

**INFLUENCE OF DIGITALIZATION ON IMPLEMENTATION OF  
SUSTAINABLE DEVELOPMENT GOALS IN PUBLIC ADMINISTRATION  
IN KENYA**

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## DECLARATION AND APPROVAL

I, **David Nganga Mburu** do hereby declare that this is my original work and has not been presented to any other university for the award of a degree.


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## **DEDICATION**

This project is dedicated to my family especially my loving mother Grace Wanjiku, spouse Janice and siblings who gave moral support.



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## ABBREVIATIONS AND ACRONYMS

<b>DESI</b>	Digital Economy and Society Index
<b>GII</b>	Gender Inequality Index
<b>GSMA</b>	Global Systems for Mobile Association
<b>ICT4D</b>	Information Communication Technology for Development
<b>ICTs</b>	Information Communication Technologies
<b>IT</b>	Information Technology
<b>MDAs</b>	Ministries, Departments and Agencies
<b>MDGs</b>	Millennium Development Goals
<b>NDPs</b>	National Development Plans
<b>NGOs</b>	Non-Governmental Organizations
<b>UN</b>	United Nations
<b>SDGs</b>	Sustainable Development Goals
<b>TAM</b>	Technology Acceptance model

## ABSTRACT

Mainstream government have suffered serious setbacks in most government institutions with policymakers in public administration largely remaining unskilled in ICT creating a gleaming future for SDGs implementation. The purpose of this study was to examine the influence of digitalization on sustainable development goals implementation in public administration in Kenya. The objectives of the study were to examine institutionalization of digital technologies, to assess coordination of ICT Infrastructure and to find out the influence of internalization of digital skills of public administrators in Sustainable Development Goals in Kenya. The study was anchored on the transformative approach perspectives to public administration, Structural-instrumental perspective, environmental perspective and Cultural-institutional perspective theories. The study adopted descriptive design, case study method was most appropriate to obtain qualitative evidence from multiple sources and gain theoretical proposition. The study used mixed method approach that is both quantitative and qualitative methods. The study employed structured questionnaires were administered to target within the government ministries that includes directors, senior managers and ICT Officers. The study will apply purposive sampling and snowball sampling to sample the target respondents. Data analysis methods were employed which included coding and categorization, tabulation, thematic analysis and use of statistical package for the social sciences (SPSS Version 23). Validity test of the research instrument was done to ensure it measures what it claims to measure. Reliability coefficient was determined using Cronbach's Alpha. Ethical consideration regarding integrity and quality of the study, privacy, the confidentiality of the data given by respondents were put into consideration. Based on the findings the study concluded that the study indicates that there was a moderate positive and statistically significant correlation between Institutionalization of digital technologies and implementation of Sustainable Development Goals SDGs ( $r = 0.565$ ;  $p < 0.05$ ). The study indicates that there was a moderate positive and statistically significant correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals SDGs ( $r = 0.684$ ;  $p < 0.05$ ). The study indicates that there was a moderate positive and statistically significant correlation between internalization of digital skills and Implementation of Sustainable Development Goals SDGs ( $r = 0.684$ ;  $p < 0.05$ ). This implies that there was correlation between , institutionalization of digital technologies, coordination of ICT Infrastructure and internalization of digital skills on Implementation of Sustainable Development Goals SDGs in public administration in Kenya. The researcher recommended that organizations should install computer technology tools, software's and databases for tracking, monitoring to enhance implementing SDGs efficiently. Institutionalization of digital technologies should be strengthened to sustainable development goals implementation in public administration in Kenya. Coordination of ICT Infrastructure should be enhanced to sustainable development goals SDGs. There should be internalization of digital skills to enhance sustainable development goals (SDGs). This study suggests that future studies should be done to establish digitalization challenges on implementation of sustainable development goals (SDGs).

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Digitalization process involves arrays of technological implications including applications of digital skills, digital public service, Information Communication Technology (ICT) infrastructure, connectivity and the use of the internet (OECD, 2012). Gartner (2018) views digitalization as more focused towards organization business and he goes further to describe digitalization as the process of moving to a digital business and use of digital technologies to provide innovative revenue, business model and value-producing opportunities. ( Gray & Rumpe, 2018) emphasizes that digitalization is based on the accessibility of huge and voluminous amounts of internal and external based on cloud data, machine learning activities and data mining for prediction of client behavior and future market. Globally, digitalization has seen considerable improvements in digital innovation and digital transformation in the past centuries by creating new ways of economic and social interaction (Mark, 2017).

The process of digitalization in public service has provided a crucial opportunity for public administrators to track the impact of sustainable development projects (Accenture, 2015). Accenture report emphasizes that rapid developments of digitalization of most operational processes in government had greatly influenced the global economy and the continent as a whole. Specifically, the acceleration of digitalization for development has improved the benefits of the digital economy, skills, income and growth in jobs. Even though it's important to note the widespread extent of digitalization, it varies according to the strength of economies as much as

it remains a transformative way in which public administration can advance the linkages and delivery of Sustainable Development Goals (UNCTAD, 2017).

While the global economy is transiting through the digitalization process, least developed countries should not be left behind. Implementation of sustainable development in developing countries will largely depend on the application of digital trade would offer the opportunity for improved participation and access in the global economy by underprivileged countries in Africa (Madelin, 2019).

In Kenya, tenets of digitalization have supported progress in sustainable development including enabling digitization of financial inclusion, education, health, agriculture, public service, fintech and innovative business models. However, the developments have not progressed without challenges that include connectivity, associated regulatory challenges, market segmentation and market dominance (Ndung'u, 2019). Apart from internal country challenges, the Kenyan government has met considerable obstacles in digitalization and streamlining with supranational policy programmers due to conflicting national development priority programmes as well as limited capacity in terms of resources and budgetary allocations for implementation (Banga and Velde, 2018).

Recently, designing public policies at the supranational level has attracted critical concerns regarding, first, the appropriateness or translation of such designs to local contexts of memberstates, and secondly, the capacities of member states in Africa to effectively adapt and implement policy objectives ( Fagbayibo, 2018; Onyango 2017). Turning policy commitments into actionable tools for sustainable developments is an uphill task nationally (Fyson et al, 2019). It requires governments to reorganize and rethink their working methods in practice. In reality,

the governments face obstacles and challenges in overturning siloed policy-making programmes especially of international nature like Sustainable Development Goals (SDGs).

Clemens and Moss, (2015) notes that the struggle by countries in addressing SDGs and implementation efforts remains elusive and disjointed from the main policy processes. Notably, SDGs are not yet introduced in governance mechanisms such as public procurement and budgeting systems (OECD, 2019). It is also considered that there are enormous gaps in leadership competencies and skills that can coherently integrate supranational policy programmes into international, private, public and domestic resources for sustainable developments (Fyson et al, 2019). Lastly, government coordinated approach is essential to allow public sector agencies, ministries and other stakeholders to monitor and share information for SDG implementation.

Fyson et al, (2019) emphasize the need for governments and public institutions to work closely on SDG implementation through regional and local authorities in a subnational government structure. Consequently, digitalization and implementation of SDGs will largely depend on the leadership and digital skills of public servants to navigate complex frameworks of SDGs and ability to turn SDG policy commitments and principles into actions (Fyson et al, 2019). Civil servants will therefore need to acquire skills and knowledge sphere that allows them to operate beyond the traditional cross-disciplinary operating environment. The applications of newly acquired skills will allow them to apply mainstream government process.

To ensure sustainable digitalization implementation, countries need to overcome the challenges and make considerable efforts in creating stronger partnerships for

sharing best governance practices for SDGs as well as enabling strategies and action plans that consistently ensure policy coherence for sustainable development, support compartmentalized government structures and overcoming institutional fragmented actions and silos (OECD, 2019). Further, leading SDG accelerations and policy implementation requires strong inclusive political commitment, leadership backed by policies, legislations, incentives and strategies for sustainable development. Similarly, policy integration that allows cross-sectoral collaboration that is strategic to institutional frameworks are integral in ensuring alignments of new realism in public sector innovations, experimental policy design, system thinking as well as enable them to meet complex intransigent cross-cutting policy challenges posed by supranational policy programmes like SDGs (OECD, 2019).

In Kenya, digitalization, on one hand, affects adoption of Sustainable Development Goals, while on the other hand, it has remained a critical issue in the public service and administration as it is anchored in development agendas. Banga and Velde (2018), Attributed that the discussion between Sustainable Development Goals and digitalization has shown that digital technologies have proved to be a transformative and enabling factor of sustainable development. In Africa, Kenya has emerged a leader of digitalization. Recent evidence show that continued efforts of both private and public sectors in Kenya point to roughly 25 percent of internet penetration in the period 2001–2016 (Banga and Velde, 2018).

According to OECD (2017), application of ICT infrastructure as part of digitalization aims at enhancing innovation, productivity and output, as well as the acceleration of SDGs, determines the success of any nation. Previous studies have revealed a positive correlation between the adoption of digitalization, expansion and socio-economic performance (OECD, 2018). The extent of application of data

analytics, enterprise management software's, social media and digital payments systems in operation and business applications have created a strong boost for the implementation of development goals. Further, realization and adoption of new trending tools of digitalization in the domain of internet of things, machine learning and artificial intelligence have created a boost in business administration and provision of professional delivery of public services (Madelin, 2019). With such trends, it would be prudent and timely to explore the correlation between the digitalization process and the acceleration of supranational policy programmes using the case of SDGs in a developing country like Kenya.

The increasing trend of digitalization development of Kenya's digital economy has been advanced by recognition of ICT as a development pillar in the government's 2030 vision, the inclusion of digital payment systems like M-Pesa, setting up undersea fiber-optic cables, private sector support to technology hubs and networks, the introduction of the National Cyber Security Strategy and National Broadband Strategy and the improvement in ease of doing business, and government (Banga and Velde, 2018). Thus, taking cues from these, this project explored digitalization repertoires in implementation of supranational policy programmes, the case of SDGs in public administration in Kenya specifically narrowing down to 7 SDGs (SDG Compass, 2016) within the Ministry of Information Communication Technology, Ministry of Labor, Ministry of Health, Ministry of Education, Ministry of Devolution and ASALs, Ministry of Water and Sanitation, Ministry of Energy. This study will focus on the seven SDGs as they are prominently structured within the ministries targeted and it was also easier to get data on the proposed SDGs. This study aims at investigating this correlation between digitalization and public administration in Kenya.

## **1.2 Statement of the Problem**

The execution of SDGs, as well as the adoption and appreciation of related targets, are still a major challenge influencing their implementation and acceleration in public administration (Murr et. al, 2017). Generally, the ICT process was not recognized while drafting the SDGs resulting in the inadequacy in measuring the digitalization process (Huawei, 2017). Achieving SDGs and other national policy programmes will not be easy if the governments do not work across digitalization policy areas and known obstacles to boost the capacity of governments to coordinate, to act, to plan and to serve as a catalyst in support of SDGs implementation. The existence of unclear roadmap and framework on the integration of the strategies for implementing SDGs by the governments has resulted to grey gaps hindering the achievement of the SDG related targets by the public administrators and implementers (Madelin, 2019).

This can largely be attributed to policy adoption challenges of public administrators revolving around policy coordination, policy reforms and politics in the public sector. At the public service and administration level especially in Kenya, SDGs implementation has become challenging to accelerate and implement as different departments have specialized in their own domains (Murr et. al, 2017). Further to this, studies have implicitly and explicitly demonstrated that public sector organization employees have rarely considered the seriousness through which they can monitor and evaluate the digitalization process of SDG in their plans. In Kenya, digital skills and connectivity that form part of the digitalization process in mainstream government have suffered serious setbacks in most government institutions with public administrators largely remaining unskilled in ICT (Mwansa, 2017).

Allison (2019) asserts that appreciating the increased adoption and acceptance of ICT usage among public administrators is far-fetched and is far from being realized. Conversely, while statistical documents show steady improvement and spread digitalization solutions in public administration, there is little existence of knowledge of the organizational process in relation to institutionalization, internalization and coordination of SDGs (Madelin, 2019). As noted by Sachs et.al (2016), “ICTs role in the implementation of SDGs in the era of 2016-2030 will steadily develop quickly and rapidly” despite the fact there are a couple of problems affecting effective and efficient adoption as well deployment strategies aimed at the digitalization of SDGs.

The challenges noted include regulation hindering the utilization and implementation of ICT, knowledge and skills advancement among public administrators assigned the role of operating information systems and the rapid growth of internet and innovation in the telecommunication sector. According to Jones et.al (2017), it is a fact that digitalization is faced by several constraints that the government should play a leading role in resolving to digitalize and align SDGs for digitalization. Therefore, this study intends to explore the Influence of digitalization implementation on sustainable development goals in public administration in Kenya.

### **1.3 Purpose of the study**

The purpose of this study was to examine the influence of digitalization on sustainable development goals implementation in public administration in Kenya.

### **1.3.1 Objectives of the Study**

- i. To examine the influence institutionalization of digital technologies on implementation of Sustainable Development Goals (SGDs) in public administration in Kenya.
- ii. To assess the influence of coordination of ICT Infrastructure implementation of Sustainable Development Goals in public administration in Kenya.
- iii. To evaluate the influence of internalization of digital skills implementation of Sustainable Development Goals in public administration in Kenya.

### **1.4 Research Questions**

- i. How does the institutionalization of digital technologies influence on implementation of Sustainable Development Goals (SGDs) in public administration in Kenya?
- ii. How does coordination of ICT infrastructure influence on implementation of Sustainable Development Goals implementation in Public Administration in Kenya?
- iii. How does the internalization of digital skills influence on implementation of Sustainable Development Goals in Public Administration in Kenya?

