as business sustainability.

**2.3. Business Model Innovation (BMI)**

Considering the constant changes in the global economy, it is important that entrepreneurs, executive managers, and even organization employees are constantly searching for new ways of maintaining a competitive edge in the market. This can be done by thoroughly exploring areas of product and process innovation that haven’t been already explored by market rivals[[44]](#footnote-44). In the light of maintaining and renewing competitive advantage, top organizations across the world now identify Business Model Innovation (BMI) as an indispensable business tool. Business model innovation involves researching novel options and opportunities that will foster changes in the existing system activity. According to Osterwalder and Pigneur[[45]](#footnote-45), there are several ways to a business model with several options and opportunities waiting to be explored or discovered. The explorations and discoveries made by organizations when trying to come up with a novel value proposition, experimenting with other possible revenue models, or when moving into new segments all led to the development of the concept of BMI[[46]](#footnote-46). Business model innovation can be of two types which include business model design and business model reconfiguration. In business model design, a new business model is developed while business model reconfiguration involves modification and revamping of an already existing business model[[47]](#footnote-47). Business model innovation is quite a complex process that starts with the identification and description of organizational goals and objectives, strategically mapping out the *modus operandi* of the new model, and then moving away from the current business practices toward the new model[[48]](#footnote-48).

While talking about BMI, it is important to lay emphasis on the understanding of the Business Model (BM) as it is the backbone of the BMI. A lot of research efforts have been directed towards understanding BM and its importance for research and practitioners in recent times[[49]](#footnote-49) [[50]](#footnote-50). Business model covers a wide range of complex topic, hence it is difficult to generate a single and simple definition for the concept. The definition provided for BM usually varies and align with the interest of the party providing the definition. But generally, business model deals with the processes and activities involved in doing business as well as how to gain value from these processes and activities[[51]](#footnote-51). In other words, business model can simply refer to the ways profit and non-profit-oriented organizations create values, gain values, and deliver values[[52]](#footnote-52). Despite the different understanding and perception that surrounds business model, certain factors can be generally regarded as the elementary units of business model. These elementary units include resources, processes, profit formula and customer value proposition[[53]](#footnote-53). A business model can be described as a plan which shows how the various elements of a business should be set and how they should interact, while the BMI is just a process of various interactions between the various elements of business with the aim of increasing profit[[54]](#footnote-54).

**2.4. Digitalization and Sustainability**

The evolution and improvement in digital abilities such as data analytics, digital frameworks and unified data have fostered the integration of Integration Technology (IT) in today’s business world. This IT and business integration has largely affected business processes and significantly impacted customers experiences[[55]](#footnote-55). For most organizations, the evolution of digital technology has resulted in improved revenue, increased productivity and reduction in expenses[[56]](#footnote-56)

Over the past few decades, the digital world and sustainability have evolved with very few connecting points between both phenomena[[57]](#footnote-57). The digital world has evolved mainly in the area of computer development and massive improvement in communication technologies while sustainability has evolved mainly in terms of social and economic perspective[[58]](#footnote-58).

Major strides in Digital technology started with the introduction of the internet in 1983 and the internet became a major driver of further advancements in technology[[59]](#footnote-59). Although the internet was introduced in 1983, it wasn’t until late 1990s that the world was considered to be in an internet age as a result of the widespread in the use of internet all across the globe[[60]](#footnote-60). The increased use of the internet in the late 90’s was triggered by the arrival of computers, the introduction of the CISCO network as well as the introduction of Operating System (OS) by Microsoft[[61]](#footnote-61). The cisco network allowed linking of computers all across the globe while the Microsoft OS facilitated access to the internet using computers, hence there was a boom in the number of internet users during this period. Subsequently, major transformations in the digital world include the replacement of micro-computers with more powerful and faster desktops, the introduction of gaming technology, and more recently the development of mobile technology[[62]](#footnote-62).

With regards to the historical perspective of sustainability, Haas[[63]](#footnote-63)agreed that the concept of sustainability dates back to many decades ago. Over the years, several organizations have been known to incorporate the concept of sustainability in their operations. Besides their general goal of making profit, most organizations have mechanisms in place to ensure societal sustainability by limiting environmental pollution as a result of their activities, contributing to the development of their immediate environment by providing jobs, making charitable donations, and providing assistance to educational institutions[[64]](#footnote-64). According to Estes[[65]](#footnote-65), business organizations should not only focus on accountability for customer and shareholder satisfaction but should also focus on social accountability. Social accountability as defined by Epstein[[66]](#footnote-66) refers to the means of identifying, measuring, monitoring and reporting the effects that an organization has on the societal and economic development of the area in which it is located.

In more recent years, the emerging connection between sustainability and digitalization is being acknowledged by business practitioners and researchers alike. For instance, it was estimated that between the year 1995 and 2007, IT has contributed about 1% to the overall yearly capital productivity in Australia, about 0.4% per annum in Japan, 0.8% in the United States, 0.7% in the United Kingdom, 0.6% in Germany and so on[[67]](#footnote-67).

**2.5. Digital Transformation Technologies**

Some of the technologies that have enabled transformation in the digital world might not be limited to but include big data, cloud computing, data analytics, mobile computing, social computing, and data sciences.

