EVALUATING THE IMPACT OF THE CORONAVIRUS DISEASE ON THE DIGITAL TRANSFORMATION OF PUBLIC SECTOR INSTITUTIONS IN LUSAKA

BY

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II. Abstract

The unprecedented global quarantine imposed during the coronavirus outbreak has revealed an interesting ethical dilemma. While lockdowns are important to protect lives, they come at a cost in the form of economic malaise caused by business and social disturbances. To maintain this delicate balance during a crisis, it is obvious that socioeconomic operations must be converted digitally to ensure continuity. Zambia has been no exception to the effects of coronavirus, and the country at large has had to make adaptations that aid the containment and spread of the virus. The purpose of this research is to evaluate the impact of the coronavirus disease 2019 on the Digital Transformation of Public Sector Institutions in the city of Lusaka. A quantitative research-based approach was used based on primary data obtained from the two subgroups of this research. The subgroups included employees in public service institutions and consumers and beneficiaries of these services.

According to the findings of the study, the coronavirus has an impact on the digital transformation of public sector entities. Regardless of the fact this research met its aims, it would have been more advantageous if there had been more respondents eager to provide additional data related to the research. The research, on the other hand, was not jeopardized because the intended objectives and research questions were met. As a result, it would be beneficial if this study could be done using a broader methodology.

Keywords- Coronavirus, Digital Transformation and Usage of Technology

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1.0 Introduction

This chapter provides an overview of the research. The goal of this study was to determine the impact of the Coronavirus 2019 pandemic on the digital transformation of Public Sector Institutions in the city of Lusaka. The chapter investigates the study's background, as well as its goals, objectives, justification, and scope.

1.1 Background of Study

When the Coronavirus pandemic began in late 2019 and spread globally during 2020, a substantial section of the world went online, hastening a decades-long digital transition. Children and students with home Internet access began attending class remotely; many employees began working from home; and various public sector institutions and enterprises adopted digital business models to maintain operations and certain revenue streams. Meanwhile, researchers employed artificial intelligence (AI) to better understand the virus and speed up the search for a vaccine. Internet traffic soared by much to 60% in some nations quickly after the outbreak (OECD, 2020), illustrating the Pandemic's digital acceleration.

While these activities demonstrate the enormous potential of digital transformation, the Pandemic has also emphasized the remaining gaps. While some digital divides have closed rapidly in recent years, others have not, leaving some behind in the COVID-driven digital acceleration. Additionally, the growing reliance on digital solutions has heightened the importance of privacy and cyber security concerns. This places a substantial strain on countries. It is improbable that economies and society would revert to "pre-COVID" patterns; the crisis has amply demonstrated the power of digital technology, and certain changes may now be irreversible. (Laudon 2019)

Faced with a future in which jobs, education, health, government services, and even social interactions may be more reliant on digital technologies than ever before, failing to ensure widespread and trustworthy digital access and use risks jeopardizing the future of these sectors. As has been the case in every other city hit by the coronavirus pandemic, considerable attempts have been made to digitally modernize Lusaka. The use of technologies that enable virtual interactions in public sector institutions, including government agencies, institutions of higher

learning, and small and medium-sized firms (SMEs), is at the heart of these transitions. There are numerous technologies available, including virtual meetings, video conferencing software, virtual whiteboards, remote reporting, and productivity tracking.

1.2 Problem Statement

The Pandemic of Coronavirus Disease 2019 (COVID19) is a global public health emergency of unprecedented proportions. In order to combat the disease, governments across the world-imposed lockdowns in the majority of major cities around the world where cases had been reported. Many Public Sector Institutions and business around the world have suffered because of these lockdowns. The requirements for social distancing and shifting patterns of demand have resulted in changes in operations as well as the introduction of new processes and product lines. (Vial 2019)

To ensure an effective response to the coronavirus outbreak, the Zambian government through the ministry of health announced the first lockdown in July 2020. The lock down was declared to ensure contactless service delivery in the private and public sectors. According to Sahr Kpundeh Country Manager for the world bank Zambia, "*Digitization can contribute both to continuity of essential service delivery and to limiting disease spread"*. Lately, Zambia has made significant strides in digital infrastructure, digital financial services, and digital platforms. This is a good foundation government can leverage in its efforts to combat the coronavirus."

The lock downs pronounced above, necessitated the need to adhere to the coronavirus guidelines and in the long term caused the demand for–digital tools to increase dramatically. *The COVID-19 (coronavirus) pandemic has increased the use and exposed the potential of digital technology in Zambia. For example, Bank of Zambia recorded a 26% increase in mobile payments from January to April 2020*. (Bank of Zambia Country Report 2020). These digital transformation efforts, however, do not come without challenges especially for, many third world countries including Zambia. The Pandemic has brought the world to a situation where those not connected to the internet are facing total exclusion.

Given the above, others would argue that there are several costs linked to digital transformation that limit public sector institutions from fully digitizing their operations. This study was deemed necessary to determine how the coronavirus has impacted the digital transformation of public sector Institutions in the city of Lusaka, Zambia, despite numerous setbacks such as limited or slow bandwidth, expensive equipment and tools that facilitate digital access, unaffordable Internet access, and a lack of access skills, to name a few.

1.3 Justification for the Research

The Coronavirus 2019 crisis appears to have given us a glimpse into a future world in which digital has become central to all interactions, accelerating the adoption curve for both organisations and individuals almost overnight. According to the IMF, access to digital technology and effective use of data and digital systems may be powerful tools in the drive to boost private sector productivity, improve public sector efficiency and effectiveness, and promote both public and private sector accountability. (IMF 2017)

In the face of the limits imposed by Covid 19 in Lusaka, the majority of public sector organizations are pushing staff to work in new ways, utilizing technology and assuming increased autonomy. This digital change has resulted in a work transformation, which entails reorganizing work and so altering how people work (Anderson-Connolly et al., 2002).

This research will add to the body of knowledge. related to the digital transformation of public sector institutions and the business environment. The information will help public service organizations as well as the business community promote the use of digital technologies during and beyond the coronavirus pandemic

1.4 Research Aim

The purpose of this research was to determine how the Coronavirus 2019 has impacted the Digital Transformation of Public Sector Institutions in Lusaka City by collecting and analysing data from Public Sector Institutions and or organizations. The research will focus on stakeholders utilizing digital technologies, pre, during and post the Covid 19 pandemic.

1.5 Research Questions

The research conducted will answer the following questions:

i. What is the impact of the Coronavirus pandemic on public sector institutions?

ii. Has the Coronavirus 2019 accelerated the digital transformation in public sector institutions?

iii. Has digital transformation improved public sector efficiency and effectiveness and accountability?

iv. Can digital transformations aided by the coronavirus permanently change the future of the work environment?

1.6 Research Objectives

The objective guiding this study is highlighted below

1.6.1 General objectives

The general objective of the study was to determine what impact the coronavirus 2019 has on digital transformation of public sector institutions

1.6.2 Specific Objectives

i.   To establish whether the coronavirus has affected the rate of digital transformations in public sector institutions.

ii. To determine whether public sector institutions in are investing in digitalization technologies during the coronavirus pandemic.

iii. To determine whether digital transformation can aid public sector efficiency and effectiveness and accountability in public sector institutions.

iv. To determine whether consumers of public sector services are willing to access services using digital platforms

1.7 Research Hypothesis

HO:- Coronavirus 2019 has no impact on the digital transformation in public sector institutions

Alternative Ho1: - Coronavirus 2019 has an impact on the digital transformation in public sector   institutions

1.8 Scope of the Study

The study was carried out on selected Public Sector Institutions and organizations as well as consumers of these services in the capital of Zambia. Data was collected from Zambia Revenue Authority – ZRA, Patents and Companies Registrations Authority -PACRA and the Department of National Registrations. The target groups of the study included employees of public sector agencies as well as consumers of public sector services.

1.9 Summary of Chapter One

The purpose of Chapter One was to help the reader understand the scope of this research. It began by providing an overview of the research, followed by a background, and finally the purpose and justification for conducting this research. In addition, an overview of the objectives, research questions, and significance of the study were provided. Finally, the research hypothesis and study scope are highlighted.

CHAPTER TWO

LITERATURE AND THEORETICAL REVIEW

2.0 Introduction

The literature review examines the body of knowledge pertaining to the study. As a result, this chapter examines similar research conducted by other researchers. Additionally, the literature review considers concepts of digital transformation whilst addressing current and past information about its adoption efforts by Public Sector Institutions before and after the coronavirus pandemic. Furthermore, this chapter also looks at how users accessing public services have adapted to the digitalization of most public sector services during the coronavirus pandemic.

2.1 Digital Transformation (Digitalization): A General Overview

Corporate transformation is necessary to respond to changes in the business environment over time (Tushman et al., 1986; Weick and Quinn, 1999), and it can entail significant changes in both Public Sector Institution corporate strategy and capabilities (Pearce and Robbins, 2008). Digital technology development has been a major driver redefining company models in numerous industries over the past decades (Bharadwaj et al., 2013; Liu et al., 2011), and innumerable businesses have expressed a need for digital transformation. Today, there are more digital solutions on the market than ever before, and the potential for digital transformation are stronger than ever (McLaughlin, 2017; Parviainen et al., 2017). Because this is a topic with little empirical and conceptual studies, Warner and Wäger (2019) emphasize the need for greater study on how organizations digitally transform.

Digital transformation, according to Verhoef et al. (2021, p. 889), is "a shift in how a business uses digital technologies to produce and appropriate additional value for the business." Similarly, Liu et al. (2011) emphasize that digital transformation is aided by digital technology and carried out to gain a competitive advantage. Furthermore, digital transformation alters a company's business model by changing procedures for creating value, organizational tasks, and how the company operates (Verhoef et al., 2021).

Several studies have also identified three distinct ways in which digitization affects and transforms organisations and business models. Matzler (2016) and Berman (2012) define these three steps as: first, digitization of products and services; second, digital processes and decision-making using Industry 4.0, Big Data, or artificial intelligence; and third, transformation of the value proposition and operating model as a whole.

2.2 Trends in Digital Transformation

Big data, Cloud computing, the Internet of Things, and Blockchain are all examples of technical breakthroughs that are having an impact on the digital transformation processes of organisations today. Their application is extensive across all industries and departments. Despite their many advantages, digital technologies pose a significant risk to the organisation. Using modern technologies requires cross-professional teamwork and new managerial and worker skills. (Chawla. and Goyal, 2022)

Figure 1: Digital Transformation trends
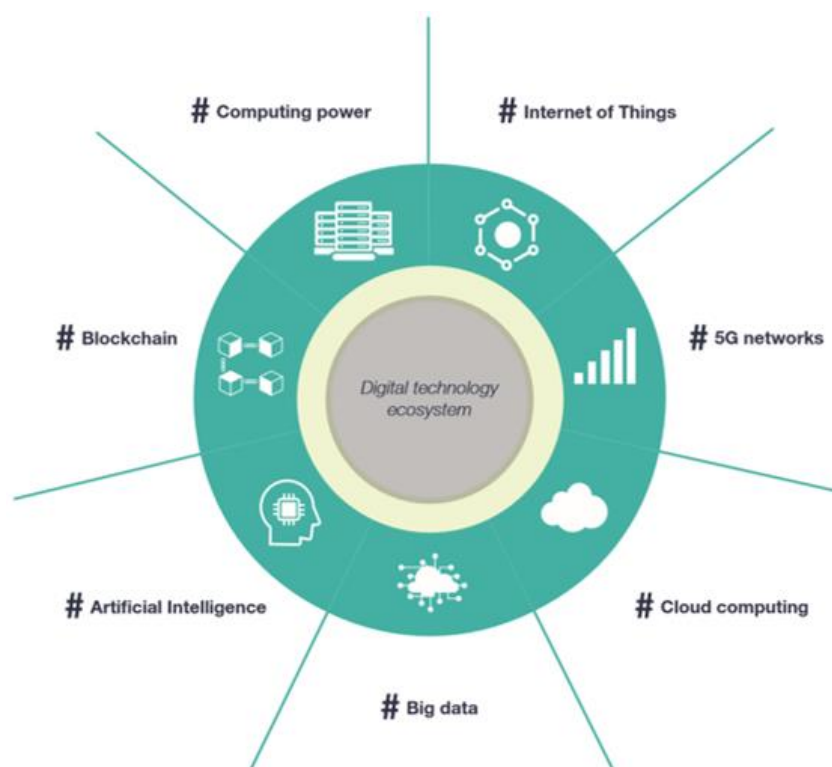
Source: Digitalization: Changing Policies and Lives OCDE (2019).