### **1.5 Significance of the study**

This study will be of significance in guiding researchers in terms of how to formulate variables that are potential for disrupting the way public sector offices are run and how sustainable development goals are linked to the programming of skills development. This study will shape public policy space by linking the theoretical context and digitalization of sustainable development goals within the public

administration. The realization of SDGs and integration of the principles in public administration will gain from this study as the challenges and solutions will be highlighted to enhance the acceleration of digitalization implementation. This research will open up discussions between policy institutes and research institute in drawing experiences and empirical knowledge on the implementation of digitalization for Sustainable Development Goals.

### **1.6 Scope of the study**

The study focused on implementation of digitalization and its relation on digital infrastructure and digital Skills that influences SDGs within the public administration in Kenya. The study focused on the seven key SDGs areas that included; SDG 2- Zero Hunger, SDG 3- Good Health and wellbeing, SDG 4- Quality education, SDG 6- Clean Water and Sanitation, SDG 7- Affordable and clean energy, SDG 8- Decent work and economic growth, SDG 9- Industry, innovation and infrastructure (SDG Compass, 2016) within the Ministry of Information Communication Technology, Ministry of Labor, Ministry of Health, Ministry of Education, Ministry of Devolution and ASALs, Ministry of Water and Sanitation, Ministry of Energy and Petroleum. The study targeted 50 employees that is directors, middle and senior public administrator's managers constituted the study population.

### **1.7 Limitations of the study**

This research was conducted within seven Government Ministries aligned with chosen SDGs, nevertheless, it was not possible to undertake a study on the all seventeen SDGs due to time limits. It will be expected that the little experience and knowledge of public administrators in the digitalization process and link between

SDGs and ICT operationalization would slow down the research. SDGs indicators and goals was deemed to be many and the chosen sites of the study will not be able to fully understand all the SDGs. This limitation was minimized through a clear selection of relevant ministries and respondents with decision making and knowledge in SDGs. The researcher faced challenges related to protocol and bureaucratic systems within the ministries where conducting interviews and administering surveys will have to be approved by the ministry administrator. To mitigate the challenges, the researcher employed a data assistant who was instrumental in collecting filled surveys and making follow up to those who were sampled to respond.

### **1.8 Delimitations of the study**

The researcher only focused on institutionalization of digital technologies, coordination of ICT Infrastructure and internalization of digital skills. Other issues on digitalization were not looked to in this study.

### **1.9 Assumptions of the study**

The study assumed that the data was collected within the planned period to enable completion of research on time. The study also assumed that all the respondents responded to the questions honestly to give accurate report. The researcher assumed that the research was within the budget.

### **1.10 Definition of Operational Key Terms**

**Digitalization:** As used in this study, digitalization is the process of technological implications including applications of digital skills, digital technologies, digital public service, Information Communication Technology (ICT) infrastructure, connectivity and the use of the internet.

**Sustainable Development Goals (SDGs):** The definition is directly adopted from the universal definitions from United Nations blueprint and collection of seventeen key goals that guide the continental and global development, equitable distribution of resources and sustainable world.

**Public Administrator:** as used in this study, Public Administrator is the official of the state government dealing primarily with administration of government functions in public office.

**Transformative Approach:** It describes how public actors who are involved in reform processes are constrained and influenced by sets of factors or contexts of historical institutional context, polity and environmental pressure as seen through cultural, structural instrumental, and environmental perspective respectively.

**Supranational:** A supranational organization is an administrative structure that goes beyond the boundaries of states. In this study, it has been used to project the influence that goes beyond the boundaries.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction of the Study**

This chapter reviewed reputable literature on supranational policy programmers, digitalization and its role in the acceleration of SDGs within the public administration. This chapter focuses on the general state-of-the art and understanding into issues of supranational policy programmers, state of digital policy implementation in Kenya, public administration transformation, SDGs, digitalization implementation, barriers of ICT adoption in public services and broader issues in internalization, coordination and institutionalization approach. This section also assists in the identification of an appropriate theoretical framework based on the critical issues about the digitalization of sustainable development goals in the within public service.

#### **2.2 Digitalization and Sustainable Development Goals**

Heads of United Nations (UN) representatives, United Nations Council, member nations, and the crowns of state gathered on the 25<sup>th</sup> September 2015 and settled on the seventeen Sustainable Development Goals to override and replace the earlier proposed Millennium Development Goals (MDGs) in UN represented the council in the year 2000 (SDG Compass, 2016). These seventeen SDGs include SDG 1-No poverty, SDG 2- Zero hunger, SDG 3- Good Health and wellbeing, SDG 4- Quality education, SDG 5-Gender equality, SDG 6- Clean Water and Sanitation, SDG 7- Affordable and clean energy, SDG 8- Decent work and economic growth, SDG 9- Industry, innovation and infrastructure, SDG 10- Reduce inequality, SDG 11-

Sustainable cities and communities, SDG 12- Sustainable consumption and production, SDG 13-Climate action, SDG 14-Life below water, SDG 15- Life on Land, SDG 16- Peace, justice and strong institutions, and SDG 17- Partnership for the goals were prompted to inspire action in the succeeding fifteen years to transform the pathway of humanity (SDG Compass, 2016). This project took stock of the central presumption that since the public administration plays a high priority role in integrating and implementing SDGs into National Development Plans; it was essential to guide acceleration of SDG in Public Administration through digitalization process.

Before transition to SDGs in 2015, MDGs were declared to promote global partnership to reduce extreme poverty with specific time-bound 8 targets ending in 2015. Even though many countries made extraordinary progress in improving citizens lives, developing countries faced significant challenges and missed on the set development targets by large margin over weak governments and institutions that are accountable to their citizens, corruption, lack of transparency and accountability and weak governance (Clemens and Moss, 2015).

Similarly, Amin (2016) and Bond (2016) critically discussed the uneven progress of MDGs and unearthed the underlying political characteristics of MDGs suiting rich states and interest of corporations in what is termed as neo-liberal globalization. The realization of uneven progress and weak implementation targets gave rise to the 17 Goals of SDGs which are institutionalized within the government development structures and are mainly implemented by the Public Administrators among other intergovernmental structures and development organizations. Looking at the implementation challenges recognized during MDGs and institutionalization of

SDGs in the current global development dispensation, it was therefore important to critically assess the digitalization and implementation process of the current targets.

The Digital Economy and Society Index (DESI) was technologically advanced by The European Commission to measure a country's achievement in the digitalization levels. The Digital Economy and Society Index (DESI) summarize the indicators linked to digital competitiveness and performance. It is summarized as a set of indicators associated with the digital policy framework having a three-layer structure (European Commission, 2017). It is noted that the first level has five principles that are Digital Public Services, Digital skills, Connectivity, Use of Internet and the integration of digital technology while the second level comprises of 12 individual indicators while the third level has 31 indicators.

An economy's digital development can only be achieved through the interconnection of these factors (European Commission, 2017). During the processes of technological change, the index changes and as of 2016 for instance, the changes included 4G coverage. The final DESI score computation weighting system share the following: Human Capital and Connectivity as having the leading impact with 25% each, while the Integration of Digital Technology follows with 20%, the application and use of the Internet and Digital Public Services recorded the lowest control of 15% (European Commission, 2017). According to Murr et.al (2017), digitalization processes and tools increases efficiency and improve data transparency. Therefore, digitalization influences the future work concepts over the next years through the application of algorithm as decision-makers, use of data and the use of bots (Sergey N. et al., 2018).

### **2.3 State of digital policy and implementation of digitalization in Kenya**

Frantic efforts have been made to place Kenya on the global map as an innovative market place for digital revolution systems. The Kenyan learn and test approach to implementation and coordination of digital revolutions has gained national support from the Kenyan government in recent times. To streamline the sector, the government has in quick successive regimes rallied e-government platforms and instituted necessary legal and statutory legislative rules that have spurred improved service delivery through integrated Huduma one-stop shop service delivery in all 47 counties. Additionally, Kenya has instigated innovative MPESA financial mobile payment systems that feature globally. In fact, Kenya features prominently in the global sphere because of the vibrancy in technological financial markets that services both informal and formal markets in Kenya including the larger East Africa region. (James, 2020).

Generally, digital platforms have revolutionized the way payments, tax administrations, health financing is made through reducing paperwork and ensuring efficient delivery of services. Through e-citizens, government platforms supported by ministries, Kenyans have been able to apply for government's services through payments via e-citizens agents, mobile money and debit cards. Digital platforms have also facilitated the monthly voluntary payments and facilitate access to the delivery of health and education services. Wasunna and Frydrych (2017) note that the transition of mobile money has reduced leakages and facilitated timely payouts to health and insurance service providers hence improving health systems which are SDG target goal.

The education sector has also seen a remarkable improvement in relay and delivery of results as noted by The Collaboration on International ICT Policy for East and Southern Africa (National Information & Communications Technology (ICT) Policy (2016). Examination results dissemination processes and the adoption of online system for national primary and secondary school examinations as well as receive instant feedback has fed into decision- making platforms for Kenya Universities and Colleges Central Placement Service (KUCCPS) to enable students to select and apply for colleges and universities. In social protection, great strides have been advanced where single registry systems, digital identification schemes, electronic incomes payments and targeted transfers to senior citizens, orphans and vulnerable persons and persons with disabilities get their grants. The platform has extended to offering grants and public works payment opportunities for youths and other beneficiaries.

Digitalization has therefore supported effective delivery of payments, reduced double registration, increased accountability and transparency, enhance the quality of operations, and provision of real-time big data (Aker, 2017). Even though significant progress has been recorded in adopting e-citizen and e-government services for targeting SDGs goals, it is evident that public still faces numerous challenges like limited accessibility of public data, low process automation levels, siloed services by government agencies, and the limited capacity of counties and national governments to roll out government services (Ndungu, 2019).

This can be corroborated by a study conducted by Kenya National Bureau of Statistics (KNBS, 2018) and Communications Authority in Kenya (CAK) on the availability of ICT infrastructure, access and use in the public sector. The study surveyed 1,030 respondents from ministries, national and county governments

departments, state corporations, learning institutions, hospitals, independent offices and constitutional commissions. The study revealed that 43.4 per cent of the public institutions implemented e-government initiatives and 20.7 per cent received mobile phone payments for services offered. The study found out that ICT infrastructures by public institutions were highly supported by the internet, computer, Local Area Network (LAN) and telephone but was low for facsimile and intranet (KNBS, 2018).

#### **2.4 Internalization, Coordination and Institutionalization Approach.**

Rouse , (2018) confirms that for more than a decade, digitalization has transformed local administration into dynamic and flexible organizations' in what is called 'digitalization reformation'. As such, the digitalization process (Greenwood et.al 2018) can be described as the process of creating social structures based on values and norms in what is summarized as institutionalization. Emerging empirical analysis, statistics and academic research projects have summarized the digital maturity of local administrators, the capability to master digitalization as an organizational, strategic and technical issue. However, there is a significant absence of focused information linked to the institutionalization of digitalization in organizations and insights on how the perception of IT role in digitalization influences institutionalization process (Greenwood et.al 2018).

Digitalization has the potential to respond to the growing implementation of public service however, there remains little awareness of what ICT can offer across physical borders and local scale (Henard et al. 2012). Digitalization space provides an opportunity for virtual processing, the building of personnel skills and knowhow (internalization) by overcoming traditional barriers to institutionalize access through what is known as democratic access as well as facilitating partnership for the joint

design of public service and enlistment of foreign experts (OECD, 2012). In public organizations, internalization has taken a smarter angle through international value chains as digital systems interlink operations within public administration (Henard et al. 2012).

More advanced technologies and applications have automated public administration services through E-governments and integrated smart infrastructure to automate coordination and flow across national borders (OECD, 2012; Onyango, 2017). Further, Onyango, (2017) highlights that e-citizen platform is not accessible to many citizens seeking services due to lack of ICT skills and financial resources, however; he opines that digital public service and one-stop- shop kiosks in Kenya have improved public service deliveries and technical environments in Ministries, Departments and Agencies (MDAs). Henard et al. (2012) note that organization smart infrastructure are always complex and requires large investments. Moreover, the usability of IT systems and digitalization processes are affected by IT penetration, coordination of ICT infrastructure, data information and security. Therefore, ICT can be instrumental in articulating internalization processes in public institutions and has the potential to create qualitative change as well as reforming coordination of ICT connectivity (Henard et al. 2012).

Lastly, coordination efforts of digitalization in public institutions have seen rising national initiatives for digitalizing governments including providing financial support, pooling resources for development in digital technologies, digital industrial platforms, legislative implementation and high-performance cloud infrastructure for digitalization (Rouse , 2018).

## **2.5 Transformation of digital technologies in Public Administration**

Technological capabilities influence the economic environment and keep track of contemporary development becoming crucial to both macro and micro levels. The characteristics in society today are influenced by the industrial revolution that occurred three centuries ago. The revolutions took place at a time when technological changes influence social structures and economic systems (Schwab, 2016). Technological changes have been remarkable since the industrial revolution in the 1760s through constant upgrades and improvements (Schmarzo, 2017).

The revolution in the early 20<sup>th</sup> century was characterized by the development of electricity enhancing mass production. In the 1960s, computer technology shaped the third industrial revolution with the introduction of personal computers and the internet. The fourth and final industrial revolution was characterized by high levels of artificial intelligence, the internet and machine learning (Schwab, 2016). The current third era of digital transformation and challenges has affected governments, the non-profit sectors, the business community and consumers in equal measures (Schwab, 2016). According to Schmarzo (2017), this era of digital transformation aims to improve efficiency in production, service delivery, manage various risks and uncover new monetization opportunities across the world.