Cloud computing in simple terms refers to the movement of data “the cloud”, which implies the migration of available data to remote facilities rather than keeping them on the premises[[68]](#footnote-68). This is done to provide access to data for collaborators all across the world and also to reduce computing power and storage cost[[69]](#footnote-69). Collaborators and partners from every part of the world can gain access to the data via various forms of mobile devices, hence speeding up the rate at which business can be done. A cloud system can be private, meaning that only permitted members of an organization can gain access to the data contained in the cloud system. It can be public, meaning that anybody from any part of the world can access the data. It can also be hybrid, meaning that some parts of the data are restricted to only those with permitted access while some other parts of the data can be accessed virtually by everybody[[70]](#footnote-70). Cloud computing provides advantages for sustainability in terms of operational flexibility and business scalability[[71]](#footnote-71). Some of the popular cloud computing platforms include IBM cloud, Amazon web, Microsoft 365, Google apps and HP cloud Services. One cloud application that is very popular in business because of its effectiveness is the Customer Relationship Management (CRM) applications such as Pipedrive, Monday.com and Zoho CRM. These application have transformed the function of CRM in organizations where it has been adopted through predictive analysis, cross-functional integration and collaboration[[72]](#footnote-72).

Mobile computing as a recent technological development, has really proven to be a disruptive innovation with significant impacts on sustainability[[73]](#footnote-73). According to emerging researches from the Pew Research Center, about 97% of Americans now own a mobile phone[[74]](#footnote-74). This represents an overwhelming 85% increase compared to the 35% reported by the Pew Research Center in 2011[[75]](#footnote-75). The use of mobile phones is increasing astronomically because it provides information at the fingertip. With very few clicks, users are able to gain access to millions of information across various sectors such as healthcare, real estate, sport, fashion, politics, online banking, job information, education and so on[[76]](#footnote-76). Some of the very pronounced and popular technological aspects of mobile computing include voice call, text messaging, video calls, and internet and music access. The direct effects that mobile computing has on sustainability include increased collaboration, automation and workforce, and improved productivity[[77]](#footnote-77)

Big data and analytics tools enables extraction and absorption of desired information from sea of diverse information[[78]](#footnote-78). In the contemporary world, there exists millions on information on environment, societal, and governance issues[[79]](#footnote-79). These data can serve as a source of business intelligence to make accurate business decisions provided that they are harnessed correctly. These data have many sources, changes quickly and can be very difficult to keep track of. Hence, big data and analytics technology helps provide solution to this problem by enabling the extraction and absorption of information needed for business intelligence[[80]](#footnote-80). As a result of the ease and rate at which mobile technology is being used in generating data, the amount of available digital data continues to grow exponentially and might reach 12,000 zettabytes by 2040 as predicted by Hounle[[81]](#footnote-81). Big data and analytics technology has a direct relationship with business sustainability as it helps businesses to capture, store, process and analyse data.

Social computing is one of the latest and most powerful digital innovations with significant consequences for business sustainability and operations all across the world. Social computing involves a series of applications and services which facilitates social interaction and multimedia exchange[[82]](#footnote-82) via the internet. These set of applications are generally referred to as web 2.0[[83]](#footnote-83). Examples include social media platforms such as (Twitter, Facebook, and Instagram), Blogs, Wikis, and open source communities.

**2.6. Theoretical Framework**

This thesis will make use of the Resource-Based View of a firm theory (RBV) as the theoretical framework for discussing how enhancements in technology have impacted the sustainability of the business.

**Resource-Based View of a firm theory (RBV)**

This RBV theory can be traced back to the works of Penrose[[84]](#footnote-84) in 1959 where he set the foundation as a theory based on the performances of organizations as a result of the resources in their possession to carry out business activities. The RBV theory suggests that for a firm to retain superiority or continue to excel for a long period of time, such an organization should be in a possession of resources that are not just valuable and rare, but such resources must also not be easily substitutable or imitated by market competitors[[85]](#footnote-85). The theory has been constantly developed ever since its introduction in 1959. In 1984, Wernerfelt[[86]](#footnote-86) consolidate the theory and modified the core principle such that it now lays emphasis on an organization’s strategic approach to business which is based on the value of resources in their possession[[87]](#footnote-87). The RBV theory is well established in strategic and management sciences and has been adopted as the framework for explaining the performance and sustainability of organizations by several authors.[[88]](#footnote-88) [[89]](#footnote-89) With regards to the nature of the thesis, technology is considered an invaluable asset for the sustainability of businesses in the contemporary world. How business organizations choose to make use of technological tools such as big data analytics, mobile technology, social computing, and data science among others can be a significant determinant factor of the sustainability of such organizations.

**2.7. Review of Previous Works**

Several research efforts have been directed toward filling knowledge gaps concerning business sustainability and the evolving technological and digital space. This section will take a look at such research works.

Vidmar *et al*.[[90]](#footnote-90) carried out a Meta-analysis on “information technology for business sustainability”. The aim of the study was to provide insights into the latest academic findings concerning the subject of business model sustainability and information system. The authors conducted a systematic literature search using relevant keywords such as business models, information systems, and sustainability. After a thorough search and paper screening, a total of 61 publications were selected to be reviewed for the purpose of identifying their further research directions. Of the chosen 61 publications, the result showed that 31 of these papers adopted a theoretical analysis, 23 adopted a qualitative analysis, 3 adopted a mixture of quantitative and qualitative analysis, while two had no specific methodology because they were book chapters. The emerging themes in the result show that business model innovation fosters business sustainability and could also be the key initiator of business sustainability. The results also establish the fact that “consumers are actively involved in the product and service development through a process which is supported by various technological platforms. Another emerging theme from the result is how most researchers focus on the environmental aspects of sustainability rather than the sustainability of the enterprise when discussing sustainability. However, the results failed to provide neither information on how businesses have been able to achieve sustainability via the use of digital technology, nor which of the digital tools is most beneficial to business organizations, hence leaving a large gap in the literature which this study hopes to fill.