2.2.1 Cloud Computing

With applications ranging from remote working to online classes to financial transactions, Cloud Computing is a technology that is at the heart of many digital business models. It is hardly an overstatement to suggest that the Cloud facilitates business.

Cloud Computing is a strong tool that enterprises can use to expedite transformation initiatives as they recover to pre-covid levels. Daiya (2018, p.89) describes cloud computing as the practise of managing software-based services over the internet rather than through a local computer. Connecting specific business software or data to the internet is the best solution for Public Sector Institutions pursuing digital transformation. They can then be accessed from anywhere on the organization's network. Cloud computing has been labelled the "ultimate digital lifestyle revolution," and the future is now. Cloud computing allows for data storage, processing, and management. This allows data to be accessed from any location and at any time, with all of the benefits that come with it. The main problem is that the cloud is not a single location, but rather a big collection of various sites all over the world, hence the name cloud.

2.2.2 Big Data

On the one hand, big data refers to a vast or complex volume of continuously changing data that can no longer be studied using traditional data analysis methodologies and tools. On the other hand, this comprises the sum of data processing technologies and analytic methodologies created in recent years to collect and analyse massive or complicated amounts of data (Reichert, 2014, p. 40). Doug Laney defines the features of Big Data as the three "V's": volume, variety, and velocity. (Laney, 2001)

Big Data encompasses all data sources, including social networks, call centres, genomic data, biological research, and medicine. The proliferation of sensors in the sector is providing organisations with vast amounts of data. The data used to describe large data is always changing. Recognizing changes and reacting promptly and intelligently are critical success factors for organisations in this new setting. While stability and scalability were crucial criteria for company in the twentieth century, the new benefits are focused on discovery and agility; in this context, performance is directed by the ability to continuously leverage existing and new data sources to uncover models and possibilities. (Davenport and colleagues, 2012)

2.3.2 Internet of Things

The Internet of Things (IoT) refers to the networking of physical things with the Internet or other networked systems via sensors and actuators. It enables items to talk with one another

and perform activities for the user independently. Users can also track and monitor the state of things, as well as remotely manipulate them. Furthermore, networked sensors monitor the environment and individuals (Fedyk 2016, Manyika et al., 2015).

The captured and sent data can then be analysed using Big data techniques and coupled with data from other sources, such as the company's ERP or CRM systems. It automates manual chores, tackles complicated issues, and generates novel measures and treatments. At the moment, the Internet of Things is still in its infancy. While the anticipated number of networked devices was nine billion in 2015, this figure is expected to grow to between 25 and 50 billion by 2025. (Manyika et al., 2015). According to experts, the Internet of Things will alter daily life in a variety of ways (Manyika et al., 2015). The rising connectivity of all aspects of life is already visible in the expanding use of smartphones and so-called wearables, or body-worn technologies such as smartwatches.

The Internet of Things (IoT) is referred to as "Industry 4.0," "Smart Factory," "Industrial Internet of Things," or the "Fourth Industrial Revolution" in the context of its implementation in manufacturing and industry. These terms are used to refer to the networking of Public Sector Institution resources such as operating systems or storage systems for autonomous control and information exchange (Kagermann, 2014). Furthermore, networking in an industrial setting will have an impact on factory planning, operation, and value creation structures, as well as enable optimization and automation of production processes (Kagermann, 2014).

2.3 Digital Transformation in Public Sector Institutions

In accordance with a World Bank report on Zambia's digital transformation issued in June 2020, it has been claimed that the city of Lusaka has made significant progress in digital transformation, which encompasses digital platforms, digital infrastructure, and digital financial services. This digital transformation has provided most public institutions with an unprecedented potential to improve communication, efficiency, and service delivery at a faster rate than they have ever experienced in their history.

The developments outlined above have become even more required as a result of the advent of the Coronavirus, which boosted the use and demand for digital equipment. Lusaka's public sector agencies, medium- and large-sized businesses have benefited from this digital transformation, which has enabled frictionless business continuity. "By combining data-driven decision-making with increased transparency and efficiency, digitization and reforms can boost productivity in both the public and private sectors," the author writes (Kpundeh, 2020)

2.4 The Coronavirus's Impact on Public Sector Digital Transformation

Following the Covid 19 guidelines, public sector institutions have had to adapt to make digital technologies part of their everyday work routines. This adaptation, however, has been implemented faster than under normal circumstances due to the advent of covid 19 pandemic and the requirements to adapt to the recommended guidelines. As a result, it is conceivable that people who would not otherwise have been so quick to integrate technologies in new ways (e.g., technology in the home office) into their daily work routine are forced to adapt more rapidly.

Institutions in the public and private sectors frequently respond to a crisis by making short-term adjustments and organizational changes, employing strategies that actively deal with environmental changes in the most effective way possible. This change in organizations occurs frequently when financial matters are critical to the organization's survival and competitiveness (Menéndez and Castro, 2002). As a result, public sector institutions and employees must strive to be more adaptable in the event of a future shock (Biakman et al., 2020). This adaptability may extend to digital forms of work in the current situation, the coronavirus era.

"The increased use of technology in everyday work (Beland et al., 2020; Spurk and Straub, (2020; Sturz et al., 2020) and changes in working hours (Von Gaudecker, 2020) imply that employees may be working in new ways, utilizing technology to a greater extent, and assuming more autonomy."

2.4.1 Impact of Digital Transformation on Employees in Public Sector

Numerous studies indicate that a variety of elements affecting work design because of digital transformation include; increasing competency requirements, virtual teams, and flexible work arrangements. (2006) (Towers et al.). Two of these factors are described in greater detail below.

2.4.1.1 Increased competency

Research extensively stresses 'digital fluency,' which refers to an individual's competency and familiarity with technology, as one of the most obvious competencies required to succeed in today's digital workforce, which has been hastened by the covid 19 pandemic (Colbert et al., 2016). Digital fluency necessitates not only familiarity with a few tools and applications, but also expertise in managing information technology to achieve strategic goals and develop concepts. As a result, even entry-level employees will be required to have high levels of digital fluency when they enter the workforce (Rintala & Suolanen, 2005). Employees who understand and use the potential of social media to generate firm-based content to engage

customers and promote their brands, as well as employees who are proficient in using virtual collaboration platforms such as Google Drive, would benefit organizations (Rintala & Suolanen, 2005).

2.4.1.2 Virtual Teams

One of most studied phenomena relating digital transformation and work design is the increase in team-based structures, more specifically the evolvement and development of virtual teams. This way of working leverages the full capabilities of technology and assigns responsibilities to employees lower in the hierarchy, as it makes sure that the points of view of all organizational members can be heard. Furthermore, global virtual teams provide "...a means of connecting and engaging geographically dispersed workers, lowering the costs associated with global collaboration, enabling greater speed and responsiveness and spurring innovation" (Schneider et al., 2014, p.207).

On the contrary, in addition to these obvious benefits, virtual teams may also result in difficulties: Members may encounter a generation gap since those under the age of 30 are "...more likely to be computer-facile than their more senior bosses" (Bergiel et al., 2008, p.106). As a result, many people working in virtual teams will most likely require further training in higher level technology applications.

2.5 The Future of Digital Transformation Post Coronavirus Pandemic

The coronavirus 2019 transformed digital from a nice-to-have add-on to a critical business tool. The Pandemic compelled businesses to reconsider how they plan and execute their digital aspirations in a world that has shifted online, probably for good in many areas. Those who did not prioritize digital prior to the epidemic discovered that postponement was no longer an option – the digital world is extremely competitive. (World Bank 2020).

A recent survey performed by the Cognizant Centre for the Future of Work (CFoW) in cooperation with Oxford Economics surveyed 4,000 C-level executives worldwide to gather insight into how they are utilizing digital technology and what they hope to accomplish in the next years. The Centre for the Future of Work determined that digital technologies will be vital to success in the coming years and listed six critical measures that all businesses should adopt to better prepare for the quickly evolving digital future:

Because change is unavoidable, the first suggested strategy for Public Sector Institutions is to review everything. As customers' demands and habits change, everything is changing, from how and where workers work to how customers are engaged, and which products and services

are now available. Second, CFoW recommends Public Sector Institutions to view technology as a collaborator in the workplace. Innovations in artificial intelligence, blockchain, natural language processing, the Internet of Things, and 5G communications will usher in decades of change and enable new levels of functionality and performance. The third recommendation encourages Public Sector Institutions to develop new workflows in order to attain higher levels of performance. The most predictable, roles, and repetitive tasks must be delegated to software, whereas humans excel at employing judgment, creativity, and language. The fourth guideline directs businesses to make digital literacy the primary competency for all employees. Whatever type of labour is required, it must include a digital component. Levels of digital literacy, including specific abilities, must be developed even among non-technologists. The sixth guideline directs businesses to initiate a skills renaissance. Big data professionals, process automation experts, security analysts, and other digital talents are difficult to acquire. Organizations will have to work harder to retain and engage people to overcome skills shortages. The seventh tip focuses on how employees desire jobs, but they also desire purpose from their jobs. How can Public Sector Institutions use sophisticated algorithms to offload an increasing percentage of chores from employees' plates, allowing them to spend more time creating value? This quest for purpose extends beyond the specific requirements of the work to what the organization stands for.

2.6 Theoretical review

The theoretical review looks at the different variables that are related to each other (Sekaran and Bougie, 2016). This section looks at the different theories that explain digital transformation as well as the factors that may impact its adoption.

2.6.1 Technology Continuance Theory

This Technology Continuance Theory (TCT) is one that examines how technology is used indefinitely (Harasis and Rasli, 2016). This Technology Continuance Theory (TCT) is one that examines how technology is used indefinitely (Harasis and Rasli, 2016). This detailed explanation explains why consumers are continually utilising technology. TCT examines why customers intend to use types of technology (Harasis and Rasli, 2016). Thus, this theory can be used to all stages of technology adoption, both short and long term. With that being said, the experience that comes with the usage of digital tools for accessing public services during the coronavirus pandemic could be the reason why consumers are more likely to use continue using these tools post the coronavirus pandemic.

Consumers' experiences with digital technologies are some of the reasons they may be for or against the adoption of these technologies (Harasis and Rasli, 2016). One's attitude toward technology might be thought of as an evaluation (Harasis and Rasli, 2016). A consumer's attitude toward a product or service might result in continued use of that product or service (Foroughi et al, 2019). Another factor covered by this idea is contentment (Harasis and Rasli, 2016). If a consumer is dissatisfied with a digital technology, he or she will stop using it. These components of this theory are mainly concerned with comprehending consumers' attitudes toward product and service usage in the short and long term.

2.6.2 Innovation Diffusion Theory

This hypothesis is used to describe how customers embrace and use new technology in information systems (Dilogini and Pushpanathan, 2018). This idea examines a user's willingness to embrace and apply new innovations to fulfil old activities (Al-Rahmi et al, 2019). Diffusion is defined as the social transmission of certain innovation ideas. When considering the Innovation Diffusion Theory, Al-Rahmi et al (2019) state that there are numerous elements to consider. These elements are relative advantage, complexity, compatibility, trialability, and observability (Al-Rahmi et al, 2019). These factors influence the rate of dissemination and determine whether innovations can be used or adopted. (Huang *et al*, 2017). Digital means of accessing services are easy to use and thus users have positive attitudes towards its innovations (Jamshidi and Kazemi, 2019).

The complexity of the technology may have an impact on a user's adoption of digital technologies (Ramanathan et al, 2020). Complexity may be viewed as a barrier when dealing with many sorts of innovation (Ramanathan et al, 2020). Because of their apparent complexity, many people are afraid to embrace digital technologies.