On the other hand, Bertini (2016) asserts that the digital transformation has affected individuals' lives as well as the operations in both the non-profit and for-profit sectors. According to Dang and Pheng (2015), the need to achieve rapid economic growth has resulted in the exploitation of natural resources at an alarming rate. Both the society and science have considered sustainable development priority in both

public and private sector (Levi Jaksic et al., 2018b). According to Brundtland Commission (1987), the concept of sustainable development suggests that humanity's wellbeing can be achieved only if the following has synergy: social equity, economic growth and sustainable environment. Further, the complex nature of society has been seen as the fourth dimension of sustainable development (Commonwealth Secretariat, 2007; Hawkes, 2001). A critic of Brundtland Commission's definition of considering five determinants of sustainable development includes, persons, time, space and permanence (Seghezzeo, 2009). This concept is however abstract in the application and has not been explored and confirmed scientifically.

In a study conducted by Benner (2017) on the influence cultural acceptance on digitalization on Germany's GDP using data obtained from Google and social media platform Facebook, it was established that digitalization is influenced by a positive cultural acceptance. In another study by Hegyes et al. (2017) to examine the challenges affecting digitalization and sustainable development in Hungary and other countries in Europe, findings revealed that digitalization indeed influences sustainable development. However, the study failed to provide a whole perspective on the impact of digitalization on the components of sustainable development. Zhao (2011) sought to establish how national culture influences e-government development in 84 countries globally. It was established from the study that long-term orientation, power distance and individualism influence e-government.

A study by Khalil (2011) on the link between practices to e-government readiness and culture established that principles of nationwide culture and practices have a

positive influence on e- government readiness. An integrated model encompassing the technology acceptance model (TAM) with Hofstede's nationwide culture proportions, was developed by Al-Hujran et al. (2011) to evaluate how nationwide culture influence e-government adoption. Favourable cultural factors such as political freedom, religion and ethnicity were established as driving factor towards the support of technological process (Coccia, 2014).

## **2.6 Implementation of digitalization for SDGs**

Digitalization may facilitate the achievement of the Sustainable Development goals. For instance, the sustainable goal number one promoting the elimination of poverty through connectivity to financial services hence financial inclusion reducing their levels of poverty (Mwansa, 2017). To achieve SDG 2 (Zero hunger), the implementation of e-agricultural services can reduce and eradicate hunger (Jones et al., 2017). Similarly, to achieve SDG 3 (good health and wellbeing), ICT can be leveraged for better connectivity and admission to e-health services as well as the involvement of health knowledge and information (GSMA, 2017). Several digitalization initiatives can be put in place to enhance gender equality.

Various e-platforms and e-governments can be used in the elimination of gender insecurity issues among women. Effective and efficient public administration is necessary for the realization of SDGs in developing countries. However, to enhance universal attainment of the Sustainable Development Goals, the public administrators must play a significant role by developing new digitalization partnerships with the private sector, other state agencies and institutions as well as civil society organizations (UNDP, 2018).

Hilti and Aebischer (2015) categorized the ICT influence in terms of use and application by recognizing that digitalization is a factor that enhances the development. The qualifying factors tend to be derivative from either negative or positive effects arising from the use or application of technology. Hilti and Aebischer (2015) further note that computer technology, when applied to the sustainable environment, contributes to the realization of maintainable ICT. Ericson (2015) outlined how technology can be used to enhance the attainment of sustainable development goals. According to Ericson (2015), this can be realized since ICT: Can enable the saving of costs; trigger research, innovation and discovery; improve flows of new applications; enhance low-cost learning and education.

Further, Carole (2020) assert that technology enhances the building of synergies across goalshelping in the realization of positive results hence removing the barriers to the achievement of the sustainable development goals. Digitalization presents an opportunity for countries to effectively address the issues relating to poverty and economic growth (Chatterjee , 2020).

## **2.7 Conceptual Framework**

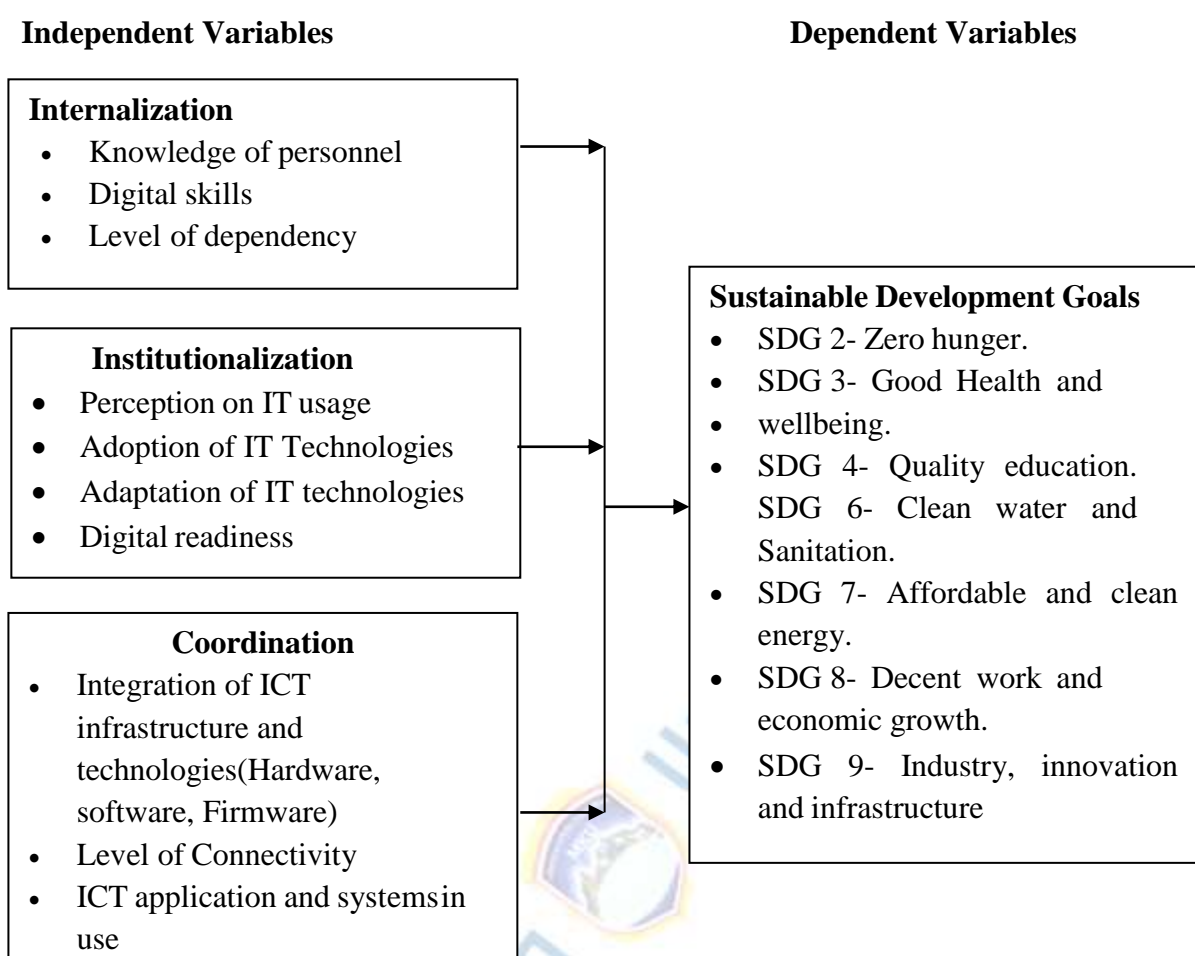
**Dependent variable:** For this study, the dependent variable will be the seven Sustainable Development Goals (SDGs). The selection guidelines for the seven SDGs explored the individual sector ministries and their related targets. The variables will be operationalized and measured as follows;

- i. SDG 2- Zero hunger; adequacy and sustainable global food production systems through investments in agriculture. This variable was measured by determining the number of ICT strategies such as the use of mobile for agriculture services.

- ii. SDG 3- Good Health and wellbeing of all ages; this variable was measured through levels of global uptake of mobile broadband and technology in accelerating achievements for health records and data collection in health services.
- iii. SDG 4- Quality education; this goal ensured lifelong learning opportunities for all and ensuring equitable quality education and was measured by the use of mobile and laptop devices for learning and application of ICTs in student's enrollment
- iv. SDG 6- Clean Water and Sanitation; accessibility to managed sustainable sanitation services and water. This variable was measured by knowing the ICT tools that are used to facilitate water management through monitoring and measurement of water supplies and systems.
- v. SDG 7- Affordable and clean energy; in ensuring reliably affordable, modern and sustainable energy for all, this variable was measured through ICT application in transport, smart grids, buildings and smart logistics.
- vi. SDG 8- Decent work and economic growth; this variable was measured by accessing the level of application and usage of ICT skills for economic development.
- vii. SDG 9- Industry, innovation and infrastructure; to ensure inclusive resilient infrastructure and sustainable industrialization that fosters innovation, this variable was measured through accessing infrastructural connectivity and number of mobile subscribers.

**Independent variables:** The independent variable which is the implementation will be segmented into three different constructs of institutionalization, coordination and internalization. Internalization is the process of understanding the digital transformation of technologies. This construct was measured through assessing the level of digital transformation, knowledge and digital skills transfer and learning of digitalization. Institutionalization is the construct looked at the organizational institutionalization processes by measuring the IT usage, level of digitalization adoption and adaptation within the government ministries. Coordination is the process of integration of various agencies and organizations to implement ICT infrastructure, technologies and enhance the connectivity of the digital system.

**Implementation of Digitalization:** as the independent variable, it will be defined as the Process of increasing efficiency and progress of digital technology transformation and integration, application of ICT, digital training and skills applications and ICT infrastructure for accelerating sustainable development.



**Figure 1: Conceptual Framework (2024)**

## 2.8 Theoretical Framework

The study was anchored on the transformative theory spectives to public administration. This theoretical approach was advanced by Tom Christensen and Per Laegreid who strongly highlighted the interplay of cultural, environmental, values and norms, power relations, perceptions and attitudes of adopting and adapting new systems in the organizational context. This theory provides better interplay in the structural public administration where hybrid and complex mixture of the polity features, environmental pressure and institutional history context are factored including recognizes the institutional decision-making a power play, cultural setting and organizational environment within public administration and

better explains the context of adoption, internalization, institutionalization, adaptation and coordination link in digitalization of SDGs. Christensen and Legreid (2018), notes that public administration is becoming complex and multifunctional with emerging challenges in globalization, internationalization, societal security and digitalization.

Therefore, this theory takes into context that one cannot understand the operation and delivery of public administration decision making without analyzing the operational and organizational modes of public administration (Christensen and Legreid, 2018). Organizational decisions in public administration can be at two levels; first, the decisions could be directed towards citizens or enterprises but they can also affect the allocation of burdens between groups. Secondly, decisions can be made towards internal organization through vertical or horizontal recruitment and career advancement (Augier M. et.al 2015). The key dependent variable of decision making by public administrators is to ensure the distribution of responsibilities among actors and the organization political dominance system (Christensen and Legreid, 2018). It is therefore essential to link whether the decision made by public administrators conforms to the needs, wishes and demands of the population (Augier. et.al 2015). Therefore, a transformative approach to public administration as described by Christensen and Legreid (2018) proposes three perspectives: structural-instrumental, environmental and cultural-institutional perspectives.

### **Structural-Instrumental Theory**

Recognizing that public administration is anchored on political science and administration, there are existing power relations and organizational arrangements

that are entrenched by rational calculations, instrumental control and leaders (Christensen and Lægreid, 2018). Politically, it is clear that there is extreme caution on how public administration handles the work that they do. Reforms and new roles must always have political backing and be calculated well in order to prevent cultural resistance and confrontational power. Inter-organizational coordination has been conceptually confused with integration, cooperation, coherence and collaboration while in essence, they are different (Onyango 2018). Conversely, coordination has been defined as the administrative mechanisms and instruments to voluntarily or forcefully create organization tasks that reduce managerial redundancy and process overlaps in the public sector. Similarly, Christensen and Lægreid (2011) argue that coordination is a multilevel interaction of vertical and horizontal alignment in the implementation of policy reforms within inter-governmental and inter-organizational structures.

Structural and instrumental perspectives towards administration and organizational design coalesce around formal structures and organizational designs that are bureaucratic and non-receptive to new phenomena. It is also assumed that public administrators tend to score high on rational calculations (Christensen and Lægreid 2017). Therefore, it remains critical to see how rationalization and digitalization for SDGs are taking place to reform the public administration. In particular, Organizational structures and managerial designs are valued such that they are religiously used to inform decision making by political and administrative leaders. While this is the case, the realization that digitalization process and digital transformation across the public sector is taking place, many organizational designs largely affect and constrain the effective implementation of SDGs. Loosely or tightly

discretionary powers within the organizational hierarchy may negatively or positively influence or affect the integration of SDGs and digitalization in the organization.

As instrumental norms defined by both substantive and procedural coordination of activities, public administrators and staffs should support new decisions and activities geared towards digitalization. Much as structural- instrumental view present individuals with a narrow understanding of their duties and roles at the organizational level, they should not allow gaps that derail institutionalization, coordination and internalization of SDG processes within the structures of organizations. For instance, organization structures and bureaucracy will affect the adoption and adaptation of SDG goals as well as making an organization digital-ready. Conversely, the individual attitudes in the administration and organization structure may lead to the public administrators not developing their skills and knowledge in the digitalization process as they would see this as a disruption of their norms.

In laying out ICT infrastructures, bureaucratic legislation has the potential to derail coordination of different players due to cultural nature of not working with the private sector or other players in the market (see, Onyango, 2019), thereby, affecting overall digitalization process. It is therefore clear that transformative approach uses central instruments from institutions to form and make decisions in public administration were hybrid and complex mixture of the polity features, environmental pressure and institutional history context are factored in (Christen and Legreid, 2018).