Previous research such as Dentchev *et al*[[91]](#footnote-91) and Lüdeke-Freund [[92]](#footnote-92)have also suggested deeper explorations on sustainability which mainly focus on how IT can be used to achieve business sustainability, while others such as Vial[[93]](#footnote-93) and Amit [[94]](#footnote-94)have recommended future quantitative research to determine how and which technological tools influences business sustainability the most. With respect to the gaps in literature, this study will take a quantitative approach to examine how IT has influenced the sustainability of specific organizations with an emphasis on the enterprise perspective of business sustainability.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.1. Research Philosophy**

**Interpretivism**

Research philosophies help to establish the relationship between reality and the concept under investigation by providing sources and the nature of knowledge relating to the concept. The two common research philosophies in management science are positivism and Interpretivism[[95]](#footnote-95). Positivism is founded on the basis that knowledge can only be created through quantifiable observations, while interpretivism is rooted in the basis that knowledge varies based on the understanding of individuals, and these understandings are constantly changing[[96]](#footnote-96). Interpretivism is the preferred philosophy to adopt in management sciences, especially when dealing with human resources, marketing, and general organizational performances. This is because these fields of research involve unique and complex situations that people can also decipher and explain based on their perspectives[[97]](#footnote-97). The problem presented in this thesis can be categorized as a socially complex problem that cannot be understood and explained by collecting objective data but rather by analysing different opinions and perspectives. For this reason, this study adopts the interpretivism research philosophy to understand how digitalization and advancements in technology have affected the sustainability of organizations and to gain insights into this subject matter by analysing different opinions, perspectives, and contexts.

**3.2. Scientific Approach**

**Abductive Approach**

The scientific approach to a study refers to the generation and connection of ideas in a study[[98]](#footnote-98). Ideas in a study can be generated and connected using either of three approaches which include abductive, deductive, and inductive approaches[[99]](#footnote-99). Using an inductive approach involves observing a phenomenon, interpreting the phenomenon, and then collecting empirical data to develop theories[[100]](#footnote-100). An inductive approach is best paired up with a qualitative study. A deductive approach, on the other hand, involves the generation of hypotheses from already existing theories, and then testing such hypotheses is by collecting data which is usually quantitative[[101]](#footnote-101). The Abductive approach integrates both inductive and deductive approaches by combining existing theories and empirical findings and allows the researcher to interpret and draw conclusions from both[[102]](#footnote-102). The abductive approach provides room for the modification of existing theories and the development of new ones[[103]](#footnote-103). In this thesis, the abductive approach was used by combining theoretical assumptions from previous studies with empirical observations across multiple case studies to gain insights into contemporary trends in the subject matter and draw appropriate conclusions.

**3.3. Case Study**

When trying to provide answers to research questions, an appropriate research strategy must be chosen. Such strategies can be in form of literature reviews, case studies, or surveys. This thesis will attempt to answer research questions concerning how digitalization has affected business organizations particularly SEEs in terms of their organizational performance. According to Yin[[104]](#footnote-104) Case studies provides a very useful means of studying the contemporary phenomenon in a real-life context, it allows the researchers to develop insights into the context as well as the process and it also perfectly suits research questions that deal with how and why[[105]](#footnote-105). Considering the fact that this study aims to explore how digitalization and advancements in technology have affected business organizations, a case study approach was considered to be the most appropriate approach for this study.

In research strategies involving case studies, it is important to consider the number of cases and time perspectives[[106]](#footnote-106). Most case study research settings make use of a single case while some make use of multiple cases[[107]](#footnote-107). Using multiple cases provides the researcher with the advantage of establishing a basis of comparison and establishing if the phenomenon under study is uniform or differs across several settings, hence multiple cases will be adopted for this study. Also, the study will adopt a cross-sectional approach rather than a longitudinal approach because of the time constraint. A cross-sectional approach implies that the study will be conducted with a focus on a phenomenon at a particular time rather than how such phenomenon changes over time[[108]](#footnote-108).

**3.4. Research Design**

**Qualitative method**

This section discusses the methods with which the study will be conducted and justifies the reason for choosing such a method. Qualitative and quantitative methods are the most common approaches to research methodology; however, some researchers make use of a mixture of both[[109]](#footnote-109). In quantitative methods the basis of data collection and analysis is numerical. Quantitative data are collected via field sampling, questionnaires, and surveys while the data is analyzed using established statistical methods[[110]](#footnote-110). The qualitative method on the other hand is based on observations and interviews which are presented in textual rather than numerical format[[111]](#footnote-111). For the purpose of this study, a qualitative method will be adopted and data will be collected using a semi-structured questionnaire which details will be discussed in later sections.

**Case Study**

In selecting the organizations that will be used as a case study, a couple of criteria were set by the researcher. Firstly, the organization must meet the Small to medium business enterprise (SME), the organization must have at least 10 employees but must not be more than 200 employees. The company must have a permanent building or location, the company must be registered and have an ownership structure in place. The researcher conducted a Google search to check companies in Lagos, Nigeria that meets this criterion. After a thorough online search and offline background checks, the company settled for three SMEs in Lagos, Nigeria that will be identified as Case 1, Case 2, and Case 3 for the study. Prior to confirming the selection of these three organizations, the researcher placed class to the CEO of these organizations, informing them of the purpose, scope, and methods of the study. The researcher also posed questions to the CEO to help confirm if the organizations actually met the inclusion criteria of the study. A total of 17 CEOs in Lagos were contacted and eventually the researcher settled for three that were deemed appropriate enough with reference to the inclusion criteria. Table 3.1 shows the summary of the selected organizations.

Case Study 1 is an organization located on the mainland of Lagos. The organization deals with the production of papers for banks, examination bodies, and other economic institutions. The organization has 83 employees at the time of writing this report and has two branches with the other branch in Port-Harcourt, Nigeria. The interview was conducted with the CEO of the organization and five randomly selected employees. The organization was 12 years old at the time of this report and has an annual revenue of roughly 10million Nigerian naira.