The word "relative advantage" relates to the extent to which an innovation is thought to be superior to its predecessor (Dilogini and Pushpanathanb, 2018). When new digital transformation technology outperforms older ones, there is a relative advantage.

The degree to which an innovation is compatible with existing accessible technologies is referred to as comparability (Ramanathan et al, 2020). A technology that is well-suited to existing similar technologies may be more easily adopted than one that is entirely unique (Ramanathan et al, 2020).

Observability, according to Dilogini and Pushpanathanb (2018), is the degree to which the effects or changes linked with an innovation are visible.

Finally, the Innovation Diffusion Theory's trialability attribute can be described as the amount to which an inventive thought can be tested while taking constraints into account (Dilogini and Pushpanathanb, 2018)

Thus, this idea may have significant implications for the public service and private sectors.

2.6.3 Disruptive Innovation Theory

The Disruptive Innovation Theory examines an innovation that has the potential to create a new market for a new product or service that could eventually supplant already available products or services (Altman and Palmer, 2018). According to the Disruptive Innovation Theory, an innovation should be capable of compelling people to adopt it and abandon existing ones (Samar et al, 2017).

Despite the disruption caused by digital transformation, one could claim that traditional means of accessing public services continue to be used (Wachira and Odingo, 2016). These alternative methods entail the usage; completion and submission of manual applications, and cash payments for various services rather than electronically submitted application and payments (Wachira and Odingo, 2016)

Despite the advent of e services to expedite service requests and transactions, many consumers have not accepted these techniques and continue to access essential services using traditional manual approach (Wachira and Odingo, 2016). As a result, this idea cannot be fully implemented in this study. This study's data analysis illustrates why the Disruptive Innovation Theory cannot be fully implemented.

2.6.4 Technology Acceptance Model

The Technology Acceptance Model framework was proposed by Davis (1989) there is currently a version 3 of the framework (TAM3). It is predicated on the concept that it aids in the explanation of a specific behaviour, in this case 'use' toward a specific target, in this case 'technology,' and within a certain context, this may be 'ease of use' or 'usefulness' as viewed by the user. Venkatesh and Bala (2008) state that the TAM framework "posits that individuals' behavioural intention to use an IT is determined by two beliefs: perceived usefulness, defined as the degree to which an individual believes that using an IT will improve his or her job performance, and perceived ease of use, defined as the degree to which an individual believes that using an IT will be effortless."

While Venkatesh and Bala (2008) note that "research on individual-level IT adoption and use is mature and has produced a wealth of theories and explanations for the determinants of adoption and use decisions, TAM, as a theoretical framework resulting from one of this research, has been shown to be highly predictive of IT adoption and use, one of the model's major criticisms has been its lack of actionable guidance for practitioners." As a result, the framework must be continuously evolved to ensure that it remains a robust instrument for further investigation and understanding of the factors that influence the adoption and use of technologies, particularly ICTs.

TAM and all of its variations are regarded to have adequate empirical evidence to support their viability as realistic models that predict user intentions and behaviour toward technology adoption and use. However, considering that in relation to industry 4.0, the adoption and use of digital technologies is from an organisational standpoint, it will be understood that basing digitalisation on the fundamental constructs of perceptions of 'ease of use' and 'usefulness' of digital technologies becomes insufficient to understand the dynamics driving organisational decisions to go the digital route.

2.7 Conceptual framework of Digital Transformation

The goal of this study was to ascertain the impact of the coronavirus 2019 on the digital transformation of Public Sector Institutions. Numerous authors have elaborated on the concept digital transformation.

The Technologies Acceptance Model (TAM) examines how adopters respond to new technology (Al-Shbiel and Ahmad, 2016). This notion is related to the usage of digital and electronic tools but focuses mostly on the adoption stage (Dar and Bhat, 2017). The researcher in this study determined what motivates early adopters to continue using digital tools and how that sustained use affects efficiency and effectiveness. The Technology Continuance Theory (TCT) provides a framework for this research by examining why early adopters continue to utilise digital tools (Harasis and Rasli, 2016). The purpose of this study was to determine how the coronavirus 2019 has influenced digital transformation on Zambian Public Sector Institutions.

Digital Transformation, public service efficiency and effectiveness, and use of digital and electronic tools are the essential words. In conceptualising, the researcher aimed to establish the impact of the coronavirus on digital transformation in the Zambian public sector industry. The following factors were discovered in the study: coronavirus as an independent variable and digital transformation as a dependent variable. The graphic below depicts the conceptual framework of the study: -

Figure 2: Independent and Dependent Variables

2.9 The Gaps Identified in the Literature

Despite the fact that some studies have been conducted on the impact of Covid 19 and its effect on digital transformation, studies on the impact of these changes in developing countries such as Zambia are scarce. The majority of studies are conducted on a global scale, with only a smattering of data about the city of Lusaka.

Using the Covid 19 pandemic as an example, the researcher will investigate how digital transformation in Lusaka has grown from the perspectives of corporate institutions and the consumers of services offered by these institutions to close the gap described above. To gather the most precise information, data will be collected from 2019, which corresponds to the year in which the Pandemic began. Even though there is some research on the impact of Covid 19 and its impact on digital transformation, studies on the impact of these reforms in underdeveloped countries such as Zambia are difficult to come by. Most research have a worldwide perspective and just a small amount of information about the city of Lusaka.

Using the Covid 19 pandemic as an example, the researcher investigated how digital transformation in Lusaka has grown from the perspectives of corporate institutions and the consumers of services offered by these institutions to close the gap described above.

2.9 Summary of Chapter Two

This chapter summarised the pertinent literature for readers to grasp the study's major concepts. Additionally, this chapter discusses related literature from other researchers' works to draw a connection to some of the difficulties identified and highlighted in the study. It is feasible to determine the basic features that have been reported by numerous scientists and famous writers regarding the correlation between coronavirus 19 and digital transformation based on the literature review. Additionally, this chapter emphasises the importance of increasing public service users' knowledge of digital transition.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter comprises of the materials and methods that were used to achieve the research objectives. The methods selected for this research were based on the research onion (Saunders *et al*, 2019). The research onion gives a detailed view on how a business research ought to be carried out (Saunders *et al*, 2019). This chapter also elucidates how data was gathered and analysed.

3.1 Research Paradigm

Research philosophy is defined as the beliefs in which people process the growth of knowledge (Saunders, 2019). According to Saunders (2019), there are three approaches to research philosophy: quantitative, involving data collection and analysis of numerical data; qualitative, which focuses on non-numerical data; and the mixed approach. This research will adopt a hybrid paradigm as the research question utilizes a case study approach to evaluate the impact whilst dealing with unquantifiable data elements.

Based on the discussed approaches above, the guiding paradigm for this research will take a combination of Positivism and Interpretivism.

The study sought to evaluate the impact of the coronavirus disease on digital transformation. It intended to establish the link between different trends of digital transformation and the influence the coronavirus pandemic has had on their adoption more so focusing on the benefits realized by consumers. The study was also undertaken to assess whether consumers were aware of the transformation efforts by public sector institutions and whether they were inclined to use these technologies for facilitating service continuity during and beyond the pandemic. For the study to accomplish this, a quantitative method of research was used so to obtain significant data related to the study.

A research philosophy can be defined as beliefs or methods by which people process the expansion of knowledge (Saunders et al, 2019). According to Saunders et al. (2019), there are three methods to philosophy research: epistemology, ontology, and axiology. Because of the nature of the research questions and aims associated with the study, an epistemology approach was used for the purpose of this study. There are three viewpoints to consider in an epistemological approach: realism, interpretivism, and positivism (Saunders et al, 2019). The

researcher took a positivist stance, claiming that the only way to conduct study was to use a scientific approach (Sekaran and Bougie, 2016). Positivism emphasises an objective approach to study while minimising the researcher's influence over the sort of data obtained (Bell et al, 2018). As a result, the researcher was disinterested in the study and could not speak out in their favour (Bell et al,2018). The positivist concept holds that data should be gathered by observation and then quantified and analysed using statistics (Saunders et al, 2019).

3.2 Deductive Approach

According to Saunders et al. (2019), positivist philosophy is typically connected with a logical approach that focuses on developing hypotheses based on previously established theories. Because of the use of a logical technique, produced hypotheses were checked against pre-existing theories (Sekaran and Bougie, 2016). Because it was governed by existing theories, this investigation could only use a deductive approach. To elaborate, the study used empirical observations to obtain data, such as questionnaires designed based on hypotheses made (Sekaran and Bougie, 2016). These quantitative methodologies were utilised to collect data that was statistically analysed in order to prove previously existing theories linked to the subject (Saunders et al, 2019). The current theories were investigated using a deductive technique to see if they might be accepted, rejected, or altered (Sekaran and Bougie, 2016). As a result, based on the findings, existing hypotheses were investigated to see if they were applicable to the study.

3.2.3 Time Horizon

According to Sekaran and Bougie (2016), a time horizon can be defined as the amount of time it will take to complete a research study. In accordance with Sekaran and Bougie (2016), the two types of time horizons that can be used in a research project are cross sectional and longitudinal time frames. The researcher used a cross-sectional strategy for this investigation.

3.2.4 Research Strategy

The research strategy is a detailed plan for carrying out the research in order to adequately answer the research questions and achieve the research objectives. The research strategy chosen was able to direct the data collection methods used. Experiments, surveys, ethnography, case studies, grounded theory, and action research are examples of research strategies, according to Sekaran and Bougie (2016). Because of the deductive approach used, a survey strategy was chosen as the research strategy for this study. This enabled the researcher to collect large amounts of empirical data related to the research, assisting in the achievement of the research objectives (Sekaran and Bougie, 2016).

3.3 Empirical Features of Methodology

Due to the vastness of the research area of digital transformation adoption, the target population for this research is equally vast. To ensure the success of this research, it is critical to narrow the focus area to minimise risks. As a result, the target population for this research will be public sector Institutions/institutions that have been forced to undergo digital transformation. At least two government agencies will be involved, each from a distinct sector of public service providers.

3.3.1 Sampling Frame, Sampling Methods, and Sample Size

3.3.1.1 Sampling Frame

Due to time and financial constraints, it will be necessary to sample only a subset of the target population. Lusaka, Zambia's capital city, drives the digital transformation agenda, accounting for nearly 60% of all digitization implementations (World Bank 2020). The medium and public sector Institutions from various sectors in and around Lusaka will serve as the sampling frame for this study. Government agencies and private institutions in the service provision sectors will be targeted.

3.3.1.2 Sampling Methods

Due to the population's variability, this study used a stratified sampling method. Prior to sampling, the population was divided into two distinct subgroups. After stratification, the survey was conducted using the simple random sampling method in two strata and the judgement sampling method in one stratum.

3.3.1.3 Sample Size

Due to the study's use of a stratified sampling method, the sample size was divided into two groups. The total sample size that was appropriate for this study was 90, as it enabled the researcher to cover more ground. The strata/subgroups and sample sizes are listed in Table 3.1.

Table 1:Subgroup Sample Sizes

Strata/Subgroup	Sample
Employees in Public Service /Sector Institutions/ Agencies	56
Consumers	34
Total	90

3.3.2 Data Collection

For this research, a variety of data collection techniques can be used, each with its own set of advantages and disadvantages. Interviews and online-based self-completion surveys in the form of structured and unstructured questionnaires will be used to collect the primary and secondary data for this research. This approach is optimal in light of the technical capabilities of the majority of corporations that have embraced the digital transformation agenda. Zambia Revenue Authority – ZRA, Patents and Companies Registration Office - PACRA, and National Registrations Office – Zanaco will be included in this research.

3.3.3 Data Protection and Ethical Issues

The ethics of the participating respondents are among the considerations for online survey research. Respondents will not be required to provide personal information such as names or any other personal identifying information. This will be done to allow for more honest responses. The researcher will also ensure that any financial information requested by the participating institution is omitted, and they will ensure the safekeeping of data, limiting its use to the intended purposes.