## **Environmental Theory**

For an organization to establish legitimacy and relevance, they are forced to operate within institutional environments both internal and external pressures such as the adoption of SDGs. This theory supports the realization of SDGs through digitalization in their institutional programming is critical. In most cases, SDGs were adopted and integrated into institutional frameworks of most organizations after the ratification of SDGs by the UN council and the realization that they were global driven goals. Therefore, formal organizations operate within certain parameters reflected by myths instead of adopting what they know would case. This theory brings the discussions on the forefront of whether adoption of SDGs by institutions was as a result of exerted pressure from international institutions. It also brings another argument backed up by Olsen (2019), who indicated that organizations may participate in forming a natural environment or the international environment as a form of pressure or norm.

Critically, the digitalization process centered on environmental factors and embedded on the strong realization that without technology and digital skills transformation, then the organization will bear the brunt of being left out of prestigious clubs. The ICT infrastructure and wave of digital skills improvement in the organization has been majorly influenced by the environmental pressure to adopt and adapt IT transformation. Nevertheless, improvement in ICT infrastructure is likely to be occasioned by international influences by laying out sophisticated internet cabling around the world including introduction of 5G. On other fronts, digital readiness coupled with a positive perception of the role of digitalization in organizations is mainly influenced by the leaders may curiously use the environment

as an instrument to influence and maintain internal judgment processes by protesting the constraints of that methodological and institutional environment decision making and weakens public administration leadership in organizations thereby creating new organizations' realignment where public administrators have the opportunity to implement new strategies for desired outputs. From Johan Olsen's arguments, it is possible to deduce that many public organizations and public administrators introduced SDGs into their organizational systems as a form of international ratifications by UN governing council in 2015.

As a result, public administrations have adopted and operationalized international norms and internalized them in their operations. Another argument fronted by March and Olsen (2019) between environmental factors and culture is that strong cultural integration within the organization may influence the adoption of technical constraints and make them valuable (Christen and Legreid, 2018). Meyer and Rowan (2019) differentiated the technical and institutional environment; the technical have resources related characters while institutional environments are geared towards symbols and myths. Olsen, (2019) identified two environmental determinisms where public organizations adapt to the country, national and international organizational norms. Olsen stressed that organizations have adopted national and international systems under pressure and that this has created more technical problems (Olsen, 2019).

The theory formulation is linked to the ratification and adoption of SDGs into government programming in the year 2016 within public service for implementation. However, the theorist notes that this adaptation has the potentiality to create pressure and technical problems in public administration since they have become

myths and doctrines (Meyer and Rowan, 2019; Christensen and Legreid, 2018). In digitalization processes, the transformational approach recognizes that the theory cements the digitalization process in public administration through institutionalization, internalization (learning), and coordination of SDGs in public administration.

### **Cultural-Institutional Theory**

This theory recognizes that decision making in the organization are products of national and local historical institutional contexts (Christensen and Legreid, 2018). The duo further argues that institutions have their dependent path, history and culture of doing things in a cultural environment and that introduction on new technologies is likely to disrupt the norms and cultures of the organization (Christensen and Legreid, 2018).

Public administrators tend to coalesce around historical experiences, past lessons, practices and traditional methods of conducting their duties, therefore reluctant to the adoption of new elements that may distort cultural environments, myths and historical dependence (Christensen and Legreid, 2018). As such, the actions of administrators and decision-makers are constrained by organizational complexities, environmental factors and cultures (Onyango, 2017). As far as SDG implementation is concerned, the cultural perspective of organizations has been geared towards the realization of sustainable development indicators.

Digitalization processes are the organization has also been premised on the cultural aspects that organizations must adapt to IT transformation and influence individuals to acquire advance knowledge and skills in IT. This affects the integration of new

ICT infrastructures and adaptation of its systems for the digitalization process. Organizational culture and norms directly derail the digital readiness and perception of IT use in organizations. The legacy systems, for example, and culture surrounding them may make it challenging to replace old systems at the organizational level because of cultural orientation. A transformative approach to public administration, therefore, presents a holistic framework for organizational analysis and evaluation of potential change options for legacy systems within public administration (Alexandrova et. al, 2018). Brooke, (2021) notes that government organizations' are heavily reliant on legacy systems to support critical functions and business processes and proroject to replace the existing systems always face legacy problems. Alexandrova et. al, (2018) notes that overcoming legacy problems or what is referred to wicked problems is difficult because of the organizational culture, complex interrelationships, information technology, government agencies normative environment and general culture resistance (Alexandrova et.al, 2018). Similarly, Onyango (2017) observes that the complexity of institutional environments is the reasons for wicked problems such as corruption that bedevils public organizations in Kenya.

It is noted that the transformative approach highlights that myths in organizational perspective greatly influence the cultural settings which eventually facilitate how decision making happens and it may be difficult for an organization to introduce borrowed or external systems for implementation without cultural resistance (Alexandrova et.al, 2018). It is, therefore, possible to realize that introduction of SDG systems and digitalization process faces resistance as they distort cultural orientation. Therefore, strongly entrenched institutional and organizational cultures

also affect the perceptions and attitudes of public administrators and are bound to make them have fixed minds on how they should deliver their roles, in effect, initiating new reforms operations will dismantle the organizations' norms and modify political-administrative cultures (Christensen and Legreid, 2018).

This frame notes that organizations have their traditional cultures and political leadership and systems for decision-making. And adapting new strategies to the systems requires reorganizations since organizations have their way of decision making and hierarchy of leaderships that creates strong homogenous structures which produce hybridity and complexity of coordinating digital technological transformations and institutionalization of SDGs (Alexandrova et.al, 2018). Therefore, myths surrounding initiated changes may influence the internal decision-making and create negative connotation of planned changes in the digitalization process.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the description of the research methodology and design employed to conduct the study. This section outlines the location of the study, target population, sample size and proposed data analysis as well as ethical considerations.

#### **3.2 Research design**

The study used descriptive design since it was considered the most applicable given that studies yield rich data that leads to important recommendations. Descriptive design was also helpful in identifying key variables that was established since data collection allowed the assembly of multifaceted in-depth information in the form of qualitative and quantitative surveys (Creswell, 2020). Therefore, descriptive design enabled the researcher to acquire an accurate sample for a larger number of the population using small sample thus exploring the relationship between variables. It also enabled the explorations of the relationship between the variables. Lastly, descriptive design helped the researcher determine the nature of prevailing conditions.

##### **3.1.1 Case Study Method**

Looking at the nature of the study question of assessing the digitalization of SDGs in public administration, it is believed that the case study method was the most appropriate to obtain qualitative evidence from multiple sources and gain theoretical propositions. This presented an opportunity to the researcher to investigate and conduct an empirical inquiry by investigating digitalization of SDGs in public

administration phenomenon. Further, the use of multiple causes of evidence allowed triangulation of findings. The case study also enabled the researcher the benefit of studying cases and phenomenon in details by the use of study variables.

The case study method was advantageous in creating deep insights and emphasized on examining rich cultural and social impacts of local adaptations to the implementation of digitalization of SDGs in public administration in Kenya. However, (Baxter, 2018) subjected case studies to criticism since it lacks generalizability and it is non- representative, further, the complexity and richness of data collected was subjected to different interpretations and research bias. Baxter, (2018) notes that despite lack of detailed iterative data analysis in case study data and inability to provide generalizability, it was believed that they are useful in refining and generalizing concepts.

#### **3.1.1.1 Study Location**

By adopting interpretative methods of uncovering the truth to understand real-life context through understanding the phenomenon, a multiple case study approach was used to describe digitalization of SDGs in public administration within seven ministries (Ministry of Information Communication Technology (ICT), Ministry of Labor and Social Services, Ministry of Health, Ministry of Education, Ministry of Devolution and ASALs, Ministry of Water and Sanitation, Ministry of Energy and Petroleum). These government ministries are directly involved in implementing the chosen SDGs which was the focus of this study.

#### **3.1.1.2 Unit of Analysis**

The researcher employed the use of multiple case study design, which contains

several units of analysis. This is where one issue is isolated but the researcher will select multiple case studies to illustrate and inform the study (Yin, 2018). The units of analysis consisted of ICT departments in government ministries and IT officers/assistants, ICT Managers and supervisors and Directors as public administrators. The units of analysis was categorized according to the original intentions of the study on where the sources of evidence was collected.

In this context, the study organized ministries according to their relevance to the SDGs chosen. This ensured the valid selection of the Government ministries in the first instance; secondly, the study parameters were determine that within the ministries, ICT departments were the most crucial in providing relevant information and data as regards to the digitalization of SDGs within ministries. To narrow on the strata within the ICT department, the study categorized staff based on Directors, Senior Managers, ICT Supervisors and Managers and lastly ICT Officers/ Assistants since they were the most appropriate individuals to clearly understand digitalization processes in on SDGs. The chosen units of analysis in this study provided a clear context for analysis, study validation and description of the case studies.

**Table 1: Target Population**

<b>Ministry</b>	<b>Units of analysis</b>
Ministry of Labor and Social Services	Department of Information Communication Technology (ICT)
Ministry of Health	Department of Information Communication Technology (ICT)
Ministry of Devolution and ASALs	Department of Information Communication Technology (ICT)
Ministry of Education	Department of Information Communication Technology (ICT)
Ministry of Information Communication Technology (ICT)	SGD acceleration Centre
Ministry of Water and Sanitation	Department of Information Communication Technology (ICT)
Ministry of Energy and Petroleum	Department of Information Communication Technology (ICT)

*Source: Kenya National Bureau of standards (2024)*

### **3.1.2 Mixed Methods Approach**

Creswell (2017) notes that integrating both qualitative and quantitative design enjoys the advantage of providing more methodological flexibility to elucidate more information that is not possible to obtain via the quantitative method, it also provided an opportunity to understand contradictions between quantitative findings and quantitative results with the ability to collect comprehensive and rich data. The researcher employed both qualitative and quantitative research methods to collect data from public administrators. Surveys, questionnaires were organized with the staff within ministries. The choice of this method was motivated by the fact that it provided with an opportunity to answer research questions that neither qualitative

nor quantitative could answer as well as gaining a better understanding of contradiction and connections across the research processes.

### **3.2 Methods of Data collection**

#### **3.2.1 Structured Questionnaires**

The study employed the use of structured questionnaires were administered to all prospective target groups within the government ministries that includes Directors, Senior Managers and ICT Officers. The structured questionnaires were designed to covers exploratory information to better understand the subjects as well as collect quantitative information. The questionnaire design was both open-ended and closed-ended. The choice of open-ended aided respondents in giving their valued opinion in an elaborate manner and highlighted responses that they could not respond to. Closed questionnaire mostly collected quantitative information. Using structured questionnaires, purposive sampling was used to collect data from the randomly sampled staff of the ministries.

othari, (2018) notes that structured questionnaire provides the advantage of reaching a wider population promptly and that the respondents have ample time to think through before responding and filling the questionnaires as well as making it easy for the researcher to code and analyze questionnaires statistically. It is projected that open-ended questions allowed respondents to riposte questions in their own arguments without influence however, some expected challenges were expected to arise where respondents may not articulate proper responses while some may not give full answers as they might have forgotten important points. To avoid this, the researcher lobbied senior management to facilitate the administration of the

questionnaires and to give the researcher opportunity to explain to the respondents the importance of the study. Through close supervision and monitoring, the researcher managed to collect a considerable number of questionnaires from the respondents. In cases where the respondent may not have time to respond, therefore a revisit was done by booking an appropriate time for data collection.

### **3.3 Target Population**

The study was conducted in seven government ministries and targeted a total number of 50 Directors, Senior Managers/ Senior IT staff for a survey, 5 Directors and 10 semi-structured questionnaires for senior managers.

**Table 2: Target Population and Response Rate**

S/N	Category	Target Respondents	Survey	Target No
1.	Ministry of Information Communication Technology	Directors		1
		Senior Managers		2
		ICT Managers		3
		Digitalization/ICT Officers		2
2.	Ministry of Labor and Social Protection	Directors		1
		Senior Managers		2
		ICT Managers		2
		Digitalization/ICT Officer		2
3.	Ministry of Health	Directors		1
		Senior Managers		2
		ICT Managers		2
		Digitalization/ICT Officers		2
4.	Ministry of Education	Directors		1
		Senior Managers		2
		ICT Managers		2
		Digitalization/ICT Officers		2
5.	Ministry of Devolution and ASALs	Directors		1
		Senior Managers		2
		ICT Managers		2
		Digitalization/ICT Officers		2
6.	Ministry of Water and Sanitation	Directors		1
		Senior Managers		2
		ICT Managers		2
		Digitalization/ICT Officers		2
7.	Ministry of Energy	Director		1
		Senior Managers ICT Managers		2
		Digitalization/ICT Officers		2
				2

*Source: Kenya National Bureau of standards (2023)*

### 3.4 Sampling Size

The sampling of the study was drawn from Senior Managers, Directors and ICT officer at the Government ministries. The government of Kenya has twenty- one ministries of which seven ministries were under the study. Consideration of seven

SDGs out of seventeen were the focus of this study. Purposive sampling gave the researcher opportunity to generalize about the sample. The study used census to collect data since the number is not large.

### **3.5 Sampling Design**

The study adopted purposive sampling in selecting respondents from the ministries. This technique gave the researcher opportunity to entirely choose respondents with characteristics and desire of the target population. Specifically, the study purposively targeted Directors, Senior ICT Managers and ICT officers within the government ministries.

### **3.6 Data Analysis**

Captured data from the qualitative and quantitative research was analyzed, presented, interpreted and described systematically. To ensure accuracy and consistency, qualitative responses were identified broadly where concepts, ideas and phrases was assigned codes to help structure and label data. Conversely, in quantitative data analysis, descriptive analysis was conducted for quantitative data analysis methods to help summarize the data and find patterns using measures of central tendency, mean and standard deviation that was used to for interpretations for presentation in tables. Specific data analysis methods were employed that this included coding and categorization, tabulation, thematic analysis and used of statistical package for the social sciences (SPSS Version 25). The study adopted the following multiple regression model.