Case Study 2 is a publicity organization located on the island of Lagos. The organization provides publicity services for clients across the world via graphics and web design, sales optimization as well as online and offline advertisement. The organization has a total of 45 employees and is just 8 years old at the time of compiling this thesis. The company has a single branch but serves clients from every part of the country. An interview was conducted with the CEO of the organization and two randomly selected employees.

**Table 1. Profile of Selected Organizations**

|  |  |  |  |
| --- | --- | --- | --- |
| **Organizations** | **Number of Employees** | **Age of organization** | **Products/services** |
| **Case 1** | 83 | 12 | Papers |
| **Case 2** | 45 | 8 | PR services |
| **Case 3** | 120 | 15 | Home lightning appliances |

**Source: Own Research**

Case Study 3 is an organization that deals with the production and sales of home appliances and batteries. Some of the appliances produced by this Nigerian-owned and Nigerian-based company include Radio, Lamps, speakers, torchlights, and batteries. The organization is also located on Lagos Island. The company boasts of 120 employees and has been in existence for 15 years as of the time of writing this report. The company has three branches in Nigeria, including a branch in Kano, Northern Nigeria, and another branch in Port Harcourt, Southern Nigeria. An interview was conducted with the CEO of the organization and five randomly selected employees.

**3.5. Data Collection**

A semi-structured questionnaire was used to collect primary data by conducting an interview with the CEO and employees of the selected organizations. The researcher decides to make use of a semi-structured questionnaire because it provides more room for variation in responses based on the organizational context of the respondent[[112]](#footnote-112). Unlike fully structured questionnaires and interviews, a semi-structured interview gives room for open-ended questions and allows respondents to elaborate their responses, hence providing new dimensions for the researcher to explore[[113]](#footnote-113). Considering this, the researcher decided to make use of the semi-structured questionnaire as it will allow the researcher to figure out the dimensions in which advancements in technology have impacted the sustainability of the organizations under study. Each organization were provided with dates of the interview as shown in Table 3.1. All the interviews were also done at each organizations branch office in Lagos. All the interviews were conducted, recorded and reported in English as shown in Appendix 1. The interview questions were designed to provide answers to the research questions and help the researcher figure out the impacts of technological advancements on business sustainability. The interview inquired about how technological advancements has improved production, working culture, sales, and overall performance. The identity of respondents and organizations were kept private as the ethics of research has suggested[[114]](#footnote-114).

**3.6. Data Analysis**

Performing qualitative analysis with a Case Study can be done using a couple of methods as described by Miles and Hubberman[[115]](#footnote-115). However, since this study involves more than one case study, the researcher will make use of the cross-case analysis method as described by Miles and Huberman[[116]](#footnote-116). Cross case analysis involves searching for repeated patterns of responses with regards to similarities and differences across variables with more or less the same outcome variables. In cross-case analysis, individual case studies are considered as individual study hence setting up a basis of comparison among all case studies.

**3.7. Research Objectives**

The main objective of the study is to identify the ways in which digitalization and advancements in technology have affected organizational sustainability. The specific objectives however include;

1. To establish the impact of technological advancements and digitalization on organizational profitability
2. To establish the impact of technological advancements and digitalization on work culture
3. To establish the impact of technological advancement and digitalization on customer satisfaction and retention
4. To establish the impact of technological advancements and digitalization on environmental sustainability

**3.8. Research Questions**

1. What is the impact of technological advancement and digitalization on organizational profitability?
2. What is the impact of technological advancement and digitalization on work culture?
3. What is the impact of technological advancement and digitalization on customer satisfaction and retention?
4. What is the impact of technological advancement and digitalization on environmental sustainability?

**3.9. Research Hypothesis**

The study aims to identify what ways digitalization and advancements in technology have impacted the organizational sustainability in terms of organizational profitability, employee engagement, customer retention, and satisfaction as well as the working culture of the organizations, hence the specific hypothesis of this study will include

1. H0: bTechnological advancement and digitalization have no impact on organizational profitability

H1: Technological advancement and digitalization have a significant impact on organizational profitability

1. H0: Technological advancement and digitalization have no impact on work culture

H1: Technological advancement and digitalization have a significant impact on work culture

1. H0: Technological advancement and digitalization have no pact on customer satisfaction and retention

H1: Technological advancement and digitalization have a significant impact on customer satisfaction and retention

1. H0: Technological advancement and digitalization have no impact on employee engagement

H1: Technological advancement and digitalization have a significant impact on environmental sustainability.

**3.10. Study Area**

The study will be conducted in Lagos State, Nigeria located at longitude 6.52270N and 3.62180E. Lagos is considered the economic hub of West Africa and ranks high among the cities with the largest economy in Africa. Lagos state has an estimated human population of 23.5million individuals[[117]](#footnote-117). Lagos state is usually divided into the island and the mainland parts based on their relative locations to the Atlantic Ocean. As a result of the large population and availability of the market, Lagos serves as home to hundreds of thousands of small, medium, and large local and foreign business organizations. The presence of several business organizations and the culture of embracing prevailing technology made the researcher consider Lagos as a suitable area for this study.

**CHAPTER FOUR**

**RESULTS**

**4.1. Introduction**

In this chapter, I will present my empirical findings from the semi-structured interview conducted for each of the case studies. The results will be presented in sections so as explore various dimensions in which digitalization and technological advancements have affected the sustainability of business organizations in Lagos, Nigeria. Sustainability will be addressed in terms of work culture, organizational profitability, customer satisfaction, employee engagement, and environmental sustainability.

**4.2. Digitalization, Technological Advancement and Work Culture**

Interviews concerning work culture were conducted with randomly selected employees and the CEO of each of the study cases to understand how the work culture of such an organization has been affected by digitalization and advancement in technology.