3.3.4 Data Processing and Analysis

The data was processed once it was collected from the two classes. The process of data processing entailed coding, keying in, and changing data (Sekaran and Bougie, 2016). The goal of data editing was to establish whether any conflicts or inconsistencies remained unsolved (Sekaran and Bougie, 2016). SPSS software and Excel sheets were utilized for coding and analysis, which proved to be quite convenient (Sekaran and Bougie, 2016). After coding the responses, the data was cleaned to remove discrepancies and blank responses that, if not handled appropriately, could bias the results (Bell et al 2018). Following that, the data was statistically analysed to determine if the responses were adequate (Sekaran and Bougie, 2016). The data were analysed descriptively, and the results were displayed as percentages and values in graphs, pie charts, tables, and bar charts.

3.5 Validity and Reliability of Data

To safeguard the researcher's integrity, each piece of research must adhere to a set of quality standards (Saunders et al, 2019). Each researcher is accountable for following all necessary processes to avoid discrepancies in the research that can taint it. As a result, the researcher employed painstaking approaches to get astounding findings (Parveen and Showkat, 2017).

According to Parveen and Showkat (2017), research's reliability and validity are defined as the study's findings and conclusions being accepted. To ensure the integrity and acceptance of the research findings, they required to be thoroughly analyzed and organized. To confirm the validity of the investigation, the ingredients were precisely measured (Heffner, 2017). The questionnaire was pre-tested and corrected before to being sent to respondents. As a result, one may claim that the research quantified the important elements necessary for reliable findings.

To ensure the research's trustworthiness, measurements required to be precise and of high quality. The measures' accuracy assured that the research findings were not only true, but also statistically significant. The findings were consistent, and they can thus be utilized to guide future research (Parveen and Showkat, 2017). As a result, the findings can be repeated in a wide range of trials (Heffner. 2017).

The term "generalisability" refers to the ability of research findings to be applied in other contexts (Parveen and Showkat, 2017). One may argue that this study is worthwhile and that its conclusions are applicable to other studies looking at the use and acceptability of digital technology in enterprises, as well as the impact of the coronavirus on digital transformation. Furthermore, for a study's findings to be called generalizable, they must be applicable to a larger population (Allen, 2017).

3.6 Ethical and Access Issues

3.6.1 Accessibility

This study achieved the required access. The researcher had full access to all trial parameters. These included station managers, change managers, information technology managers, and operations and support workers at ZRA headquarters and PACRA offices. The researcher used computerised questionnaires to collect data from respondents, gaining first-hand expertise (Sekaran and Bougie, 2016). A letter from ZCAS University stating that the questionnaires were designed particularly for this research was presented.

3.6.2 Research Ethics

The information gathered came from the two strata chosen for this study. All data gathered was for the purpose of this study, and ethical concerns were addressed. As a result, the researcher followed ethical guidelines to ensure that the investigation caused no harm (Saunders et al, 2019).

3.7 Chapter Summary

This chapter covered in full a thorough research technique. The scope of the survey, its philosophy, research technique, design, time horizon, research strategy, sampling frame, and sample size are discussed in this chapter. Additionally, data collecting, processing, and analysis strategies were highlighted. Additionally, information was offered regarding the reliability and validity of the research findings, as well as ethical and access concerns. The scope of the survey, its philosophy, research technique, design, time horizon, research strategy, sampling frame, and sample size are discussed in this chapter. Furthermore, strategies for data collecting, processing, and analysis were examined. Additionally, material relevant to the reliability and validity of the research findings, as well as ethical and access issues, were presented.

CHAPTER FOUR

FINDINGS AND ANALYSIS

4.1 Introduction

This chapter discusses the analysis and interpretation of data collected from respondents using online/electronic surveys (see appendix) distributed to respondents within the various groupings. The data was analysed and then interpreted into relevant information, which led to the study's ultimate result and hence the achievement of the research objectives. The study's discussion centred on the aims, research questions, and hypothesis that served as the foundation for this research.

4.2 Presentation of Findings

The study's demographic findings are presented separately for each of the two studied subgroups/strata. After aggregating the data from both strata, descriptive statistics will be used to analyse the results.

4.3 Demographic Data

The demographic information gathered during the survey is necessary to ascertain basic information about the respondent that is not directly relevant to the study but may contain unique facts that contribute to the study's overall outcomes. Below is a breakdown of the demographic data for each stratum.

### 4.3.1 Public Sector Institutions Demographic Data

The idea to understanding the age groups was to ascertain the ability to adapt to modern technology among existing employees at the Zambia Revenue Authority - ZRA and the Patents and Companies Registration Agency - PACRA.

4.3.1.2 Age of respondents (Public Sector Employees)

Figure 2 depicts the age range of public sector employees: 42.9 percent were between the ages of 26 and 35, while 25 percent were between the ages of 36 and 50. The purpose of identifying age groups was to assess existing employees' ability to adapt easily to digital transformation efforts at ZRA and PACRA. According to the representation, the age groups employed by the two Public Sector Institutions are primarily composed of the young, with 41 respondents being between the ages of 18 and 35. These are perceived to be young minds capable of rapid learning

and adaptation to new trends, including those associated with emerging technology and uncertainties such as the coronavirus pandemic.
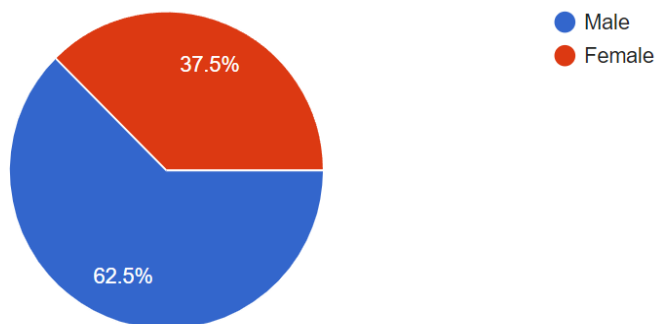
Figure 1:Age Category for Public Sector Employees
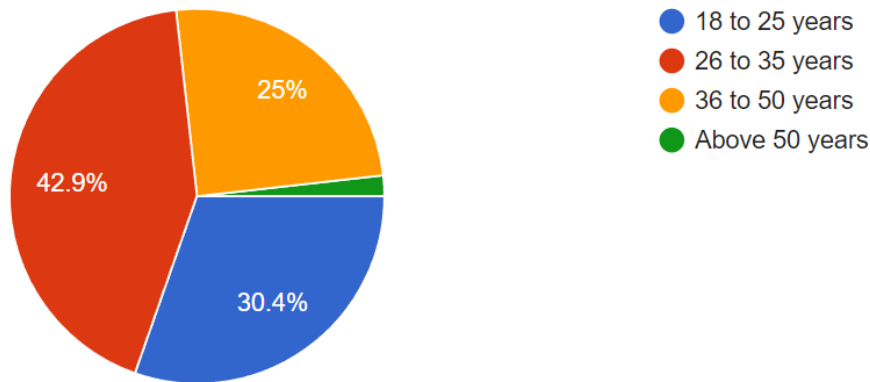
Source (Author 2022)

4.3.1.2 Respondents Gender (Public Sector Employees)

Figure 3 depicts the gender of employees in public sector Institutions. The majority of respondents were male, accounting for 62.5 percent of the total, with female participants accounting for 37.5 percent of the total. This indicates that male employees outnumber female employees in public sector organisations.

Figure 2:Gender Category for Public Sector Employees
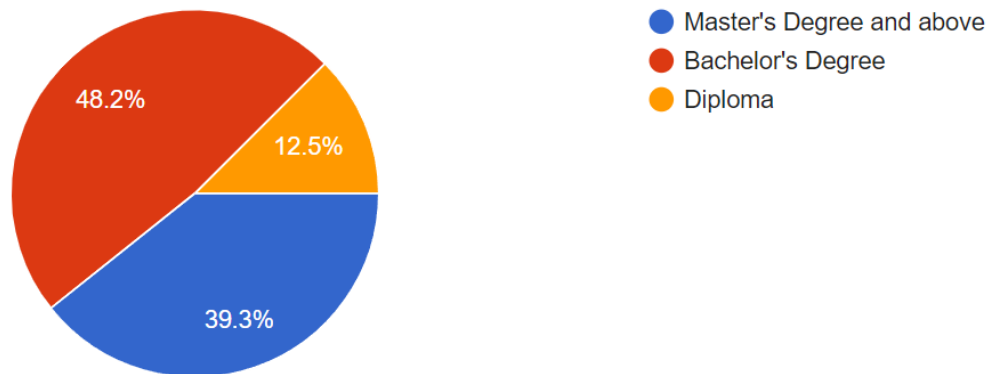

Source (Author 2022)

4.3.1.3 <u>Respondents' Educational Background (Public Sector Employees)</u>

The educational background of public sector employees is depicted in Figure 4.3 below. According to this data, 42.8 percent, 39.3 percent, and 12.5 percent of respondents in this group had earned a Bachelor's, Master's, or Diploma, respectively.

**Figure 3: Educational Background for Public Sector Employees**

Source: Author (2022)

4.3.2 Consumers/Users Demographic Data

4.3.2.1 <u>Respondent's Gender (Consumers/users of Public Services)</u>

Figure 5 depicts the gender of consumers/users. Male respondents made up 51.3 percent of all respondents in this poll, while female respondents made up 46.9 percent, indicating that male consumers outnumber female consumers when it comes to public sector service users. '

**Figure 4: Gender Category for Public Service Consumers**
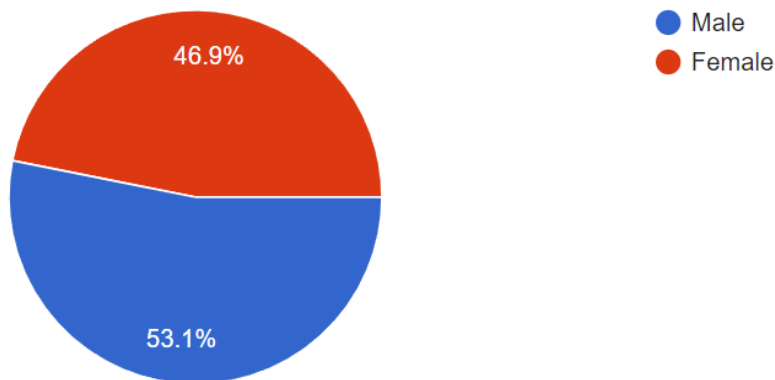
Source (Author 2022)

4.3.2.2 Respondents age (Consumers/users of Public Services)

The age range of consumers/users is depicted in Figure 4.8. The youngest age group (aged 18 to 25) accounted for 34.6 percent of all responses. The most common age group (26 to 34 Years) accounted for 40.6 percent. The above-50-year-old age group garnered the fewest responses (9.4 percent).

**Figure 5: Age Category for Consumers/Users**
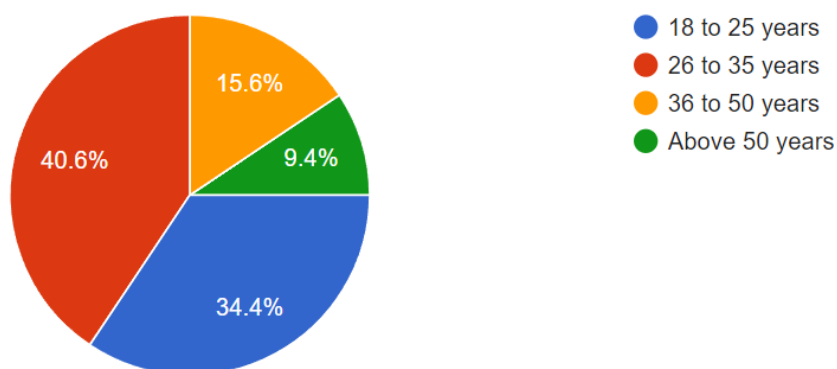
Source (Author 2022)

4.3.2.3 Respondents' Educational Background (Consumers/users of Public Services)

Figure 7 depicts the educational background of consumers. The bulk of respondents (50%) held bachelor's degrees, followed by master's degree holders (25%) and diploma holders at 12.5 percent. 12.5 percent of those polled had finished high school.