### **Regression Model**

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon$$

Where Y = Sustainable Development Goals

X<sub>1</sub> = Internalization, X<sub>2</sub> = Institutionalization, X<sub>3</sub> = Coordination,

$\varepsilon$  is the error term, ;  $\beta$  is the regression beta coefficient

### **3.7 Validity Test**

Jackson (2017) defines validity as an indication of whether the instrument of the study measures what it claims to measure. According to Zohrabi (2013), validity was emphasized and checked right from the beginning of data collection to analysis and interpretation. The following validity tests were carried out.

#### **3.7.1 Construct validity**

To ensure the construct validity of the study, the researcher linked the theory and measurements of the study by establishing operational measures for the concepts being studied while relating them to the original intentions of the study. The researcher employed specific methods of using multiple sources of evidence from the case studies to improve on data inquiry during data collection.

#### **3.7.2 Internal Validity**

Yin (2018) alludes that internal validity denotes to the degree to which the researcher has taken into account an alternative explanation for any causal relationship of their study. To ensure internal validity was adhered to, a pre-test was administered to the respondents followed by a post-test to get the difference in test scores that informed measure of the treatment effect. (2018).

### **3.7.3 External Validity**

Yin (2018) notes that external validity entails establishing the domain to which study findings can be generalized. In this study, the researcher ensured cross-case synthesis by having more than one case to strengthen the findings. External validity explored the problem of knowing whether study findings were generalized beyond the case study during research design. The researcher employed statistical generalization and analytical generalization to ensure that a specific set of results to wider theory was achieved. This ensured that if the theory is replicated in another study, then similar results were produced.

### **3.8 Reliability Test**

To ensure high reliability, the researcher made steps as operational as possible such that if a later investigator follows the same procedure as documented, then the same findings should be arrived at. The specific methods of ensuring reliability included the test-retest techniques where the same instruments were administered to the same group of respondents by correlating the scores from both testing periods and keeping all initial conditions constant to obtain coefficient stability and reliability. For internal consistency of data, the researcher determined the scores obtained from a solitary test administered to respondents. The obtained scores were correlated with other scores obtained from other respondents using Cronbach's alpha general form K-R20 formulae (Mugenda and Mugenda, 2018) whereby a high coefficient implies that the items correlate highly and there is interest in measuring the concept of interest.

The reliability coefficient were determined using Cronbach's Alpha that were

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

generated by SPSS.

N = Number of items

$\bar{c}$  = Denotes Average Covariance between item pairs

$\bar{v}$  = This denotes Average Variance

The researcher tried to minimize random error and increase the reliability of data collected to acceptable coefficient levels of 0.80 or more (Selltiz, Wrightsman & Cook, cited in Githua, 2020). On the split-half technique, the researcher assessed reliability by conducting one test with two parts to ensure correlation of one score with another. This approach ensured the elimination of chance error. Therefore, data with high split-half reliability had high correlation coefficient.

### **3.9 Ethical Considerations**

Since data collection is an intrusion into respondent's privacy, time and space, Cohen et al (2017) observe that a high standard of integrity and ethical considerations was sustained throughout the study. Therefore, to safeguard respondents on the participation on the interview process, a consent letter noting all the interest in the research, the level of participation, who to contact, confidentiality and privacy of data was stipulated for respondent understanding and consent. This information in the informed consent was signed by the respondent in voluntary volition to participate freely in the study. Informed consent letter addressed all aspects and reasons for the research and what findings are going to be used for.

The researcher kept all information and data collected confidential and will not be in a position to share data without respondent's consent. The researcher understood and observed highest levels of integrity coupled with highest ethical standards in the course of completed research and strived to be guided by the outlined principles by MacDonald and Headlam, and Coolican (2018) regarding integrity and quality of the study, privacy, the confidentiality of the data given by respondents, informed consent, the anonymity of the respondent, and the independence of the research. The guiding authorities in the research included the Mount Kenya University which issued approval letter to conduct the research, Ethical review committee clearance letter, National Commission of Science, Technology and Innovation (NACOSTI) also provided a research permit for the period of conducting the research.

## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSION

#### 4.1 Introduction

The chapter focuses on data analysis, results presentation and discussion of the findings. The purpose of this study was to examine the influence of digitalization on sustainable development goals implementation in public administration in Kenya.

#### 4.2 Pilot Test Results

A pilot study was conducted among five respondents in the seven government ministries. This represented 10% of the sample size. Reliability of the instruments was determined using Cronbach Alpha. The findings were as indicated in Table 3

**Table 3: Reliability Test Results**

Variable	N	Cronbach's Alpha Value
Institutionalization of digital technologies	5	.727
Coordination of ICT Infrastructure	5	.709
Internalization of digital skills	5	.739
Sustainable Development Goals in public administration	5	.778

*(Source field data, 2024)*

The questionnaires were coded and Cronbach's Alpha Test was then conducted. All the 4 variables gave Cronbach's Alpha threshold values greater than 0.7 as shown in Table 4 From the pilot study the Cronbach Alpha values were 0.727, 0.709, 0.739 and 0.778. for institutionalization of digital technologies, coordination of ICT Infrastructure, internalization of digital skills and sustainable development goals in public administration in Kenya. All the variables had Cronbach values which were greater than 0.7. This implies that the instruments were reliable.

### 4.3 Response Rate

Response rate equals the number of people with whom structured questionnaires were properly completed divided by the total number of people in the entire sample (Fowler, 2014). The study administered 45 questionnaires for data collection. However, 43 questionnaires were properly filled and returned. This represented 96 overall successful response rates. Respondents were also assured of confidentiality of the information provided. Trex (2018) suggested that a response rate of 50% is adequate 60% is good and 70% and above very good for analysis. This implies that 96 percent response rate was very appropriate for data analysis.

**Table 4: Response Rate**

Sampled No. of respondents	No. of Questionnaires Returned	Response Rate (%)
45	43	96

*(Source field data, 2024)*

### 4.4 Bio data

#### 4.4.1 Gender of the Respondents

The researcher sought to find out the gender of the respondents involved in the study. The findings are as indicated in Table 5.

**Table 5: Gender of the Respondents**

Gender	Frequency	Percentage (%)
Male	23	53
Female	20	57
<b>Total</b>	<b>43</b>	<b>100</b>

*(Source field data, 2024)*

According to the findings, 23(53%) of the respondents were male whereas 20 (57%) were female. This imply that majority of respondents were males.

#### 4.4.2 Age of the Respondents

The researcher sought to find out the age of the respondents involved in the study.

The findings are as indicated in Table 5.

**Table 5.: Age of the Respondents**

Age	Frequency	Percentage (%)
Below 25 Years	2	5
26-30 Years	6	14
31-35 Years	11	25
36-40 years	9	21
41- 45 Years	15	35
<b>Total</b>	<b>43</b>	<b>100.0</b>

*Source field data,2024)*

From the findings 2(5%) of the respondents were in the age bracket years, 6(14%) were in age bracket of 26-30 years, 6(14%) were in age bracket of 26-30 years, 11(25 %) were in age bracket of 31-35 years while 9(21%) were in age between 36-40 years. Those between 41-45 years were 15(35%) This implies that majority of the respondents who participated in the study were in age bracket of 31-55 years and 36-40 years. The age composition revealed that majority of these respondent were had a wide knowledge on digitalization on sustainable development goals implementation in public administration in Kenya.

#### 4.4.3 Position in organization

The researcher sought to find out the position of the respondents in the organization.

The findings are as indicated in Table 6.

**Table 6: Position in Organization**

<b>Position</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Department Manager	12	28
ICT Manager/Officer	7	17
Senior Manager	16	38
SDG Focal Point	7	17
<b>Total</b>	<b>42</b>	<b>100.0</b>

*(Source field data,2024)*

The study findings showed that 12(28%) of the respondents were department managers . Those who were ICT managers were 7(17%). Majority were senior managers comprising of 16(38%) while those in SDG focal point were 7( 17%).

#### 4.4.4 Academic Qualification

The researcher sought to find out the academic qualification of the respondents. The findings are as indicated in Table 7.

**Table 7: Academic Qualification**

<b>Education level</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Certificate level	2	5
Diploma	9	21
Undergraduate	23	55
Post graduate	8	19
<b>Total</b>	<b>42</b>	<b>100.0</b>

*(Source field data,2024)*

The study findings showed that 2(5%) of the respondents had attained certificate level. Those who had diploma level qualification comprised 9(21%) while those who were undergraduate holders comprised 23(55%). Those who had attained post graduate were 8(19%). These results implied that majority of the respondents were well educated thus understanding and filling the questionnaire was done adequately.

#### 4.4.5 Computer Skills Proficiency Skills

The researcher sought to find out the computer skills proficiency skills of the respondents. The findings are as indicated in Table 8.

**Table 8: Computer Skills Proficiency Skills**

Education level	Frequency	Percentage (%)
Basic	5	12
Intermediate	16	38
Advanced	21	50
<b>Total</b>	<b>42</b>	<b>100.0</b>

*(Source field data, 2024)*

The study findings showed that 5(12%) of the respondents had attained basic computer skills level. Those who had intermediate computer skills were 16(38%) while those who had advanced computer skills comprised of 21 (50%). These results revealed that all the respondents had computer proficiency skills.

#### 4.4.4 Length of service in the organization

The researcher sought to find out the length of service in the organization. The findings are as indicated in table of service in the organization. The results are shown in Table 9.

**Table 9: Length of service in the organization**

<b>Period</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Less than 1Year	2	5
2-5 Years	12	29
6-10 Years	17	40
Above 10 Years	11	26
<b>Total</b>	<b>42</b>	<b>100.0</b>

*(Source field data,2024)*

The findings indicated that 2( 5% ) of the respondents had worked in the organization for a period of less than 1 year, 12(29% had had worked in the organization for a period of 2-5 years, 17(40 %) had worked in the organization for a period of 6-10 years and 11(26 % ) had worked in the organization for a period above 10 years. This implies that majority of the respondents who participated in the study had work experience above two years. These revealed that majority of this respondent therefore had a wide knowledge and experience on sustainable development goals implementation in public administration in Kenya.

#### **4.4.5 Institutionalization of digital technologies on sustainable development goals (SGDs)**

##### **4.4.5.1 Understanding SDGs**

The respondents were to state whether the respondents understood SDGs. The results are presented in Table 10

**Table 10: Understanding SDGs**

<b>Understanding SDGs</b>	<b>Frequency(n)</b>	<b>%</b>
Yes	42	100
No	0	0
<b>Total</b>	<b>42</b>	<b>100</b>

*(Source field data,2024)*

The results revealed that all the respondents understand the meaning of SDGs at 42(100 %) . This implied that the respondents were fully understood the meaning of SDGs on sustainable development goals implementation in public administration in Kenya.

#### **4.4.5.2 Ministry/state agency implementation of SDGs**

The respondents were to state whether the ministry implemented SDGs. The results are presented in Table 11.

**Table 11: Ministry/state agency implementation of SDGs**

<b>Implementation</b>	<b>Frequency(n)</b>	<b>%</b>
Yes	40	95
No	2	5
<b>Total</b>	<b>42</b>	<b>100</b>

*(Source field data,2024)*

The results indicated that majority of the respondents 40(95%) ministries implemented SDGs while the minority 2(5%) indicated that their ministries did not implement SDGs on sustainable development goals implementation in public administration in Kenya.

#### 4.4.5.3 Use of information technologies in SDGs Implementation

The respondents were to give an opinion on the usage of information technologies in SDGs Implementation. The results are presented in Table 12.

**Table 12: Use of Information technologies in SDGs Implementation**

Implementation	Frequency(n)	%
Yes	42	100
No	0	5
<b>Total</b>	<b>42</b>	<b>100</b>

*(Source field data,2024)*

The results indicated that all the respondents used information technology in implementation of of SDGs at 42(100 %). This implied that the ministries used information technology to implement SDGs on sustainable development goals implementation in public administration in Kenya.

#### 4.4.5.4 Technology tools used in SDGs Implementation

The respondents were to state the technology tools used in SDGs Implementation. The results are presented in Table 13.

**Table 13: Technology tools used in SDGs Implementation**

Tools	Frequency(n)	%
Computer	42	100
Laptop	42	100
Mobile phones	42	100
Internet	42	100
E government	42	100
Automated solutions	40	95
ICT enabled applications	42	100

*(Source field data,2024)*

The results indicated that technology tools used in SDGs include computer, laptop, mobile phones, internet, e government, automated solutions and ICT enabled applications. This showed that various technology tools are used in SDGs implementation on sustainable development goals implementation in public administration in Kenya.

#### **4.5 Descriptive statistics**

The study requested respondents to give opinions in regard to the Institutionalization of digital technologies on sustainable development goals (SDGs). The value of the mean indicated the level of agreement ranging as follows Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5

##### **4.5.1 Institutionalization of digital technologies on sustainable development goals (SDGs)**

The respondents were to state on institutionalization of digital technologies on sustainable development goals (SDGs). The findings are as indicated in Table 14.