**Case Study One**

As we will recall, case study one is an organization that deals with the production of papers for banks, examination bodies, and other corporate organizations in Nigeria. Ten employees were randomly selected and interviewed concerning the implementation of digital technology at the organization. One recurring theme in the response of participants was that implementation of technology is an everyday part of their business and advancement in technology has slightly altered the way work is been done at the organization. For instance, five of the employees (all of which have at least 7 years of experience at the organization) gave examples of increased reliance on the machines as one of the ways in which technological advancements have altered the work culture at the organization. To elaborate, one of the employees added that almost every other year a faster and more efficient machine is used to replace less efficient ones hence reducing the working hours of employees and also increasing the lay-off of employees at the organization. Some of the employees (all with less than 3 years of experience) insisted that advancements in technology have not really changed how work is being done at the organization and laid emphasis on the fact that they have had almost the same routine ever since they resumed work at the organization. The CEO of the organization stated that technological advancements has considerably affected the working culture at the organization. Also citing the instances of employee lay-off and increasing dependence on machines.

**Case Study Two**

This organization provides publicity and other public relations services for clients at home and abroad. Ten (five male and five female) employees were randomly selected to take part in the interview process. All the interviewed employees agreed that advancement in technology has a massive impact on the work culture at their organization. Talking about positive or negative impacts, most of the employees considered the impact to be positive, however, a few are of the opinion that technological advancement has disrupted the work culture at the organization. Some of the employees that agreed that technological advances have made work easier, faster, and more efficient, cited the example of how the continuous evolution of social media platforms such as Twitter and WhatsApp have facilitated their ability to secure and communicate with clients. Also, some of the respondents pointed out that the emergence of virtual meeting platforms such as Zoom, and Google meet during the pandemic has slightly affected the work culture at the organization as the use of these technological tools has now been integrated into the daily routine of employees. However, few of the respondents also agreed that advancement in technology has adversely affected work culture citing the instance of working for more hours as one of the negative impacts. Few of the employees agreed that it has made their work harder as they now have to work beyond office hours. One of the employees was quoted below

“*I work all day. Even after closing from the office, I go home and continue responding to clients online and attending to their needs. The evolution of social media might have simplified our job at this organization but it has increased working hours for most employee*”.

The CEO of the organization agreed that advancement in technology has significantly affected the working culture at their organization, especially in the aspect of employee development. He emphasized that employees have to be constantly trained to meet up with the evolving technological space.

**Case Study Three**

Case study three is an organization that deals with the manufacture and sales of lightening products such as lamps, LED bulbs, as well as air conditioners, and fans. Most of the employees in this organization agreed that technological advancement and digitalization significantly influence the working culture at the organization. Most of the employees (with at least 5 years of experience working at the organization) insisted that the working culture continues to evolve as employees are constantly going through a cycle of training, un-training, and re-training to evolve with the evolving digital and technological space. Most of the employees working in the sales department also agreed that frequent training sessions have been organized in recent years to help employees know how to effectively use social media as leverage to improve sales. This claim was corroborated by the CEO who also insisted that the advancements in technology has affected working culture in both the production and sales department as both our engineers and sales personnel are constantly undergoing trainings to help them develop the latest skills in order to gain strategic advantage in the market.

**4.3. Digitalization, Technological Advancements and Organizational Profitability**

Interviews concerning organizational profitability were only conducted with the CEO of each of the study case in order to understand how the financial performance of such organization has been affected by digitalization and advancement in technology.

**Case Study One**

In an interview with the CEO of case study one, the CEO insisted that the overall revenue of the organization has remained more or less the same for the past five years and he attributed this to the continuous evolution in digital technology. According to him, people are no longer reliant on printed materials as a lot of information is now documented on the internet. Nevertheless, he insisted that they are still largely patronized especially by banks and higher institutions in the country, but the number of papers distributed to wholesalers and retailers has reduced drastically over the years. In order to cope with this challenge, the CEO said more said that the organization has reduced its workforce, acquired latest paper production machines and now focused mainly on paper production for official uses as most of their consumers are those that require papers for official purposes such as for the production of certificates, chequebooks, etc. Although the organization still produce plain papers for domestic uses, but it has significantly cut down on the amount produced. All in all, the CEO agreed that the amount of paper sales made in the earlier years of the organization is consistently declining and the organization is making efforts to adapt to the realities by producing more of high quality papers for official rather domestic uses.

**Case Study 2**

In an interview with the CEO of case study 2, she admitted that the annual revenue of the organization has been on a steady increase for the past five years. She admitted that digitalization and technological advancement has played a significant role in the increasing profitability of the organization. Comparing business during the earlier years of the organization with recent years, she agreed that the popularity of social media in recent years has made it easier to source for and hold on to clients. However, she disagreed that digitalization has been all good to the organization has she cites the example of more intense competition as one of the downsides of digitalization and technological advancements. As quoted,

“*Digitalization and technological advancement has made sourcing for and holding on to clients more easier and hence increased the profitability of our organization, but nevertheless, more expenses is now been channelled towards development of our employees by providing trainings on the usage of emerging technology tools as this is the only way we can stay ahead of the immensely growing competition*”

As a result of digitalization and technological enhancement, more organizations are now engaging in public relations services such as advertisement and publicity, hence making the market highly competitive. In tackling this challenge, the organization ensures that its employees are equipped with the latest public relations technical skills and software.

**Case Study Three**

In an interview with the CEO of case study 3, it was established that digitalization and technological advancement has contributed significantly to the overall profitability of the organization. The CEO acknowledged the fact that the organization’s revenue continues to beat past records due to the increasing originality of the organizations product and a larger Nigerian market. The CEO agreed that digitalization through wide media publicity has improved their profitability, but the main driver of increased profitability has to be the uniqueness of the organizations product which is largely as a result of technological advancement. Citing the example of their low energy consuming bulbs, he said that the introduction of these technology to the market is largely responsible for their increased profitability. Similarly advancements in solar technology has continued to increase the organizations market in Nigeria has it provides a solution to the erratic power supply that has plagued Nigeria for several years.