Figure 6: Educational Background Category for Consumers/Users of Public Services
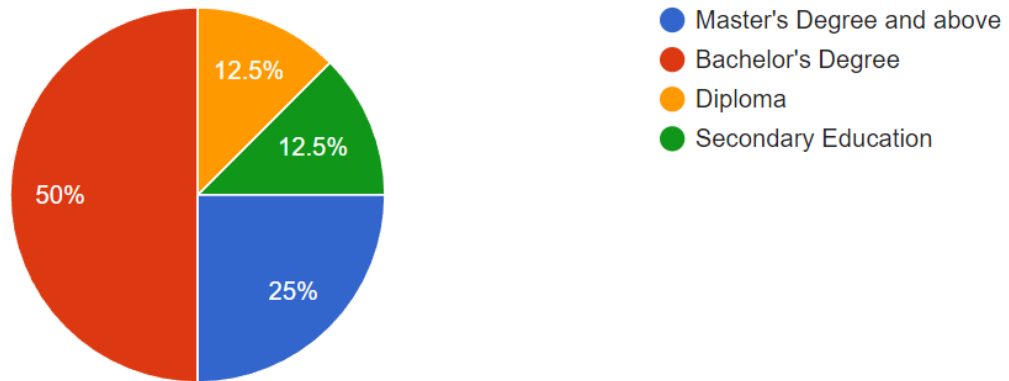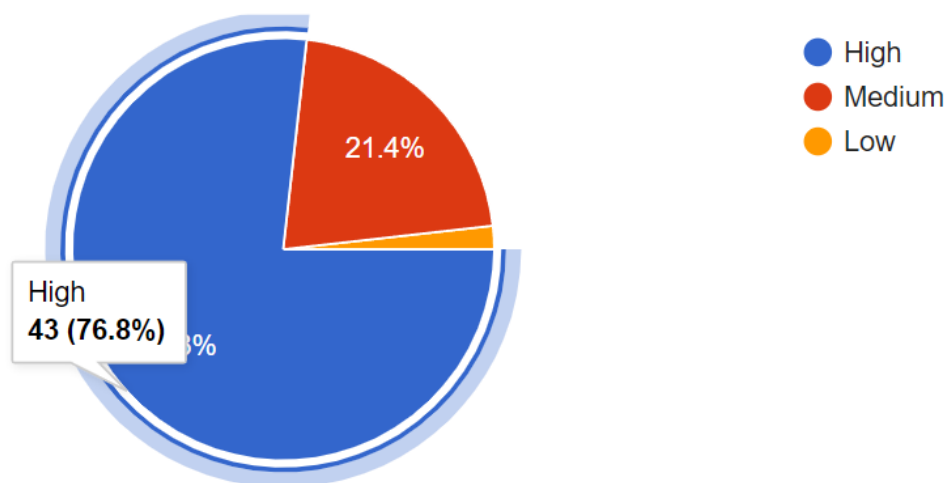

Source: Author (2022)

4.4 The Coronavirus and Public Sector Digital Transformation

The below findings from the survey relate to the impact the coronavirus 2019 on the digital transformation of public sector institutions.

4.4.1 <u>How would you rate the technology adoption rate in your organization (automation of business processes) during the covid 19 pandemic</u>

The results presented below reflect how staff at ZRA and PACRA rated the technology adoption during the coronavirus pandemic. In figure 0 below, 43 of the 56 respondents account for 76.8 percent of the responses reported a high technology adoption rate. Conversely, 21 percent rated the adoption rate as medium, while 1.8 percent reported a low rate. These results are indicative that there was a digital transformation surge in both Public Sector Institutions during the Pandemic.

Figure 7:Technology adoption rate during covid 19
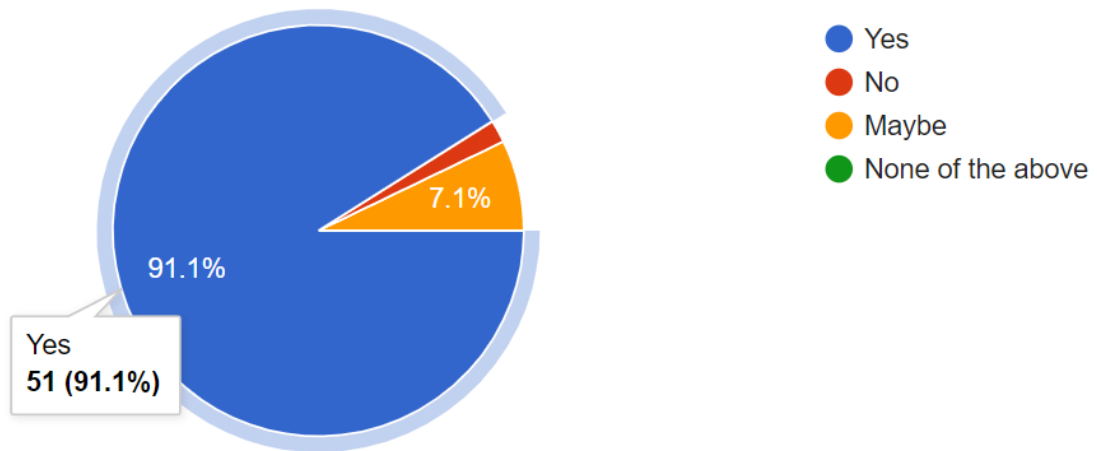

Source: (Author 2022)

4.4.1 <u>How would you rate the technology adoption rate in your organization (automation of business processes) pre and post coronavirus pandemic</u>

Figure 9 below recorded the responses to the usage of digital tools and platforms that would aid remote working and collaboration during the pandemic. The highest response, accounting for 91 percent was recorded from respondents who reported an increase in the usage of digital tools. 7.8 percent were not sure if there was an increase and 1.8 percent reported no increase at all.

Figure 8: Usage of Digital Tools during covid 19

Source: (Author 2022)

4.4.3   If your answer to question eleven was yes, what has been the general acceptance rate of these technologies

This question was meant to assess the acceptability of technology during the coronavirus pandemic. In figure 10 below, 43 of 56 respondents gave a response of a high technology acceptance rate of 78.2 percent. 20 percent gave a moderate acceptance rate and 1 percent reported a low acceptance rate. The high and moderate acceptance rates can be said to positively impact the digital transformation rates of Public Sector Institutions during the pandemic.

Figure 9: Technology Acceptance Rate
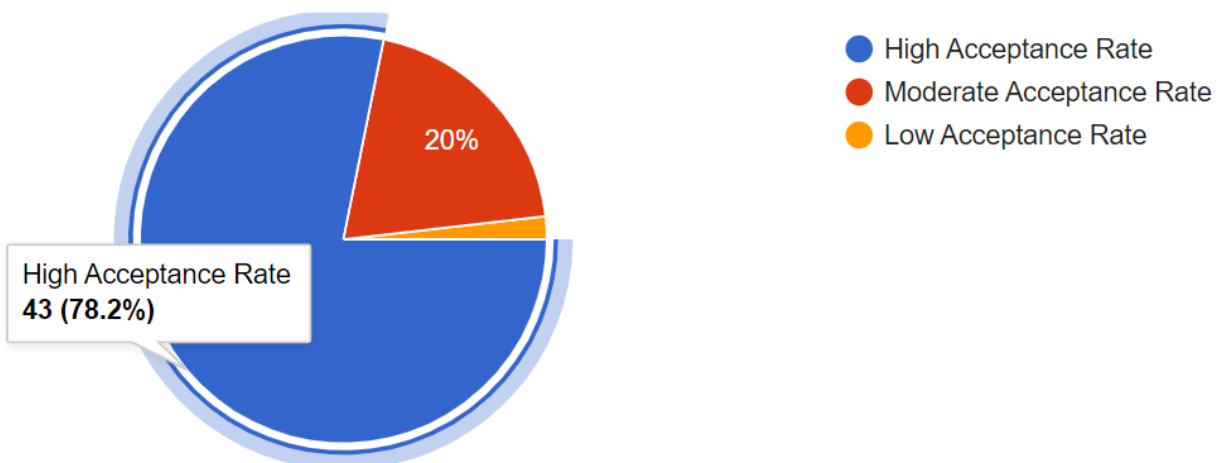
Source: (Author 2022)

4.4.4   How do you rate the Impact of Digital Technology Adoption on Productivity and Sustainability During the Covid 19 pandemic

From figure 11 below it can be seen that 76.4 % of respondents stated that digital technology resulted in high productivity and business sustainability during the covid 19 pandemic. 21.8 % and 1.8 % gave a rating of medium and moderate productivity and business sustainability respectively.

Figure 10: Effects of Digital Technology
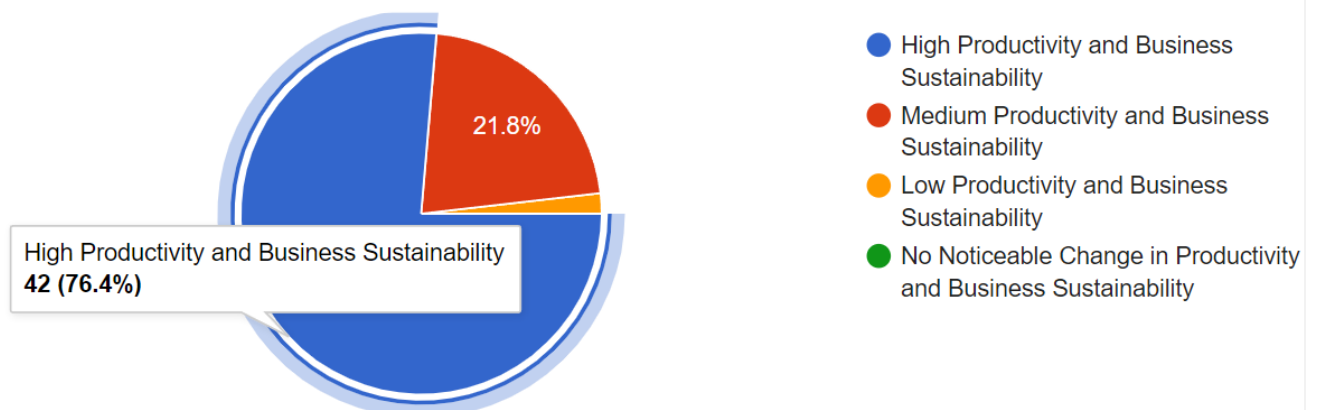
Source: (Author 2022)

4.4.5 If your answer to question eleven was yes, would you continue using these digital tools/platforms post the coronavirus pandemic

As shown in figure 12, 94.5% of the respondents stated they would continue to use digital tools/platforms that were adopted during the covid 19 pandemic. The figure also shows that 5.5 % of the respondents with a response of maybe.