**Table 14 : Digital technologies on sustainable development goals(SDGs)**

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Mean</b>	<b>Std</b>
<b>Digital Technologies</b>	%	%	%	%	%		
Use of Digital technology e.g. emails, social media, mobile phones, multimedia improves skills and knowledge of public administrators in rolling sustainable development goals	32	39	19	6	4	4.44	0.61
I have advance digital technology and computer skills that can enable roll out SDGs work	37	41	9	8	5	3.71	1.67
Our organization has installed computer technology tools,software's and databases	34	35	16	10	5	4.19	0.86
Use of ICT tools like emails, social media, mobile phones,multimedia has encouraged learning, knowledge sharing and SDG data use in our organization	47	29	14	7	3	3.80	1.50

*(Source field data 2024)*

The research findings revealed that majority of the respondents (39%) strongly agreed, 32 % agreed while those who moderately agreed were at 19 % that there was use of digital technology e.g. emails, social media, mobile phones, multimedia improves skills and knowledge of public administrators in rolling sustainable development goals with a mean of 4.44 and the standard deviation of 0.61. The findings further indicated that majority of the respondents (41 %) agreed, 37% strongly agreed. Those who moderately agreed were at 9 % , 8% disagreed while the minority were 5% that they had advanced digital technology and computer skills that can enable roll out SDGs work with a mean of 3.71 and the standard deviation of 1.67.

The research findings also revealed that that majority of the respondents (35%) agreed, 34 % strongly agreed while those who moderately agreed were at 16 %, 10% disagreed and those who strongly disagreed were at 5 % that our organization has installed computer technology tools, software's and databases for tracking, monitoring and implementing SGDs with a mean of 4.19 and the standard deviation of 0.86.

The results showed that majority of the respondents (47%) strongly agreed, 29 % agreed while those who moderately agreed were at 14% , 7 % disagreed while 3 % strongly disagreed that use of ICT tools like emails, social media, mobile phones, multimedia has encouraged learning, knowledge sharing and SDG data use in our organization with a mean of 3.80 and the standard deviation 1.50. These results indicated that digital technologies has an influence on sustainable development goals (SDGs).

The respondents were to state digital systems on sustainable development goals (SDGs). The findings are as indicated in Table 15.

**Table 15 : Digital systems on sustainable development goals(SDGs)**

<b>Digital systems</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Mean</b>	<b>Std</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>		
Our leadership are advancing the use of information communication technologies to conduct SDGs work in our organization.	31	36	20	8	5	4.45	0.65
Adoption of computer systems like emails, tablets, mobile phones, databases, and social media for SDG implementation is	39	40	13	5	3	3.68	1.72
Employees have adapted the use of digital systems like emails, tablets, databases, mobile phones, social media, for SDGscommunication.	35	37	15	10	3	4.34	0.69
The culture of this organization supports use of digital systems and technology like emails, E- government, tablets, mobile	40	25	19	12	4	3.72	1.32

*(Source field data 2024)*

The research findings revealed that majority of the respondents (31%) strongly agreed, 36 % agreed while those who moderately agreed were at 20 % , 8 % disagreed while 5 % strongly agreed that the institution leadership are advancing the use of information communication technologies to conduct SDGs work in the organization with a mean of 4.45 and the standard deviation of 0.65. The findings further indicated that majority of the respondents (40 %) agreed, 39% strongly agreed.

Those who moderately agreed were at 13 % , 5% disagreed while the minority were 3% that there was adoption of computer systems like emails, tablets, mobile phones, databases, and social media for SDG implementation is with a mean of 3.68 and the standard deviation of 1.72.

The research findings also revealed that that majority of the respondents (35%) strongly agreed, 37 % agreed while those who moderately agreed were at 15 %, 10% disagreed and those who strongly disagreed were at 3 % that employees have adapted the use of digital systems like emails, tablets, databases, mobile phones, social media, for SDGs communication with a mean of 4.34 and the standard deviation of 0.69.

The results showed that majority of the respondents (40%) strongly agreed, 25 % agreed while those who moderately agreed were at 19% , 12 % disagreed while 4 % strongly disagreed that the culture of organization supports use digital systems and technology like emails, E- government, tablets, mobile with a mean of 3.72 and the standard deviation 1.32. These results indicated that digital systems has an influence on sustainable development goals (SDGs).

The respondents were to state on ICT infrastructures on sustainable development goals (SDGs). The findings are as indicated in Table 16.

**Table 16: ICT infrastructures on sustainable development goals (SDGs)**

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Mean</b>	<b>Std</b>
<b>ICT infrastructures</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>		
ICT infrastructures like internet, network, software's, and websites influences implementation of SDGs	42	31	17	8	2	4.41	0.63
Coordination of computer services like databases and internet within our organization affects the management of SDGs	33	38	21	4	4	3.61	1.81
ICT connectivity affects how SDGs are measured and managed	30	45	13	7	5	4.56	0.63

*(Source field data 2024)*

The research findings revealed that majority of the respondents (42%) strongly agreed, 31 % agreed while those who moderately agreed were at 17% , 8 % disagreed while 25 % strongly agreed that ICT infrastructures like internet, network, software's, and websites influences implementation of SDGs with a mean of 3.61 and the standard deviation of 1.81. The findings further indicated that majority of the respondents (38 %) agreed, 33% strongly agreed. Those who moderately agreed were at 21 % , 4% disagreed while the minority were 4% that coordination of computer services like databases and internet within our organization affects the management of SDGs with a mean of 3.68 and the standard deviation of 1.72. The research findings also revealed that that majority of the respondents (30%) strongly agreed, 45 % agreed while those who moderately agreed were at 13 % , 7% disagreed and those who strongly disagreed were at 5 % that ICT connectivity affects how SDGs are measured and managed with a mean of 4.56 and the standard deviation of 0.63. These results indicated that ICT infrastructures has an influence on sustainable development goals (SDGs).

The respondents were to state on technology processes in the organization to implement SDG on sustainable development goals(SDGs). The findings are as indicated in Table 17.

**Table 17: Technology processes in the organization to implement SDG on sustainable Development Goals (SDGs)**

	3	2	1	Mean	Std
<b>Technology processes</b>	%	%	%		
Digital technologies like mobile phones, tablets,	45	34	21	4.87	0.73
ICT infrastructure like internet, network, software's, and websites.	31	44	25	3.07	1.47
ICT digital skills and trainings like programming and databases.	41	32	27	4.23	0.74

*(Source field data 2024)*

Table 17 shows how technology processes is used in implementation of SDGs. The statements are stated as follows. Lowly dependent – 1 Moderate dependent – 2 Highly dependent - 3.

The research findings revealed that majority of the respondents (45%) highly depend on digital technologies like mobile phones, tablets, 34 % moderately depend while 21 % lowly depended on digital technologies like mobile phones, tablets on digital technologies with a mean of 4.87 and 0.73. The findings indicated that majority of the respondents (44 %) moderately depended on ICT infrastructure like internet, network, software's and websites, 31% were highly dependent while 25 % lowly depended on ICT infrastructure like internet, network, software's, and websites tablets digital technologies with a mean of 3.07 and 1.47.

The findings indicated that majority of the respondents (41 %) highly depended on ICT digital skills and trainings like programming and databases. 32% moderately depended while 27% lowly depended on ICT digital skills and trainings like programming and databases digital technologies with a mean of 4.23 and 0.74. These results indicated that technology processes in the organization to implement SDG on sustainable development goals(SDGs).

#### **4.5.6 Coordination of ICT Infrastructure**

##### **4.5.6.1 Digital technologies processes for Sustainable Development Goals in Public administration**

The respondents were to state on digital technologies processes for Sustainable Development Goals in Public administration. The findings are as indicated in Table 18.

**Table 18 : Digital Technologies Processes Sustainable Development Goals (SDGs)**

	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Mean</b>	<b>Std</b>
<b>Coordination of ICT Infrastructure</b>	%	%	%	%	%		
Use of ICT has improved access and monitoring of SDG implementations.	37	33	21	6	3	4.53	0.61
Use of ICT has encouraged knowledge sharing and SDG data use in our organisation.	43	41	13	2	1	3.57	1.86
Use of ICT and related tools like internet, mobile phones, computers and software applications has improved my productivity in SDGs processes.	35	38	16	9	2	4.65	0.83
Through E-government system, our organisation enhances accountability and adequate service delivery to the citizens including SDGs.	37	45	12	5	1	3.73	1.42

*(Source field data 2024)*

The research findings revealed that majority of the respondents (37%) strongly agreed, 33 % agreed while those who moderately agreed were at 21 % , 6 % disagreed while 3 % strongly agreed that the use of ICT has improved access and monitoring of SDG implementations with a mean of 4.53 and the standard deviation of 0.61. The findings further indicated that majority of the respondents (41 %) agreed, 43% strongly agreed. Those who moderately agreed were at 13 % , 2% disagreed while the minority were 1% that the use of ICT has encouraged knowledge sharing and SDG data use in our organization with a mean of 3.57 and the standard deviation of 1.86.

The research findings also revealed that that majority of the respondents (35%) strongly agreed, 38 % agreed while those who moderately agreed were at 16 % , 9%

disagreed and those who strongly disagreed were at 2 % that the use of ICT and related tools like internet, mobile phones, computers and software applications has improved my productivity in SDGs processes with a mean of 4.65 and the standard deviation of 0.83.

The research findings also revealed that that majority of the respondents (37%) strongly agreed, 45 % agreed while those who moderately agreed were at 12 %, 5% disagreed and those who strongly disagreed were at 1 % that through E-government system, our organization enhances accountability and adequate service delivery to the citizens including SDGs. with a mean of 3.73 and the standard deviation of 1.42. These results indicated that digital technologies processes has an influence on sustainable development goals (SDGs).

#### **4.5.7 Internalization of digital skills**

##### **4.5.6.2 Digital skills for SDGs**

The respondents were to state on digital skills for SDGs for Sustainable Development Goals in Public administration. The findings are as indicated in Table 19.

**Table 19 : Digital skills for (SDGs)**

	5	4	3	2	1	Mean	Std
Digital skills for SDGs	%	%	%	%	%%		
Cost of accessing the internet and maintaining computers, tablets and mobile phones affects implementation of SDGs	27	42	18	10	3	4.52	0.82
ICT knowledge, training and skills of Public Administrators affects implementation of SDGs.	31	47	17	4	1	3.97	1.94
Ease of use of computer software's, systems and computers affects SDG implementation.	34	32	16	13	5	4.65	0.83
Poor internet connectivity and network affects implementation of SDGs	30	41	19	5	3	3.73	1.49

(Source field data 2024)

The research findings revealed that majority of the respondents (27%) strongly agreed, 42 % agreed while those who moderately agreed were at 18 % , 10 % disagreed while 3 % strongly agreed that the cost of accessing the internet and maintaining computers, tablets and mobile phones affects implementation of SDGs with a mean of 4.52 and the standard deviation of 0.82. The findings further indicated that majority of the respondents (47 %) agreed, 31% strongly agreed. Those who moderately agreed were at 17 % , 4% disagreed while the minority were 1% that the ICT knowledge, training and skills of Public Administrators affects implementation of SDGs. ICT knowledge, training and skills of Public Administrators affects implementation of SDGs. with a mean of 3.97 and the standard deviation of 1.94.

The research findings also revealed that that majority of the respondents (34%) strongly agreed, 32 % agreed while those who moderately agreed were at 16 % ,

13% disagreed and those who strongly disagreed were at 5 % that the ease of use of computer software's, systems and computers affectsSDG implementation with a mean of 4.65 and the standard deviation of 0.83. The research findings also revealed that that majority of the respondents (30%) strongly agreed, 41 % agreed while those who moderately agreed were at 19 %, 5% disagreed and those who strongly disagreed were at 3 % that poor internet connectivity and network affects implementation ofSDGs with a mean of 3.70 and the standard deviation of 1.42. These results indicated that internalization of digital skills has an influence on sustainable development goals (SDGs).

#### **4.6 Diagnostic Test**

##### **4.6.1 Autocorrelation Assumption Test**

The results of the test of autocorrelation assumption are presented in Table 20.

**Table 20 : Autocorrelation Assumption Test Results**

<b>Variable</b>	<b>Durbin-Watson</b>
institutionalization of digital technologies	1.512
coordination of ICT Infrastructure	2.406
internalization of digital skills	2.421
implementationof Sustainable Development Goals (SGDs)	1.452

*(Source, field 2024)*

The results as indicated in Table 20 revealed that the Durbin- Watson statistic value of institutionalization of digital technologies was 1.512. In addition, the Durbin-Watson statistic value for coordination of ICT Infrastructure was 2.406. Further, the results indicated that the Durbin-Watson statistic value for internalization of digital skills was 2.421 while implementationof Sustainable Development Goals (SGDs was 1.452 in in public administration in Kenya. This implies that the study variables had

the independence of errors because it meets the threshold of Durbin-Watson between 0-4. The Durbin-Watson test reports a test statistic, with a value from 0 to 4, where: 0-2.5 denotes no autocorrelation. In conclusion, the data collection instruments were found to be valid and reliable and therefore can be used for data collection in the main study.

#### 4.6.2 Normality Assumptions Test

The study conducted a normality test to determine whether the data is normally distributed. The result of the normality test is indicated in Table 21.

**Table 21: Normality Assumption Test Results**

Variable	Kolmogorov-Smirnov	Sig
Institutionalization of digital technologies	.367	.526
Coordination of ICT Infrastructure	.352	.724
Internalization of digital skills	.231	.815
Implementation of Sustainable Development Goals (SGDs)	.237	.606

*(Source, field 2024)*

Normality assumption test results in Table 21 established that the data was normally distributed since the significance values for Kolmogorov-Smirnov were greater than 0.05. The study findings indicated that Institutionalization of digital technologies had a Kolmogorov-Smirnov significance value of  $p=.526 > 0.05$ . Coordination of ICT Infrastructure had a Kolmogorov-Smirnov significance value of  $p=.724 > 0.05$ . Project implementation had a Kolmogorov-Smirnov significance value of  $p=.836 > 0.05$ . Internalization of digital skills had a Kolmogorov-Smirnov significance value of  $p=.815 > 0.05$ . Implementation of Sustainable Development Goals (SGDs) in public administration in Kenya had a Kolmogorov-Smirnov

significance value of  $p=.606 >0.05$ . Since the p-values were greater than the significance level (0.05), this implies that the data were normally distributed.