**4.4. Technological Advancements and Customer Satisfaction**

Interviews were conducted with randomly selected employees and the CEOs of each of the case study and recurring themes were identified, presented and analysed.

**Case Study One**

Most of the interviewed employees agreed that adopting new technologies at the organization has increased customer satisfaction and retention at the organizations. A recurring theme during the interview was the repetition of how newly acquired paper production machines has led to the production of high quality paper which banks and other official institutions in Nigeria heavily rely on. In agreement with this theme, the CEO of the organization stated that customer satisfaction and retention has been strongly influenced by the adoption of emerging technologies in the field of paper production. He elaborated that production of papers with more quality has been highly influential in helping the organization retain its customers. Talking about digitalization, the CEO was quoted saying

“*I do not think there is any relationship between digitalization and our customer satisfaction and retention ability, although we employ the use of emerging technologies here at our organization, but we haven’t been adopting so much of the digital parts*”.

**Case Study Two**

Most of the interviewed employees in this case study highlighted the positive relationship between digitalization, emerging technologies and customer satisfaction and retention. The responses recorded from the interview clearly shows that the adoption of virtual meeting platforms such as Zoom and Google meet has significantly improved employee satisfaction and retention at the organization. According to one of the interviewed employees

“*The popularity of Zoom and Google meet has really widened our customer base and increased our ability to satisfy and retain them. Setting up virtual meetings helps us understand their requirements clearly and communicate other parts of the deal with them conveniently from wherever they are in the world. It has also expanded our oversea clientele base*”

The CEO of the organization was also in agreement with the hypothesis that digitalization has improved beyond doubts about their ability to satisfy and retain customers, also citing the instances of virtual meeting platforms and social media for constant communication. The CEO also highlighted how emerging technologies such as Pexels, Prezly, and SparkToro have become an invaluable asset for the organization in satisfying and retaining customers home and abroad.

**Case Study Three**

All the interviewed employees in this case study agreed that advancement in technology especially solar technology has significantly improved customer satisfaction and retention at the organization. Although a few of the respondents were doubtful concerning the extent to which digitalization has helped in improving customer satisfaction and retention, most of the respondents agreed that digital advertisement has played its role in expanding their clientele base. One of the respondents in support of this stance stated that

“*Despite the fact that our organization has only a branch here in Lagos, our products can be found in every part of the country even in the far north and far east. Although much credit can be directed at the uniqueness of our product in the market, but extensive advertisement offline and digital platforms such as YouTube and Twitter has also contributed our expanding customer base*”.

The CEO of the organization agreed that both digitalization and other forms of emerging technology has made a significant contribution to their ability to satisfy and retain customers. He stated that

“*By exploiting the more recent development in solar technology, we have been able to come up with novel and unique products in the market which has left our customers highly satisfied and demanding for more. Also by leveraging on the power of social media platforms, our sales and publicity department has made use of YouTube and Twitter to improve the popularity of our products and thus expanded our customer base all across to the country. So I would confirm that digitalization and advancements in technology has played a highly significant role in satisfying and retaining customers at our organization*. (CEO, case study 3)

**4.5. Digitalization, Technological Performance and Employee Engagement**

The interview was conducted with the randomly selected employee in order to identify how digitalization and adoption of technology at their organization has influenced their engagement and commitment to the organization.

**Case Study One**

Most of the interview respondents did not agree that technological advancements have increased nor reduced their engagement with the organization. Some of the respondents claimed that their engagement to the organization is more dependent on other factors such as the employee-employer relationship rather than the adoption of the latest technology or digital platforms. Although most of the respondents agreed that the adoption of recent technologies at the organization has made their work at the organization easier, faster, and efficient, they do not think that it has anything to do with their engagement and commitment with the organization. Also one of the respondents agreed that advancement in technology has affected employee engagement negatively. The respondent was quoted below

“*Advancement in technology in our organization has actually increased the organizations dependence on technology and less dependence on human labour. This is obvious from the fact that several employees have been laid off over the years*”

**Case study Two**

All of the interview respondents here agreed that their engagement with the organization has been significantly increased as a result of adoption of latest technology in the digital space. According to one of the respondents “*The introduction of new technology in our organization is usually followed by gaining sessions which every employees finds intriguing. Improving our OR expertise via these trainings largely contributes to our development not only as an employee of this organization but also as a person. So, personally I have to agree that the tech logical advancement has increased my overall engagement to this organization as I always look forward to helping the organization reach new heights by utilizing the knowledge gained from our training sessions”* all the other respondents also agreed that their engagement with the organization has been positively shaped by digitalization and adoption of emerging technologies

**Case Study Three**

The interview session with the selected respondents showed that employee engagement at the organization is largely influenced by the adoption of relevant technologies. One of the respondents insisted that ever since the adoption of solar technology at the organization, employee engagement has increased because every employee is trying to bring out their creativity by designing unique solar products. Another respondent stated that since the solar product of the organization has been thriving in the marketplace, every employee at the organization is always brainstorming on new solar products another forms of technology that can be introduced into the market again. Furthermore, some employees agree constant training on emerging technologies keeps employees on their feet, sharpen their creativity, and increases their overall employee engagement.

**4.6. Digitalization, Technological Advancements and Environment Sustainability**

The one-on-one interview was conducted with the CEO of each of the case studies in order to determine how these technology adopted at the organizations has ensured that their organizational activities do not contribute to the degradation of the environment.