Figure 11:Usage of Digital Tools post covid 19
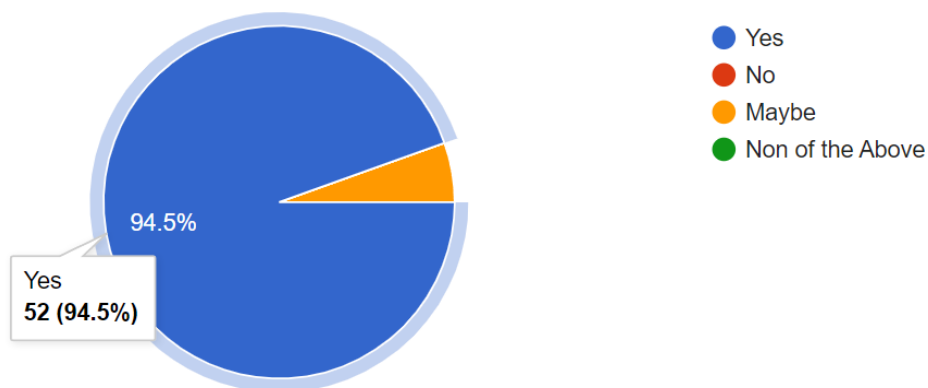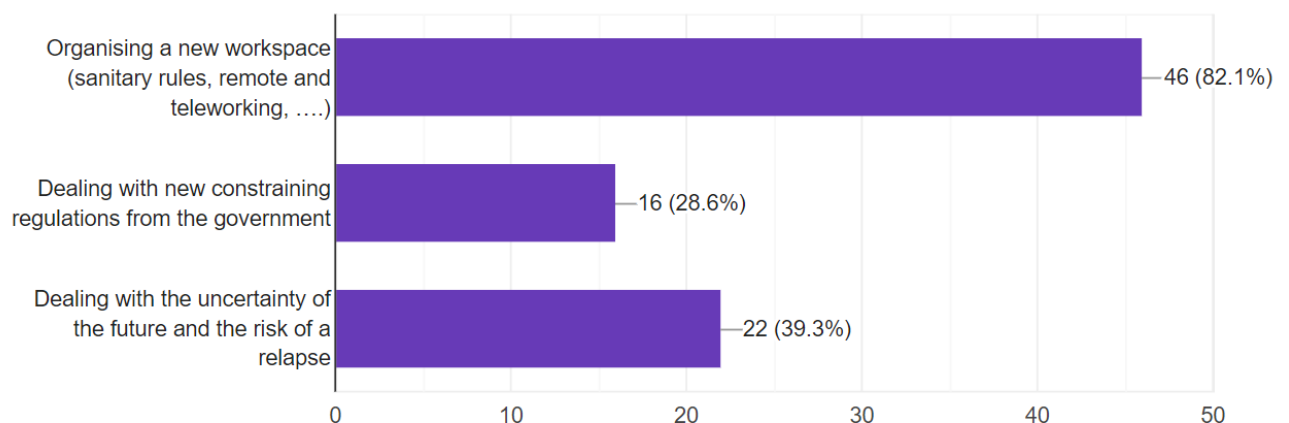

Source: (Author 2022)

4.5 Impact of the Coronavirus 2019 on the Work Environment

The findings from the survey relate to the impact the coronavirus 2019 on the work environment of public sector institutions

4.5.1   <u>What are the major concerns related to Covid 19</u>

From figure 13 below, it was gathered that teleworking or working remotely was the biggest concern of employees of public sector Institutions, accounting for 82.1 percent of responses. This was followed by the uncertainty of the future, such as a relapse at 39.3 percent and finally dealing with constraining regulations at 28.6 percent. From these findings, that the biggest concern (working remotely) would imply an increase in the adoption and usage of technology by Public Sector Institutions for employees to respond to requests and continue providing services to members of the public, consumers in this regard.

Figure 12:Concerns of covid 19 pandemic

Source: Author (2022)

4.5.2   <u>Have your employers implemented any form of work rotations</u>

From the responses obtained as seen in figure 14, 96.4 percent of public service employees reported of work rotations having been implemented by their employers, leaving less than 4 percent still working from their office locations. These findings align with covid 19 responses from most global governments aimed at decongesting public spaces to meet covid guidelines. This in the process lead many Public Sector Institutions to digitally transform and adopt technology as it was the only guaranteed way to ensure sustainability and business continuity whilst lessening physical contact between employees and consumers of public services

Figure 13:Implementation of work rotations
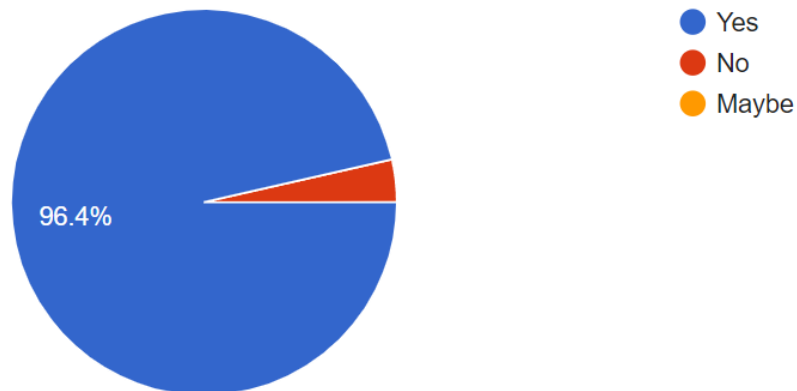
Source: Author (2022)

4.5.3   Availability of technology tools during work rotations

In figure 15 below, 92.6 % of the respondents from public sector institutions responded having been provided with the minimum technology tools required to use during work rotations, 2 % reported not having been given the required tools and another 2 percent were not sure if they had been provided the minimum tools required. From the analysis above, most Public Sector Institutions provided technology tools for their employees working from home in the process increasing the automation in public sector institutions.

Figure 14:Availability of tools during rotations
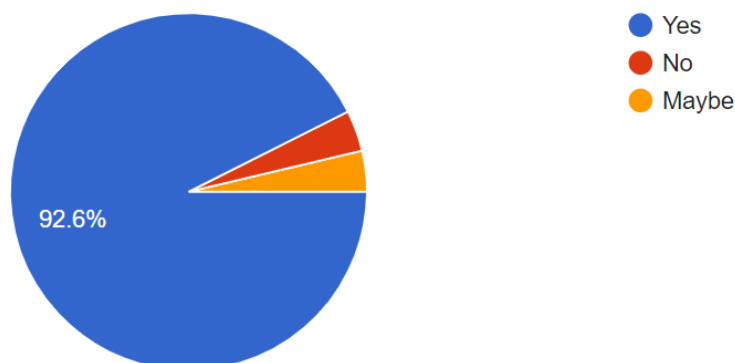
Source: Author (2022)

4.5.4   What challenges did you experience during work rotations

This question was meant to provide an overview of challenges experienced during the work rotations triggered by the covid 19 pandemic. From figure 16, 94.4 % of the respondents highlighted slow connectivity as the biggest challenge. A further 20 percent reported destructions at home and 13 % reported not having adequate tools. These findings are consistent with the findings in earlier research questions which report an increase in need and usage of technology, in this case the increased need for stable internet connectivity and bandwidth.

Figure 15:Challenges During Rotations
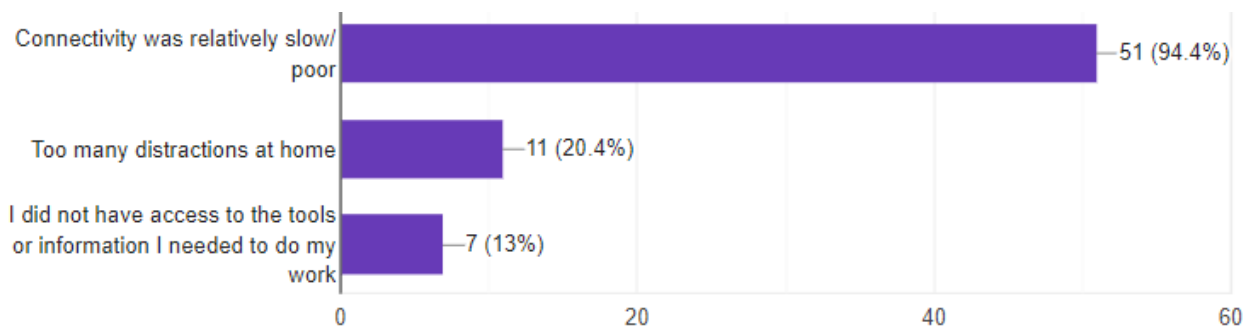
Source: Author (2022)

4.5.5 What Impact has Covid 19 had on your organization

The purpose of this research question was to gather the covid 19 impact on public sector institutions, then later ascertain if technology adoption could assist avert this impact. 91 percent of respondents reported revenue loss as the greatest challenge, 76.8 percent reported reduced activity and 1 percent reported increased activity.

Figure 16: Impact of Covid 19 on Public Sector Institutions:
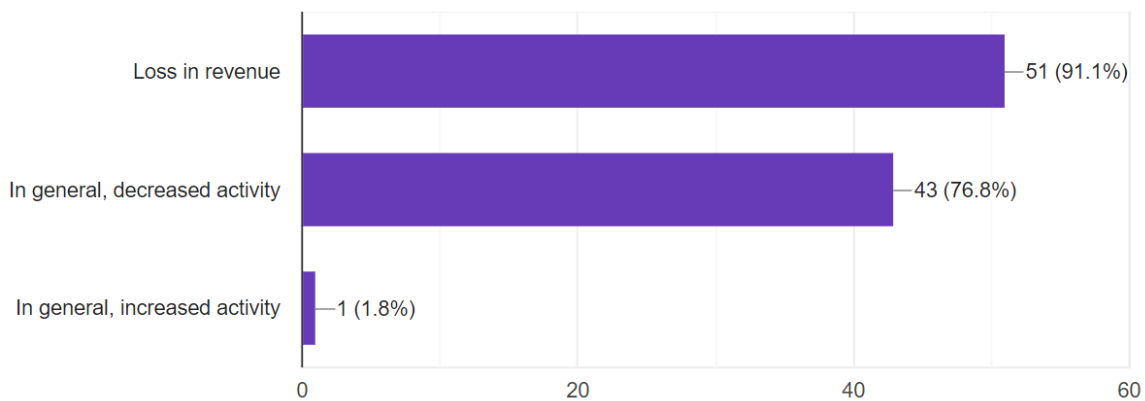
Source: Author (2022)

4.5.6   Implementation of contingency measures to offset impacts of Covid 19

The purpose of this question was to ascertain if public sector institutions had responded to the covid crisis through the implementation of contingency measures to avert the covid crisis. These measures took the form of changes to business processes or adoption of technology tools. In figure 18, the highest number of respondents, accounting for 67.9 percent reported a shift to e-platforms which signifies a clear shift to digital transformation trends. 55.4 percent reported of alternative means of client integration, whilst 21.4 percent responded with the launching of new product and services, reports which can be deduce technology adoption.

Figure 17:Contingency measures pre covid
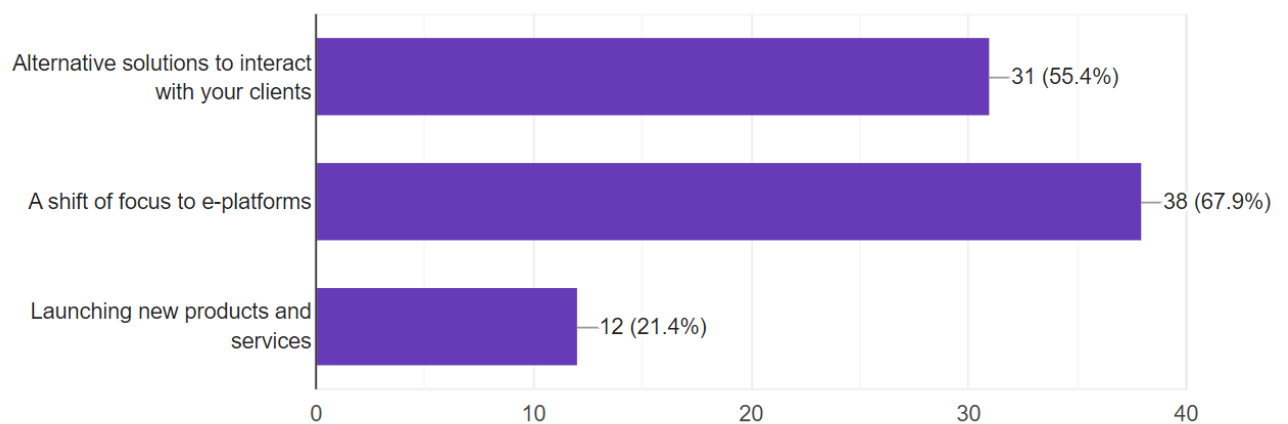
Source: Author (2022)

4.6 Impact of Digital Transformation on Consumers

The findings from the survey relating to the impact covid 19 digital transformations has had on consumers of public sector services.

4.6.1 <u>Have you previously used any of the below public services? Select all that are applicable</u>

A total of 27 out of 33 respondents accounting for 84.4. percent stated that the have previously used Taxation services (*Registration, Filing and Payments*) previously. 56.3 % and 34.4 confirmed using Company Registration and National Registration services respectively.