#### 4.6.3 Multicollinearity Test

Multicollinearity occurs when two or more independent variables are highly correlated with each other. When multicollinearity is present in a regression model, it can be difficult to determine the unique contribution of each independent variable to the outcomes. The study result is presented in Table 22

**Table 22: Multicollinearity Assumption Test Results**

Variables	Tolerance	VIF
Institutionalization of digital technologies	.547	1.723
Coordination of ICT Infrastructure	.561	1.678
Internalization of digital skills	.689	1.452
Implementation of Sustainable Development Goals (SDGs)	.736	1.521

*(Source, field 2024)*

From the finding the tolerance and variance inflation factor value for Institutionalization of digital technologies (tolerance=0.547 and VIF=1.723), (Coordination of ICT Infrastructure =0.561 and VIF=1.678), Internalization of digital skills (tolerance=0.689 and VIF=1.452) and implementation of Sustainable development Goals (SDGs) (tolerance=0.736 and VIF=1.521). The study results imply that all tolerance values for the four variables under study were all above 0.10 and VIF values all less than 10, this implies that the data used had no Multicollinearity.

#### 4.6.4 Homoscedasticity Test Results

Homoscedasticity describes the homogeneity of disturbance between independent and dependent variables across the values of the independent variables. It expresses constant residual terms across observations. Conversely, unequal errors lead to heteroscedasticity problem. Heteroscedasticity contribute to inefficient parameter estimates and incorrect confidence intervals. When the value of the dependent variable changes, the error term ought not to vary much. For homoscedastic data, p-value is greater than 0.05. Homoscedasticity test results are shown in Table 23.

**Table 23: Homoscedasticity Test Results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	(Constant)	.031	.207		
Institutionalization of digital technologies	.019	.052	.096	-.146	.823
1 Coordination of ICT Infrastructure	.056	.055	.255	1.014	.743
Internalization of digital skills	.032	.29	.074	.258	.832

a. Dependent Variable: Implementation of Sustainable Development Goals (SDGs)

The results in Table 23 shows that, Institutionalization of digital technologies, coordination of ICT Infrastructure and Internalization of digital skills had p-values 0.809, 0.823, 0.743 and 0.832 respectively. All these values are greater than 0.05, implying that the data was homoscedastic and there was no heteroscedasticity problem. The results helped the researcher to validate the appropriateness of the linear regression analysis.

#### 4.6.5 Linearity Test Results

Linearity tests were undertaken to establish the linear relation between institutionalization of digital technologies, coordination of ICT Infrastructure and Internalization of digital skills project. Results are presented in Tables 24, 25, and 26.

**Table 24: Linearity between institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs)**

			Sum of	df	Mean	F	Sig.
			Squares		Square		
Implementation of Sustainable Development Goals (SDGs) * institutionalization of digital technologies	Between Groups	(Combined)	2.657	25	.347	3.431	.019
		Linearity	2.012	3	2.012	19.316	.001
		Deviation from	1.624	23	.081	1.710	.122
		Linearity					
		Within Groups	1.525	25	.106		
	Total	4.200	42				

(Source, field 2024)

Results show that the p-value for the deviation from linearity was 0.122. For linear relationship to exist, the deviation from linearity should be greater than 0.05.  $0.122 > 0.05$  implies that between institutionalization of digital technologies and implementation of sustainable development goals are linearly related. This linear relationship supported inferential statistical analysis particularly in determining the causal relationship between institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs).

**Table 25: Linearity between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs)**

			Sum of Squares	df	Mean Square	F	Sig.
Implementation of Sustainable Development Goals (SDGs) * coordination of ICT Infrastructure	Between Groups	(Combined)	2.659	25	.217	3.831	.039
		Linearity	3.016	3	2.012	19.716	.001
	Within Groups	Deviation from Linearity	1.654	23	.081	1.610	.747
		Total	1.525	25	.206		
		Total	5.236	42			

(Source, field 2024)

The results in Table 25 shows that the deviation from linearity between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) was 0.747. This implies that there was a linear relationship between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) since 0.747 is greater than 0.05 level of significance. Therefore, there existed linear relationship between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs).

**Table 25: Linearity between Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs)**

			Sum of Squares	df	Mean Square	F	Sig.
Implementation of Sustainable Development Goals (SDGs) * Internalization of digital skills	Between Groups	(Combined)	2.459	25	.217	3.383	.028
		Linearity	2.018	3	2.012	17.719	.001
	Within Groups	Deviation from Linearity	1.654	23	.081	1.612	.675
		Total	1.575	25	.243		
		Total	5.098	42			

(Source, field 2024)

The results in Table 25 shows that the deviation from linearity between Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) was 0.675. This implies that there was a linear relationship between Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) since 0.675 is greater than 0.05 level of significance. Therefore, there existed linear relationship between Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs).

## 4.7 Inferential Statistics

### 4.7.1 Correlation Analysis

#### 4.7.1.1 Institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs)

The study sought to establish the correlation between Institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs). The findings of the study are as shown in Table 26.

**Table 26: Institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs).**

		Implementation of Sustainable Development Goals (SDGs).
	Pearson Correlation	.565**
Institutionalization of digital technologies	Sig. (2-tailed)	.000
	N	42

\*\* . Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 26, the study indicates that there was a moderate positive and statistically significant correlation between Institutionalization of digital technologies and Implementation of Sustainable Development Goals (SDGs) ( $r =$

0.565;  $p < 0.05$ ). This implies that Institutionalization of digital technologies enhances implementation of Sustainable Development Goals (SDGs) in public administration in Kenya.

#### 4.7.1.2 Coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs)

The study sought to establish the correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs). The findings of the study are as shown in Table 27.

**Table 27: Coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs)**

		Implementation of Sustainable Development Goals (SDGs).
	Pearson Correlation	.684**
coordination of ICT Infrastructure	Sig. (2-tailed)	.000
	N	42

\*\* . Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 27, the study indicates that there was a moderate positive and statistically significant correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) ( $r = 0.684$ ;  $p < 0.05$ ). This implies that correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) in public administration in Kenya.

#### 4.7.1.3 Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) and Implementation of Sustainable Development Goals (SDGs)

The study sought to establish the correlation between internalization of digital skills and Implementation of Sustainable Development Goals (SDGs). The findings of the study are as shown in Table 28.

**Table 28: Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs)**

		Implementation of Sustainable Development Goals (SDGs).
	Pearson Correlation	.684**
Internalization of	Sig. (2-tailed)	.000
digital skills	N	42

\*\* . Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 28, the study indicates that there was a moderate positive and statistically significant correlation between internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) ( $r = 0.684$ ;  $p < 0.05$ ). This implies that correlation between internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) in public administration in Kenya.

#### 4.7.2 Regression Analysis

The study carried out a regression analysis to evaluate the combined Institutionalization of digital technologies, coordination of ICT Infrastructure and Internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) influence of was established. The model summary was shown in table 29.

**Table 29: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.909 <sup>a</sup>	.826	.849	.3889	.000

The R-Squared is the proportion of variance in the dependent variable which can be explained by the independent variables. The R-squared in this study was 0.849, which shows that the three independent variables, Institutionalization of digital technologies , coordination of ICT Infrastructure, and Internalization of digital skills can explain 82.6 % Kenya while other factors explain 17.4% are explained by other factors influencing Implementation of Sustainable Development Goals SGDs in public administration in Kenya.

**Table 30 : ANOVA**

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	28.52	3	8.193	100.308	.000 <sup>b</sup>
1	Residual	6.441	41	.1002		
	Total	35.093	42			

a. Dependent Variable: Implementation of Sustainable Development Goals SGDs

b. Predictors: (Constant), Institutionalization of digital technologies , coordination of ICT Infrastructure, and Internalization of digital skills.

The analysis of variance in this study was used to determine whether the model is a good fit for the data. From the findings, the p-value was 0.000 which is less than 0.05 and hence the model is good in predicting how the four independent variables (institutionalization of digital technologies , coordination of ICT Infrastructure, and Internalization of digital skills) influence implementation of Sustainable Development Goals SGDs in public administration in Kenya. Further, the F-value

was (100.308) which shows that the model was fit in predicting the influence of the independent variables on the dependent variable.

**Table 31: Regression Coefficients**

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	.054	.193		.251	.745
Institutionalization of digital technologies	.368	.155	.528	4.551	.016
Coordination of ICT Infrastructure	.361	.062	.267	2.517	.032
Internalization of digital skills	.356	.194	.147	2.357	.046

Table 30 shows the overall significant test results for the hypothesized research model. The interpretations of the findings indicated follow the following regression model.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

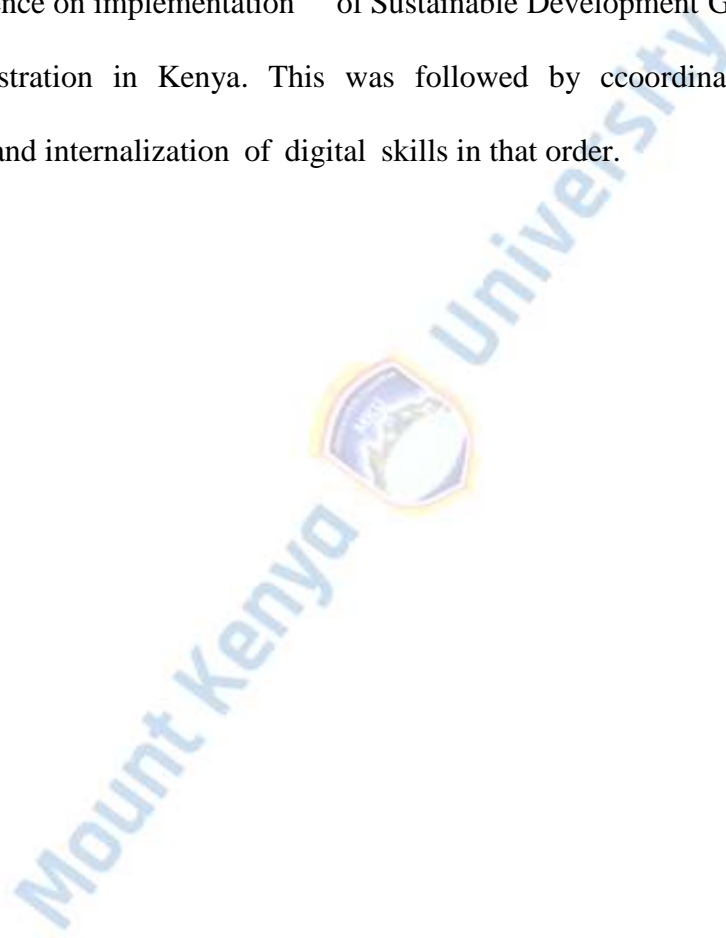
Therefore,

$$Y = 0.054 + 0.368 X_1 + 0.361 X_2 + 0.356 X_3$$

According to the intercept ( $\beta_0$ ), when the three independent variables are held constant, the implementation of Sustainable Development Goals SGDs in public administration in Kenya was 0.054. In addition, holding all the other independent variables constant, a unit increase in institutionalization of digital technologies would lead to a 0.368 implementation of Sustainable Development Goals SGDs in public administration in Kenya. Further, holding on the other independent variables constant, a unit increase in coordination of ICT Infrastructure would lead to a 0.361 implementation of Sustainable Development Goals SGDs in public administration in

Kenya.

In addition, holding all the other variables constant, a unit increase in Internalization of digital skills would lead to a 0.356 improvement in implementation of Sustainable Development Goals SGDs in public administration in Kenya. From these findings it can be inferred that institutionalization of digital technologies had the most influence on implementation of Sustainable Development Goals SGDs in public administration in Kenya. This was followed by coordination of ICT Infrastructure and internalization of digital skills in that order.



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter provides a detailed summary of the major findings of the actual study; it then draws conclusions and discusses implications emanating from these findings. Finally, it makes some recommendations and suggestions on areas of further study. The purpose of this study was to examine the influence of digitalization on sustainable development goals implementation in public administration in Kenya.

#### **5.2 Summary of Major Findings**

The study sought to determine the summary of key major findings of the study. The summary was categorized in form of specific objectives.

##### **5.2.1 Institutionalization of Digital Technologies on Sustainable Development Goals (SDGs)**

The research findings showed that there was use of digital technology like emails, social media, mobile phones, multimedia improves skills and knowledge of public administrators in rolling sustainable development goals. The findings also showed that they had advanced digital technology and computer skills that can enable roll out SDGs work. The research findings also revealed the organization has installed computer technology tools, software's and databases for tracking, monitoring and implementing SGDs These results indicated that digital technologies has an influence on sustainable development goals (SDGs).

The research findings revealed that the institution leadership are advancing the use of information communication technologies to conduct SDGs work in the

organization. The findings further indicated that there was adoption of computer systems like emails, tablets, mobile phones, databases, and social media for SDG implementation. The research findings also revealed that employees have adapted the use of digital systems like emails, tablets, databases, mobile phones, social media, for SDGs communication. The results showed that the culture of organization supports use digital systems and technology like emails, E-government, tablets, mobile. These results indicated that digital systems has an influence on sustainable development goals (SDGs). From the analysis the study findings revealed that Institutionalization of digital technologies had an influence of digitalization on sustainable development goals implementation in public administration in Kenya.

The research findings revealed that ICT infrastructures like internet, network, software's, and websites influences implementation of SDGs. The findings further indicated that coordination of computer services like databases and internet within our organization affects the management of SDGs. The research findings also revealed that ICT connectivity affects how SDGs are measured and managed. These results indicated that ICT infrastructures has an influence on sustainable development goals (SDGs).