**Case Study One**

The CEO of the organization acknowledged the fact that the most significant contribution of technology in their organization is the adoption of paper recycling technology which the company started using in 2020. Prior to the point where the organization started engaging in paper recycling technology, the organization has its own sustainably managed forest reserve where it sources for wood for the production of paper. The CEO maintained that the forest reserve has become even more sustainably managed now that the organization has started adopting the paper recycling technology. The CEO was quoted below

“*Our organization is very much aware of the disadvantageous position that deforestation puts our environment, hence we started operating with our reserve forest ever since the inception of the organization. We source for timber from this forest and plant back these trees. In 2019, when we started making use of the paper recycling technology, the amount of wood required for manufacturing at the organization has reduced significantly, hence expanding our abilities to sustainably manage our forest reserve and contribute to afforestation worldwide rather than become an agent of deforestation*”

**Case Study Two**

The CEO confirmed that the adopted technologies at their organization rather promote the sustainability of the environment rather than contribute to its degradation.

*For instance, most of our services are delivered via the internet and digital space with minimal paper consumption. Also, 80% of our energy supply is generated using solar panels rather than carbon-emitting diesel and petrol engines.*

**Case Study Three**

While responding to the interview questions, the CEO made it clear that the main reason for investing in solar technology was to reduce carbon footprint of the organization as well as that of the consumers.

“*The erratic power supply in Nigeria has increased the popularity and usage of diesel and petrol engines in many households in Nigeria, hence the rate of carbon emission in the country is very high. This was one of the reasons we decided to explore the very uncommon solar technology in Nigeria. We started by producing solar dependent lamps and bulbs, but now we produce solar panels capable of supplying the energy requirement of various sizes of offices and homes across the country*”

**Table 2. Summary of Results**

|  |  |  |  |
| --- | --- | --- | --- |
| **Factors** | **Case 1** | **Case 2** | **Case 3** |
| **Work Culture** | Increased work efficiency  Increased employee layoff | Increased working efficiency  Increased number of working hours | Improved Employee Development |
| **Organizational Profitability** | Reduced profitability | Increased profitability | Increased profitability |
| **Customer satisfaction and Retention** | Improved satisfaction as a result of increased product quality | Improved satisfaction as a result of the availability of virtual communication platforms and availability of improved digital tools and platforms | Increased satisfaction and retention as a result of the adoption of solar technology |
| **Employee Engagement** | Increased engagement as a result of employee development and increased creativity | Increased engagement as a result of employee development and increased creativity | Increased engagement as a result of employee development and increased creativity |
| **Environmental impact** | Reduced paper wastage as a result of paper recycling technology | Dependence on digitalization has vastly reduced the environmental impact. | Reduced carbon emission as a result of the adoption of solar technology |

**Source: Own Research**

**DISCUSSION**

Work culture refers to a set of norms, beliefs, values, traditions, habits, and principles that dictates and guides the behaviours of an employee at a given organization[[118]](#footnote-118). These practices can help employees in an organization to grow and develop and might also hinder growth and development under certain circumstances[[119]](#footnote-119). In literature, digitalization and technological advancements have been known to impact the work culture of the organization positively, especially in terms of employee development,[[120]](#footnote-120) and negatively usually in terms of over-reliance on technology which can lead to the excess layoff of employees[[121]](#footnote-121)

As shown by the empirical evidence above, how digitalization and technological advancements affect the work culture at various organizations is largely dependent on the type of work done at such organizations. Case study 2 which provides public relations services seems to be heavily affected particularly by digitalization in both positive and negative dimensions. Some employees cited the instances of increasing work efficiency while others cited the instances of increasing the number of working hours. The heavy impact of digitalization and technological advancements on this case study can be attributed to their dependence on the internet for their day-to-day activities. With the constant evolution of social media and its adoption in the delivery of public relations services,[[122]](#footnote-122) such changes are expected to occur in case study 2. As mentioned by the employees in case study 2, the evolution of social media has affected work culture mostly in terms of how clients are secured and communicated with. This corroborates well with the claims of Wang [[[123]](#footnote-123)] that a large proportion of public relations services revenue is now directed toward social media. Unlike case study 2 which is mostly affected by digitalization, case studies 1 and 3 are more affected by the mechanical forms of technological advancement. As in case study 2, the work culture in case study 1 was affected in positive and negative ways. Technological advancement has eased the way at which work is done and has reduced the number of working hours, however, it has also led to an increased rate of employee lay-offs at the organization. Instances of over-dependence on technology leading to employee lay-off have been well documented in the literature.[[124]](#footnote-124) Case study 3 has also felt the effect of technological advancement on the working culture at the organization as both departments (production and sales) reported that advances in technology have fostered immense employee development at the organization.

Organizational profitability in simple terms refers to the measure of an organization’s overall profit about its overall expenses.[[125]](#footnote-125) Organizational profitability is usually used as an index to measure overall organizational performance. An empirical review of literature has shown that advancement in technology has fostered improved the profitability of certain organizations in Nigeria such as banks[[126]](#footnote-126) and SMEs[[127]](#footnote-127).

With respect to the empirical evidence above, it is evident that digitalization and technological advancements have impacted the profitability of all the case studies, although to different extents. Case study three seems to have benefited immensely by leveraging on advancement in solar technology and LED bulbs, case study 2 has benefited largely from digitalization by leveraging on the evolution and improvement of social media technology while case study one seems to have been at the disadvantageous end of technology as advancement in digitalization has led to reducing dependence on papers and printed materials. The illustration of the three case studies above has shown that digitalization and technological advancements can affect the profitability of organizations positively or negatively based on the nature of products and strategy of such organizations. Also with respect to case studies 2 and 3 which have been able to leverage digitalization and technological advancements, they now also have to deal with the downsides such as increased market competition and increased human resource development requirements. Human resource development has been identified as the main channel through which organizations can leverage the continuous evolution in the technology and digital space[[128]](#footnote-128). Improving technology and continuous digitalization must be equally met by training and retraining of employees to increase their knowledge and expertise of emerging technology so that it can be appropriately utilized to maximize organizational performance.[[129]](#footnote-129) Also as seen in case study one, the CEO emphasized that in responding to the reduction of paper demand, the organization is managing the situation by reducing the size of its workforce and shifting production to suit market realities. This shows that understanding the dynamics of the market is another way to deal with the continuous evolution of technology and the digital space.