Figure 18:Usage of Public Sector Services
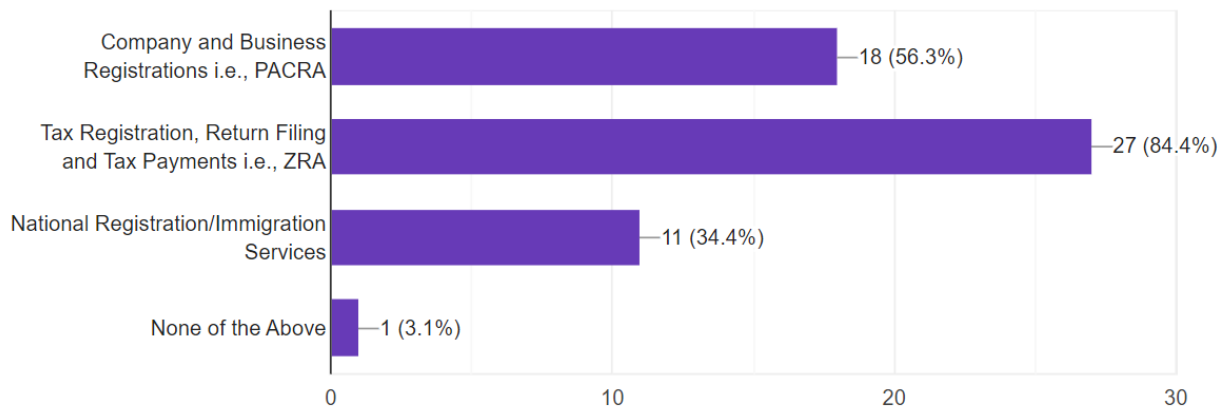
Source: Author (2022)

4.6.2. <u>How have you been accessing the services in question 5?</u>

From figure 20, it can be observed 40.6 % of respondents access public services online, 50% access these services both online and manually and 9.4 % stated that they access these services manually.

Figure 19: Mode of Accessing Services
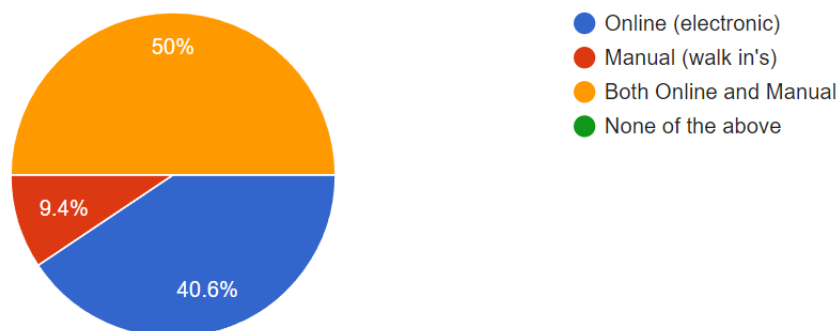
4.6.3. If you selected options (One) Online Access in question, how reliable have you found these services

From figure 21 it can be observed 64.7 % of respondents stated that public services accessed online are reliable, 23.5% stated that these are very reliable and 11.8 % stated that these services are moderately reliable.

Figure 20:Reliability of Accessing Services Online
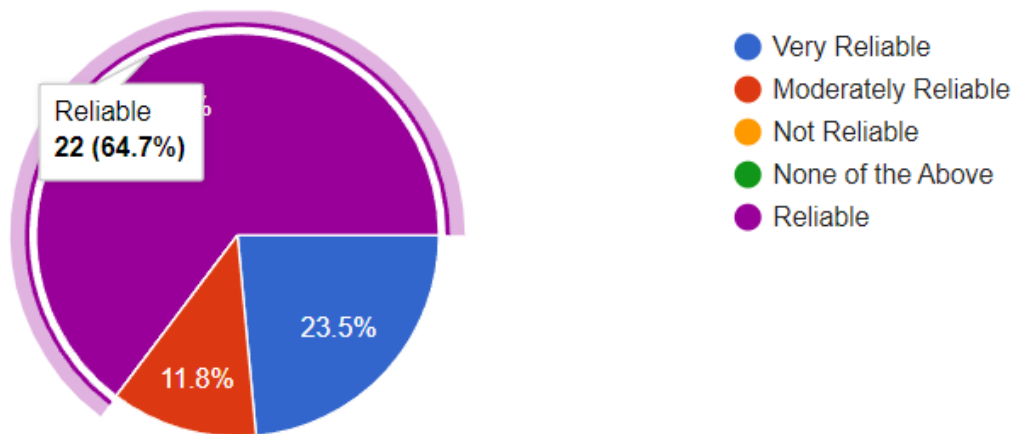
4.7 Impact of Digital Transformation on Consumers (During Covid)

4.7.1 During the Corona virus Pandemic, have you observed an increase in the availability of public services through digital/online platforms

In figure 22 below, 82.4% percent of respondents stated that they had observed an increase in the availability of public services through digital platforms. 5.9% reported no increase at all and 11.9 percent were not sure if there was any increase.

Figure 21:Restriction of Access to Services Online
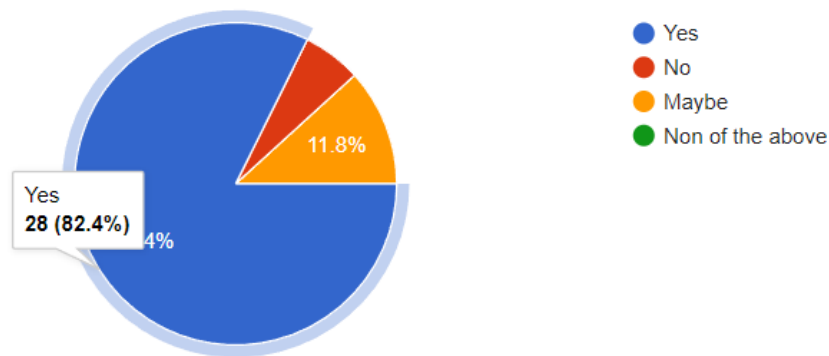
Source: Author (2022)

4.7.2. If you answered yes to question Ten, have these services been simplified any further than they were before the covid 19 pandemic

From figure 23 below it can be observed that 65.6 % of respondents stated that access to public services had been simplified during the covid 19 pandemic. 18.8 % were not sure and 12.5 % stated that they never observed any simplification of these services online.

Figure 22:Simplification of Services Accessed Online
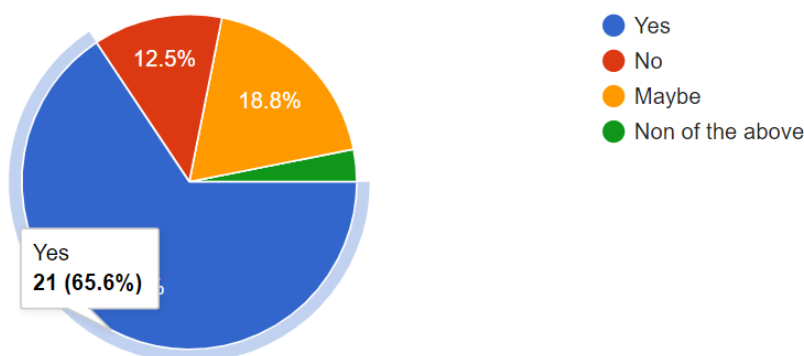
Source: Author (2022)

4.7.3. Do you believe digital transformation occurring during the Coronavirus disease 2019 has improved public service efficiency, effectiveness, and accountability?

62.5 % of respondents stated that digital technology greatly increased the efficiency effectiveness and accountability of public services during the covid 19 pandemic. 18.8 gave a rating of medium and moderate increments in efficiency, effectiveness, and accountability of public services

Figure 23:Simplification of Services Online
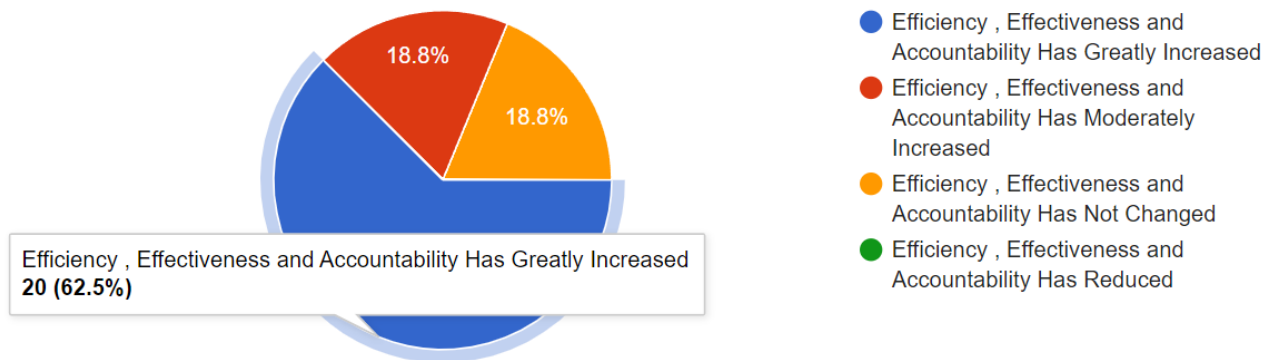
Source: Author (2022)

4.7.4. Beyond the covid 19 pandemic, how would you prefer to access the public services listed in question Five

As shown in figure 25, 79.4% of the respondents stated they would continue to access public services through digital platforms that sprung during the covid 19 pandemic. The figure also shows that 17.6 % of the respondents stated they would continue accessing the services both electronically and manually.

Figure 24:Access of Services Post Covid
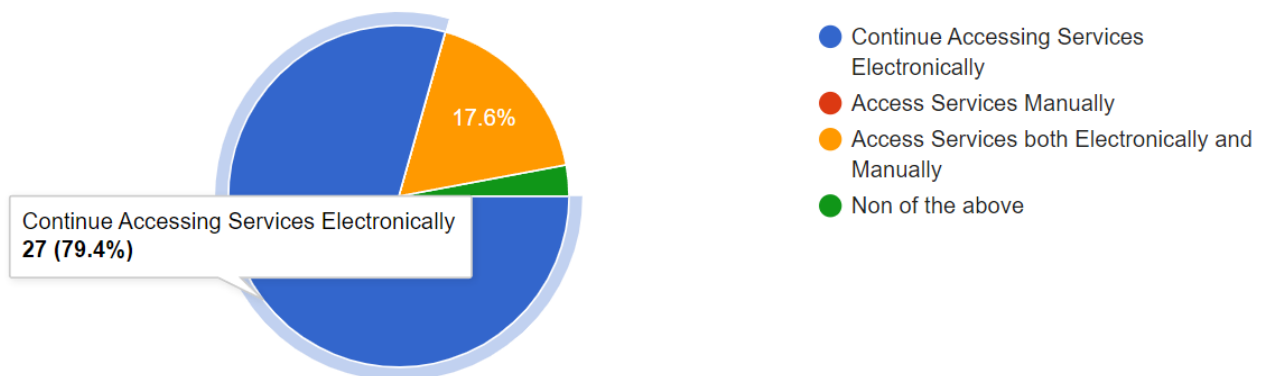
Source: Author (2022)

4.8 Impact of Coronavirus 2019 on Digital Transformation

As shown in Table 2, there was a relationship between the impact of the coronavirus disease and the digital transformation of Public Sector Institutions. Out of the 56 respondents in public sector firms, 51 (80.4%) stated that the coronavirus has increased digital transformation whereas 1 respondent reported no change in digital transformation 4 respondents responded stating maybe

Table 2:Digital Transformation in Public Service Public Sector Institutions

DigitalTransformationIncrease * ContinuedIncrease Crosstabulation

			ContinuedIncrease			Total
			High Ado	Low Adop	No Chang	
DigitalTransformationIncrease	Maybe	Count	0	1	3	4
		% within DigitalTransformationIncrease	0.0%	25.0%	75.0%	100.0%
	No	Count	0	0	1	1
		% within DigitalTransformationIncrease	0.0%	0.0%	100.0%	100.0%
	Yes	Count	41	2	8	51
		% within DigitalTransformationIncrease	80.4%	3.9%	15.7%	100.0%
Total		Count	41	3	12	56
		% within DigitalTransformationIncrease	73.2%	5.4%	21.4%	100.0%

4.9 Hypothesis Testing

From the results shown in table 3, it can be seen that the Chi-square value is 16 with a 4 degree of freedom and a probability of 0.04. Subsequently, the null hypothesis will be rejected since the p-value.002796 is lower than 0.05. The study therefore accepts the alternative hypothesis and hence concludes that the coronavirus does have an impact on the digital transformation of Public Sector Institutions.