The research findings revealed that there is dependency on digital technologies like mobile phones, tablets on digital technologies. The findings indicated that majority there was dependency on ICT infrastructure like internet, network, software's and websites on digital technologies. The findings indicated that there was dependency on ICT digital skills and trainings like programming and

databases. on digital technologies. These results indicated that technology processes in the organization to implement SDG on sustainable development goals(SDGs)

### **5.2.2 Coordination of ICT Infrastructure and Implementation of Sustainable Development Goals SGDs**

The study findings indicated that the use of ICT has improved access and monitoring of SDG implementations that the use of ICT has encouraged knowledge sharing and SDG data use in our organization. The research findings indicated that the use of ICT and related tools like internet, mobile phones, computers and software applications has improved my productivity in SDGs processes. The research findings that through E-government system, our organization enhances accountability and adequate service delivery to the citizens including SDGs. These results indicated that coordination of ICT Infrastructure has an influence on sustainable development goals (SDGs).

### **5.2.3 Internalization of digital skills and Implementation of Sustainable Development Goals SGDs) and Implementation of Sustainable Development Goals SGDs)**

The findings indicated that the cost of accessing the internet and maintaining computers, tablets and mobile phones affects implementation of SDGs. The findings further indicated that the ICT knowledge, training and skills of Public administrators affects implementation of SDGs. The research findings also revealed that the ease of use of computer software's, systems and computers affects SDG implementation. The research findings also revealed that poor internet connectivity and network affects implementation of SDGs.

These results indicated that internalization of digital skills has an influence on sustainable development goals (SDGs).

### **5.3 Conclusions**

Based on the findings the study concluded that the study indicates that there was a moderate positive and statistically significant correlation between Institutionalization of digital technologies and implementation of Sustainable Development Goals (SDGs) ( $r = 0.565$ ;  $p < 0.05$ ). This implies that Institutionalization of digital technologies enhances implementation of Sustainable Development Goals (SDGs) in public administration in Kenya. The study indicates that there was a moderate positive and statistically significant correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) ( $r = 0.684$ ;  $p < 0.05$ ). This implies that correlation between coordination of ICT Infrastructure and Implementation of Sustainable Development Goals (SDGs) in public administration in Kenya.

The study indicates that there was a moderate positive and statistically significant correlation between internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) ( $r = 0.684$ ;  $p < 0.05$ ). This implies that correlation between internalization of digital skills and Implementation of Sustainable Development Goals (SDGs) in public administration in Kenya.

### **5.4 Recommendations**

Based on the findings of the study, the researcher recommended that organizations should install computer technology tools, software's and databases for tracking, monitoring to enhance implementing SDGs efficiently. Institutionalization of digital

technologies should be strengthened to sustainable development goals implementation in public administration in Kenya. Coordination of ICT Infrastructure should be enhanced to sustainable development goals SDGs. There should be internalization of digital skills to enhance sustainable development goals (SDGs).

### **5.5 Suggestion for further Studies**

This study suggests that future studies should be done to establish digitalization challenges on implementation of sustainable development goals (SDGs).



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## APPENDICES

### Appendix I: Informed Consent Form

**Dear sir/madam,**

RE: REQUEST FOR YOUR CONSENT TO PARTICIPATE IN A RESEARCH

I kindly write to request for you to participation in a research project. The study title is: **INFLUENCE OF DIGITALIZATION ON IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS IN PUBLIC ADMINISTRATION IN KENYA.**

The potential risks and discomforts of the study are minimal. This is because you will only be expected to participate in the questionnaire. Before filling the questionnaire, all respondents will be reminded and requested to keep what is discussed to be confidential. There are no potential benefits for you as a person for participating in this study. I am requesting you to volunteer and share your opinions. No payments will be made for the information that you give or for the time that you will spend with us. Confidentiality of any information that you provide will be maintained. Data collected will only be used for the purpose of this study and will be destroyed when the findings are published.

PARTICIPATION IN THIS STUDY IS ENTIRELY VOLUNTARY. YOU MAY REFUSE TO FILL THE QUESTIONNAIRE AND YOU MAY WITHDRAW AT ANY STAGE IF YOU SO WISH. If you accept to participate in this study, please append your signature below:

Signature of participant..... Date: .....

If you have any query, please contact the following:

Mobile phone: +254                      or by email @gmail.com Sincerely,

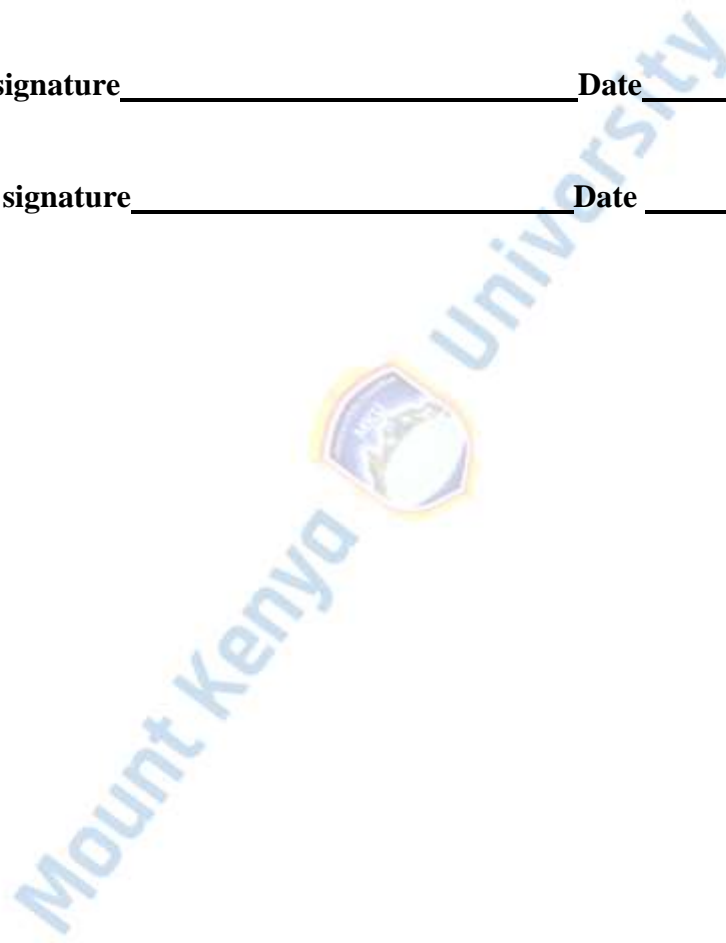
**RESEARCHER**

## CONSENT

I have carefully reviewed the provided details, comprehended the information, and had the chance to seek clarification. I acknowledge that my involvement in this study is entirely voluntary, and I retain the freedom to withdraw at any point, without the need to provide a justification and without incurring any expenses. I am aware that I will receive a copy of this consent form. With full understanding, I willingly consent to participate in this study.

**Participant's signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Investigator's signature** \_\_\_\_\_ **Date** \_\_\_\_\_



## Appendix I1: Questionnaire

You are kindly requested to answer the questions by putting a tick (✓) against the correct choice(s).

### Section A: Bio Data

1. Gender

Male ( ) Female ( )

2. Age

25 years or below ( ) 26-30 years ( )  
31-35 years ( ) 36-40 years ( ) 41-45 years ( )

3. What is your position in this organization? (please tick 1)

Manager [ ] ICT Manager/Officer [ ] Senior Manager [ ] SDG Focal Point [ ]

4. What is the highest level of education attained?

Certificate Level

Tertiary Level

Undergraduate Level

Postgraduate

5. Computer Skills: What is the level of your proficiency skills?

Basic [ ] Intermediate [ ] Advanced [ ]

6. How long have you been associated with the organization?

Less than 2 years ( ) 2-5 years ( ) 6-10 years ( ) Over 10 years ( )

**Section B: Institutionalization of Digital Technologies on Sustainable Development Goals (SGDS)**

1. Do you understand SDGs? Yes  No

2. Does your ministry/state agency implement SDGs? Yes  No

3. Which SDGs does your organization directly implement? (State all that is applicable)

.....

.....

4. Do you use information technologies to implement SDGs? Yes  No

5. What technology tools are in place for use in your organization for SDGs? (*Tick all applicable*)

Computer

Laptop

Mobile Phones

Internet

E-Government

Automated solutions  ICT enabled applications

Other: \_\_\_\_\_

6. To what extent do you agree with the following statements

Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5

Statements	1	2	3	4	5
a) Use of Digital technology e.g. emails, social media, mobile phones, multimedia improves skills and knowledge of public administrators in rolling sustainable development goals					
b) I have advance digital technology and computer skills that canenable roll out SDGs work					

c) Our organization has installed computer technology tools, software's and databases for tracking, monitoring and implementing SGDs					
d) Use of ICT tools like emails, social media, mobile phones, multimedia has encouraged learning, knowledge sharing and SDG data use in our organization					

7. To what extent do you agree with the following statements

Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5

Statements	1	2	3	4	5
a) Our leadership are advancing the use of information communication technologies to conduct SDGs work in our organization.					
b) Adoption of computer systems like emails, tablets, mobile phones, databases, and social media for SDG implementation is at advance stage within our organization.					
c) Employees have adapted the use of digital systems like emails, tablets, databases, mobile phones, social media, for SDGs communication.					
d) The culture of this organization supports use of digital systems and technology like emails, E- government, tablets, mobile phones and social media for SDG work.					

8. To what extent do you agree with the following statements

Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5

Statements	1	2	3	4	5
a) ICT infrastructures like internet, network, software's, and websites influences implementation of SDGs					
b) Coordination of computer services like databases and internet within our organization affects the management of SDGs.					
c) ICT connectivity affects how SDGs are measured and managed.					

9. To what degree do you depend on the following technology processes in your organization to implement SDGs?

Lowly dependent – 1 Moderate dependent – 2 Highly dependent - 3

Statement	1	2	3
a) Digital technologies like mobile phones, tablets, desktops			
b) ICT infrastructure like internet, network, software's, and websites.			
c) ICT digital skills and trainings like programming and databases.			

### Section C: Coordination of ICT Infrastructure

To what extent do you agree with the following statements on the use of digital technologies/processes for Sustainable Development Goals in Public administration?

**Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5**

Statements	1	2	3	4	5
a) Use of ICT has improved access and monitoring of SDG implementations.					
b) Use of ICT has encouraged knowledge sharing and SDG datause in our organisation.					
c) Use of ICT and related tools like internet, mobile phones, computers and software applications has improved my productivity in SDGs processes.					
d) Through E-government system, our organisation enhances accountability and adequate service delivery to the citizens including SDGs.					


### Section D: Internalization of Digital Skills

1. To what extent do you agree with the following statements on digital skills for SDGs

**Strongly Disagree – 1 Disagree – 2 Neutral -3 Agree – 4 Strongly Agree - 5**

Statement	1	2	3	4	5
a) Cost of accessing the internet and maintaining computers, tablets and mobile phones affects implementation of SDGs					
b) ICT knowledge, training and skills of Public Administrators affects implementation of SDGs.					
c) Ease of use of computer software's, systems and computers affects SDG implementation.					
d) Poor internet connectivity and network affects implementation of SDGs					

## Appendix III: ERC Letter



# Mount Kenya University

REF: MKU/ISERC/3731  
TO: DAVID NGANGA MBURU  
Date: 21 May 2024  
REG: MPAM/2023/43248

Dear Sir/Madam,


**RE: INFLUENCE OF DIGITALIZATION ON IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS IN PUBLIC ADMINISTRATION IN KENYA**

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2775**. The approval period is **21/05/2024 - 20/05/2025**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including informed consents, study instruments, MTA will be used
- ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
- vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,  
  
Dr. Alfred Owino, PhD  
Chairman, Mount Kenya University ISERC

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Cell: +254 709 153 000 | +254 709 153 200  
Email: info@mku.ac.ke, Web: www.mku.ac.ke  
Chartered and ISO 9001 : 2015 Certified Institution.  
**Unlocking Infinite Possibilities**

## Appendix IV: Introductory Letter



### DIRECTORATE OF GRADUATE STUDIES

MPAM/2023/43248

22<sup>nd</sup> May, 2024

*National Commission for Science Technology & Innovation (NACOSTI)  
Off Waiyaki Way, Upper Kabete,  
P.O Box 30623- 00100  
NAIROBI, KENYA*

Dear Sir/Madam,


**RE: DAVID NGANGA MBURU - REGISTRATION NO. MPAM/2023/43248**

The purpose of this letter is to introduce the above named student who is pursuing **Master of Arts in Public Administration and Management** in the department of Management in the school of Business and Economics.

The title of the research is "**Influence of Digitalization on Implementation of Sustainable Development Goals in Public Administration in Kenya.**" It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2024 and August, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

  
Dr. Samuel M. Karanja, Ph.D  
Director, Graduate Studies

Mount Kenya University  
P.O. Box 342-01000, THIKA  
Office of the Director,  
Graduate Studies

Enc.

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Chartered and ISO 9001 : 2015 Certified Institution.  
**Unlocking Infinite Possibilities**

## Appendix V: NACOSTI Authorization

 <b>REPUBLIC OF KENYA</b>	 <b>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY &amp; INNOVATION.</b>
Ref No: <b>457039</b>	Date of Issue: <b>05/June/2024</b>
<b>RESEARCH LICENSE</b>	
	
<p><b>This is to Certify that Mr. DAVID NGANGA of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INFLUENCE OF DIGITALIZATION ON IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOALS IN PUBLIC ADMINISTRATION IN KENYA for the period ending : 05/June/2025.</b></p>	
License No: <b>NACOSTI/P/24/36356</b>	
457039 Applicant Identification Number	 Director General <b>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY &amp; INNOVATION</b>
Verification QR Code	
	
<p><b>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</b></p>	
<b>See overleaf for conditions</b>	

**Appendix V: Similarity Index**