The empirical pieces of evidence above have shown that advancement in technology is a strong influencer of customer satisfaction and retention across all the examined case studies. Digitalization is also recognized to influence customer satisfaction and retention in all the study cases but not as strong as other forms of technology except in case study 2 where both digitalization and other forms of technological advancements are considered strong influencers of customer satisfaction and retention. Digitalization and other emerging technologies improving the customer satisfaction and retention ability of organizations is not a new phenomenon as it has been documented extensively in the literature.[[130]](#footnote-130) [[131]](#footnote-131) [[132]](#footnote-132) Once again, the importance of digitalization and technological advancement on the various sustainability dimensions of an organization is usually dependent on how much such organizations rely on both phenomena. For instance, case study two offers public relations services that are heavily influenced by the utilization of digital platforms, hence the customer satisfaction and retention ability of this organization are more affected by the evolution of the digital space than in the other two case studies. Similarly, case study 3 which deals with the manufacture of lightning appliances has exploited solar technology to the satisfaction of its consumers, and case study 1 which deals with the manufacturing of paper has benefited more from other forms of technological advancement besides digitalization.

Employee engagement as described by Rama Devi[[133]](#footnote-133) is used to indicate the level of involvement and commitment of an employee towards the core values of his/her organization and it is an accurate predictor of organizational performance and growth[[134]](#footnote-134) As shown by the empirical data above, the commitment of employees to their organization was largely influenced by digitalization and the adoption of emerging technologies, particularly in case study 2 and 3. Employees in case study 1 seem to be rather motivated by other factors rather than digitalization and technology. As it has been identified in previous studies,[[135]](#footnote-135) [[136]](#footnote-136) advancements in technology can positively or negatively affect employee engagement. Both case study one and case study two have properly shown the positive influence of emerging technologies on employee engagement with examples such as providing career development opportunities (case study one) and improving employee creativity (case study two). Examples of the negative impact was also cited in case study one where one of the respondents agreed that emerging technology has led to overdependence on technology and consequently lesser employee engagement. Similar instances have been cited by Devi and Jyothsna[[137]](#footnote-137).

Business sustainability usually entails both the market sustainability of an organization as well as their activities impact the environment[[138]](#footnote-138). In other words, a sustainable business is one that can meet the needs of the present generation without compromising that of the future generation[[139]](#footnote-139). Digitalization and technology seem to enhance the business sustainability of many organizations largely because most of the emerging technology in recent years are designed to be environmentally friendly. Since most products that enhance environmental degradation are been frowned upon in the market, most organization now ensure that their products are sustainable and does not contribute to the degradation of the environment.

The empirical evidence gathered from this study has shown that all the case studies are very much conscious of how their activities affect the environment. Case study 1 adopts the recycling technology in order limit deforestation and paper wastes. Case study 2 has significantly cut down on its paper requirement and depends more on digital materials, while case study 3 has adopted the solar technology with the aim of keeping petrol and diesel engines out of the Nigerian market.

In Summary, this study has shown how digitalization and technological advancements have impacted the sustainability of organizations in Nigeria. Measuring sustainability using different dimensions such as employee engagement, organizational profitability, customer satisfaction and retention, work culture and sustainable practices, the study was able to identify how digitalization has affected all these dimensions of sustainability in both positive and negative ways.

**CONCLUSIONS**

This study aimed to establish the relationship between technological advancements and sustainability among business organizations in Lagos. Sustainability was measured using five dimensions which include employee engagement, work culture, organizational profitability, customer satisfaction, and environmental impacts.

Three organizations in Lagos State, Nigeria were chosen as a case study. Case study one deals with paper production, case study 2 offers PR services, while case study 3 produces home lightning appliances. A quantitative research approach was adopted, and interviews were conducted for the randomly selected study participants at each of the organizations.

Concerning work culture, the results showed that digitalization and technological advancement had a significant effect on work culture in all the three case studies and these effects had both positive and negative dimensions. Some of the positive dimensions include an increase in work efficiency and encouragement of employee development. Some of the negative dimensions include an increase in the number of working hours and an increase in employee lay-offs.

Concerning organizational profitability, the results showed that digitalization and technological advancements had a significant effect on organizational profitability also in positive and negative dimensions. While two of the case studies showed that digitalization and technological advancements have boosted organizational profitability, one of the case studies proved otherwise as digitalization has led to less dependence on their product (paper), hence fewer customers and less profitability.

Concerning customer satisfaction and retention, the results showed that digitalization and technological advancements have enhanced the ability of organizations to satisfy and retain their customers as this was seen across all three case studies

Concerning employee engagement, the results have shown that digitalization and technological advancements have also affected employee engagement in business organizations. The emergence of new technological tools and digital platforms has forced organizations to further invest in the development of their employees and this has strengthened their engagement with the organization

Lastly, the results have shown that digitalization and technological advancements have reduced the environmental impacts resulting from organizational activities in Nigeria. Solar technology has reduced the emission of carbon from diesel and petrol engines in case 3, while case 2 has reduced its dependence on paper and made use of more digital material, hence reducing paper wastage. Similarly case study 1 now employs the paper recycling technology which enables them to recycle used papers for the production of new papers and sustainably manage their forest reserve by reducing the rate at which they cut down trees for paper production.

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