Table 3:Chi-Square Tests

Statistic	Value	Df	Asymp. Sig. (2-tailed)
Pearson Chi-Square	16.173	4	0.03
Likelihood Ratio	15.109	4	0.04
N of Valid Cases	56		

The hypothesis for this research as outlined in Chapter one were:

Ho: - Coronavirus 2019 has no impact on digital transformation. With reference to the findings, it can be noted that Coronavirus 2019 has an impact on digital transformation. The null hypothesis was therefore rejected.

Alternative **Ho1**: - Coronavirus 2019 has an impact on digital transformation. With reference to the findings in table 2, this hypothesis was accepted.

4.10 Chapter summary

The primary finding of the study was that the coronavirus 2019 has an impact on the digital transformation of public sector organizations. This is supported by the findings of a survey in which 51 (80.4 percent) of 56 respondents from public sector organizations stated that the coronavirus has accelerated efforts to transform their organizations into digital enterprises.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This concluding chapter summarises the findings that have been discussed in detail in the preceding chapters. Additionally, the findings are reviewed, and conclusions regarding the impact of covid 19 on the digital transformation of Public Sector Institutions. Additionally, recommendations have been made based on the study's findings.

5.2 Discussion of Findings

The fundamental objective of this study was to determine the impact of the coronavirus on the digital transformation of Public Sector Institutions. The study focused on two subgroups within Lusaka city which were made up of 34 consumers, and 56 employees in public sector institutions. Based on the modes of research methodology that had been undertaken for this study, relevant data was collected and analysed to arrive at a conclusion.

In the current study, most employees in the public sector firms were aged between 18 to 35. This age group represents a millennial who are more receptive to change and are more likely to easily adapt to unprecedented changes such as those brough about by the coronavirus. Further to this, the second sector representing beneficiaries of public sector services analysed fell with the similar age group of 18 to 35 years, and a response consistent to that of public sector employees was recorded. This response spoke to how they preferred to access most services electronically and would continue to access these services this way even beyond the coronavirus pandemic.

Considering the theories associated with this study and the hypotheses generated, it can be concluded that the coronavirus has had an impact on digital transformation. This is due to the fact that employees in the public sector, and consumers as well as beneficiaries of public services are more likely to use digital and electronic platforms if policies and procedures are in place to ensure that these tools are available around the clock. Consumers continue to use certain technologies after they have been adopted, according to the Technology Continuous Theory of Research (Harasis and Rasli, 2016). Based on the findings of this study, it can be concluded that the Technology Continuous Theory is supported by the findings of this study.

5.3 Conclusion

5.3.1 Digital Transformation During and Post the Coronavirus Pandemic (Impact on Public Sector Institutions)

Amongst the factors that this study attempted to determine was the continued use and adoption of digital transformation models, tools and their continued usage and adoption beyond the coronavirus pandemic. For this objective, the findings alluded to in chapter four indicated that most Public Sector Institutions responded positively to the digital adoption agender and were willing to retain the digital transformation strategies and implementations beyond the covid 19 pandemic. Public Sector Institutions availed more of their processes online and endeavoured to simplify processes so as to remain sustainable.

5.3.2 Digital Transformation During and Post the Coronavirus Pandemic (Consumers)

As deduced from the findings in chapter 4, consumers are receptive to digital transformation efforts in Public Sector Institutions, and they have demonstrated a greater desire to access most services through digital channels as opposed to the traditional manual approach. The findings, however, still show a small percentage of consumers stating that digital services are unreliable and are not easy to use. Because of this, a conclusion can be drawn to say that despite the many benefits that can be realized from digital transformation, some consumers still resolved to access services using manual options to unreliability resulting from inadequate infrastructure.

5.3.3 Impact of Digital Transformation on Efficiency, Effectiveness and Accountability

From the finding in this study, it is suggested that 'digital transformation can aid service efficiency and effectiveness. Most respondents (consumers) indicated that accessing services using online/digital tools presented several efficiencies which cannot be seen in the manual processes. The finding s also revealed that digital tools provide for great er accountability. Further to this, the study showed that an increase in digital services was observed, initially resulting from governments guidelines to decongest public service offices but later as a preference over the traditional means of accessing these services

5.4 Implications of Findings/ Recommendations

Given the established findings of the study regarding the digital transformation of public sector Institutions resulting from the coronavirus pandemic, the following recommendation may be taken into consideration:

5.4.2 The importance of being digitally ready

The coronavirus proved the crucial importance of digital preparedness, which allows business and daily life to continue as usual – to the extent that it is possible – during pandemics and other disasters. The development of the infrastructure necessary to support a digital world, as well as staying current with emerging technology, will be critical for any business or country seeking to remain competitive in a post-COVID-19 world, as will the adoption of a human-centred and inclusive approach to technology governance. Thus, the findings in Chapter 4, such as concerns about slow connectivity when working remotely, might be mitigated by developing a greater mental preparation for digital transition.

5.5 Limitations of the Study

Collecting data from government agencies proved difficult, even more so during the covid 19 pandemic. Because of the small number of respondents, the researcher only had a small sample size to work with. Since personal information processed by government agencies is extremely sensitive, the vast majority of respondents in Public Sector Institutions stated that the vast majority of materials were too sensitive to be shared with the researcher due. In addition to the vast amount of data from the two layers that needed to be collected and analysed, time was a problem to consider.

5.6 Direction for Future Research

The goal of this study was to ascertain the impact of the coronavirus epidemic on businesses in Zambia's capital, Lusaka. As the coronavirus spread throughout the country, its impacts and consequences became apparent. As a result, future study should be done in additional geographic sites throughout the country, most notably semi-urban and rural areas. Future research could potentially analyse the coronavirus's socio-economic impact. This research will define the perceived benefits of digital transformation in secondary towns and rural areas, such as the utilization of data and digital technology to improve sector-specific outcomes.

5.7 Chapter summary

This research concentrated on public sector. Institutions, and consumers of these services in order to acquire a more comprehensive understanding of the impact of the coronavirus on the digital transformation of Public Sector Institutions in the city of Lusaka. The quantitative research approach used in this study allowed the researcher to collect enough primary data to

complete the investigation. This report detailed the extent to which covid 19 was able to drive the digitalization of government services in key agencies.

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7.0 APPENDICES

APPENDIX A: SURVEY QUESTIONNAIRE

Dear Respondent,

This questionnaire is meant to source information for academic purposes only on how the coronavirus 2019 has impacted the digital transformation process in Public Sector Institutions. Please feel free to provide answers in the most objective way you understand the questions given. The researcher promises to treat the information provided with strict confidentiality to protect your identity.

Please DO NOT WRITE YOUR NAME ON THE FORM. Use a tick to indicate your response and, if applicable, a comment. This questionnaire is designed to solely collect information for academic purposes regarding how the Covid 19 has impacted your organization's digital transformation and technology adoption rate. Please feel free to respond in the most objective way possible in accordance with your interpretation of the questions. To protect your identity, the researcher ensures that the information you provide will be treated with strict secrecy.

PART ONE (Employees in Public Sector Institutions)

Section A: Respondent Demographics

Question One: Respondent's Gender

   a) Male
   b) Female

Question Two: Respondent's Age Category

   a) 18 to 25 years
   b) 26 to 35 years
   c) 36 to 50 years
   d) Above 50 years

Question Three: Respondent's Educational Background

   a) Master's Degree and above
   b) Bachelor's Degree

c) Diploma

Question Four: What are your biggest concerns related to Covid-19 today?

a) Organising a new workspace (sanitary rules, remote and teleworking, ….)
b) Dealing with new constraining regulations from the government
c) Dealing with the uncertainty of the future and the risk of a relapse
d) Other (please specify)

Question Five: During the Covid-19 Pandemic, did your organization implement any form of work rotations (Work From Home) ?

a) Yes
b) No
c) None of the Above

Question Six: If your answer to question five was yes, do you have all the equipment you need to work from home
a) Yes
b) No

Question Seven: If your answer to question five was yes, what are the biggest challenges you faced while working from home? Select all that apply

a) I did not have access to the tools or information I needed to do my work
b) Connectivity was relatively slow/poor
c) Too many distractions at home

Question Eight: How did Covid-19 impact your organization? Select all that apply.

a) Loss in revenue
b) In general, increased activity
c) In general, decreased activity
d) Other (please specify)

Question Nine: Has your organization implemented any of the below contingency measures to offset the impact of a crisis such as COVID-19? Select all that apply.

a) Alternative solutions to interact with your clients
b) A shift of focus to e-platforms
c) Launching new products and services
d) None
e) Other (please specify)

Section C: Covid 19 Impact on Digital Transformation

Question Ten: How would you rate the technology adoption rate in your organization (automation of business processes) pre and post coronavirus pandemic

a) High Adoption
b) Medium Adoption
c) No Change

Question Eleven: Has there been an increase in the use of digital tools/platforms (virtual collaboration tools, productivity monitoring tools) in your organization during the Covid 19 pandemic

a) Yes
b) No
c) Maybe

Question Twelve: If your answer to question eleven was yes, what has been the general acceptance rate of these technologies

a) High Acceptance Rate
b) Low Acceptance Rate
c) None of the above

Question Thirteen: If your answer to question eleven was yes, would you continue using these digital tools/platforms post the covid 19 pandemic

a) Yes
b) No

c) Maybe

PART TWO (Consumers of Public Sector Services)

Section A: Respondent Demographics

Question One: Respondent's Gender

    a) Male

    b) Female

Question Two: Respondent's Age Category

    a) 18 to 25 years

    b) 26 to 35 years

    c) 36 to 50 years

    d) Above 50 years

Question Three: Respondent's Educational Background

    a) Master's Degree and above

    b) Bachelor's Degree

    c) Diploma

    d) Secondary Education

Question Four: Employment (Tick only one)

    d) Government Employee

    e) Private Company Employee

    f) Self-Employed

    g) Not Employed

    h) Others (please specify) ………………….

Section B: Digital Transformation Related Question

Question Five: Have you previously used any of the below public services? Select all that are applicable

a) Company Registrations i.e., PACRA

b) Tax Registration, Return Filing and Tax Payments i.e., ZRA

c) National Registration/Immigration Services

d) Other

e) None of the above

Question Six: If you selected options (A,B,C or D) in question 5 above , how have you been accessing these services..?

a) Online (electronic)

b) Manual (physically walked to the service provider)

c) Both Online and Manual

Question Seven: If you selected option (A) in question 6 above, how reliable have you found these services

a) Very Reliable

b) Reliable

c) Not Reliable

d) None of the above

Question Eight: If you selected options (A) in question 6 above how easy do you find it using these services

e) Fairly Easy

f) Difficult

g) Extremely Difficult

h) None of the above

Section C: Digital Transformation During the Covid Pandemic

Question Nine: During the Corona virus Pandemic, has access to any of the public services in question 5 been restricted to digital/electronic means

a) Yes

b) No

c) Maybe

d) None of the above

Question Ten: During the Corona virus Pandemic, have you observed an increase in the availability of public services through digital/online platforms

a) Yes

b) No

c) Maybe

d) None of the above

Question Eleven: If you answered yes to question Ten, have these services been simplified any further than they were before the Pandemic

a) Yes

b) No

c) Maybe

d) None of the above

Question Twelve: Beyond the covid 19 pandemic, how would you prefer to access the public services listed in question Five

a) Continue Accessing Them Electronically

b) Access Them Manually

c) Non of the above

THANK YOU VERY MUCH FOR PARTICIPATING IN THIS SURVEY