

# Digital Transformation and It's Governance

**Bature Salisu**

Computer Department

Yusuf Bala Usman College of Education and Legal Studies, Daura

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## Abstract

In this 21<sup>st</sup> century, the advent of Information and Communication Technology (ICT) has made a tremendous improvement in the communication process of every society due to the dynamic nature of digital technology, the mode of communication between people is changing day-by-day. Today's era of innovation of technological progression, digitalisation has not only transformed individual lives but also has a prominent influence on education system and business activities. The world is surviving in a global yet complex technological progression that not only changes the lives of civilians but is also transforming the public, private, and academic spheres of life. Thus, IT is a very vital tool for effective educational, business, office management and other related services at all levels of governance. This paper focuses on the digitization of governments, their challenges, and success factors. It is found that government faces difficulties in formulating strategies, proper planning, execution strategies, and lack of organized information and expertise. However, success can be achieved by working on capabilities of the future workforce, creating leaders for tomorrow, generating digitization capabilities, and bringing a purpose-driven digitization before digital government transformation. Therefore, this paper presents the use of IT in governance and digital transformation for effective delivery of government services, policies and programmes.

**Keywords;** Digital Transformation, Digitalization, Governance, Technology and innovation.

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## 1.0 Introduction

In this present age of information technology (IT), the use of internet and data communication in government establishments and relevant organizations is becoming quite popular for accessing information on any topic of interest. It also provides tremendous opportunities for government officials and other professionals in getting information on matters related to the fields of different professions for effective delivery.

In this regard, most of the people who have computers around them use Internet to access information from the World Wide Web (www), exchange messages, documents and e-services (e-governance, e-business, e-learning, e.t.c.).

Now a days, technology is transforming government establishments, especially, in the performance of their functions. This is the sole reason for governments all over the world embracing technology and becoming electronically viable. Information and Technology (IT) enables and facilitates good governance agenda for transparency, accountability, empowerment, decentralization, and fiscal reforms. It is this agenda that governments of today are aspiring to achieve through digital transformation with the help of Information Technology (IT).

Governments are using IT in restructuring their traditional organizational set up, re-engineering the work processes, interacting with citizens and stakeholders, rendering services and information, efficient human resources management, financial management and decision-making. Hence, IT are playing a very significant role in enabling governments to pursue the agenda of good governance.

## 2.0 What is IT

IT is a technology that supports activities involving information, which include gathering, processing, storing and presenting data to produce meaningful information. To a large extent it influences the 21<sup>st</sup> century communication system by digitalizing its mode of delivery in an effective and efficient manner. Increasingly these activities also involve collaboration and communication of government policies, programmes, educational activities and other related services.

The term IT, has been defined by different scholars, according to Yekini and Lawal (2012), it is defined as powerful collection of elements which include computer hardware, software, telecommunication networks, workstations, robotics and smart chips, which is also at the root of information systems. Also, it is a technology that enables society to create, collect, consolidate, communicate, manage and process information in multimedia and various digital formats for different purposes i.e. computing and telecommunications technologies like the personal computer, CD-ROM, cable TV, cellular phones and the Internet.

According to the Organization for Economic Cooperation and Development (OECD), rapid development of information and communication technology (ICT) over the past decade has enabled heterogeneous economic sectors to be more integrated, leading to a significant effect on nation's economic growth across the countries' Organization for Economic Cooperation and Development (OECD). Thus, the use of IT in governance will definitely enhance the productivity of government establishments.

## 2.1 IT infrastructure

IT infrastructure is the foundation for deploying, operating, and managing a company's technology resources and applications. It's the collection of hardware, software, networks, facilities, and related services that deliver IT operations.

IT infrastructure components include servers, storage systems, networking devices, operating systems, databases, and other software applications. IT infrastructure underpins nearly every aspect of modern business operations.

### 2.1.1 Components of IT infrastructure

IT infrastructure includes the following elements:

- I. **Hardware** consists of servers, computers, routers, switches, and storage systems.
- II. **Software** includes operating systems, applications, and problem anagement tools.
- III. **Networking** comprises routers, switches, and cables.
- IV. **Data centers** are facilities housing critical IT equipment and support infrastructure, including power, cooling, and security systems.
- V. **Cloud services** encompass remote computing services offering scalable IT resources over the internet, such as storage and processing power.

### **A. Hardware components**

Hardware elements essential for IT infrastructure include the following:

1. **Servers** provide resources such as network storage and application processing.
2. **Storage devices** comprise hard drives and solid-state drives.
3. **Networking equipment** includes routers, switches, and cabling.

### **B. Software components**

Software aspects integral to IT infrastructure functionality include the following programs:

1. **Operating systems** are the foundation for hardware operations and application execution.
2. **Databases** organize, store, and facilitate access to large volumes of data.
3. **Middleware** is a connective layer for communication and data exchange between software applications.

#### **2.1.2 Network infrastructure**

Network infrastructure supports IT operations with smooth transmission and data transfer between devices and systems. It includes physical and virtual components, such as routers, switches, cables, wireless access points, protocols, and services.

#### **2.1.3. Data centers and cloud services**

Data centers are physical facilities that ensure high availability, redundancy, and optimal operating conditions for IT assets. Cloud services complement data centers by offering virtualized online resources for on-demand scalability and flexibility. Together, they support business continuity, disaster recovery, and the dynamic allocation of IT resources which helps companies efficiently meet their computing needs and adapt to changing demands.

#### **2.1.4 Security in IT Infrastructure**

IT infrastructure security acts as a critical defense against cyber threats and data breaches. Robust security protocols protect sensitive data and maintain the integrity and availability of IT services. This includes authentication and authorization systems, intrusion detection and prevention applications, and encryption.

#### **2.1.5 Types of IT Infrastructure**

Traditional (on-premises), cloud computing, and hybrid are the three primary IT infrastructure models. Organizations can set up and manage their infrastructure in different ways depending on their size, needs, and resources. Here are the four main types:

##### **1. Traditional IT infrastructure**

Traditional on-premises infrastructure hosts all hardware and software within a physical space. It offers maximum control and security and suits companies with strict regulatory compliance needs.

##### **2. Cloud IT infrastructure**

Cloud IT infrastructure, particularly the public cloud, relies on third-party providers to host IT resources remotely. It offers scalability, flexibility, and cost-efficiency.

For example, infrastructure as a service (IAAS) provides virtualized computing resources over the Internet. A cloud provider manages the physical infrastructure. The client provisions and manages the virtual resources, such as machines, operating systems, and applications.

Infrastructure as code (IAC) is a related process. IAC is an IT infrastructure management process that applies best practices from DevOps software development to the management of public cloud infrastructure resources. It uses machine-readable definition files to set up and control elements such as networks, virtual machines, load balancers, and connection topologies.

With Cloud Infrastructure Management, IT teams handle resources like compute power, storage, and networking that are delivered over the internet by a third-party provider (e.g., AWS, Microsoft Azure, Google Cloud).

This model allows for flexible scaling, automation, and cost optimization, but it also requires strong governance and vendor management.

### **3. Hybrid IT infrastructure**

The hybrid model combines traditional and cloud infrastructure. It allows companies to leverage the cloud's scalability and flexibility while keeping sensitive operations on-premises.

### **4. Hyper-Converge Infrastructure**

Hyper-Converge Infrastructure (HCI) bundles compute, storage and networking into a single software-defined system. It simplifies management through a unified interface and relies heavily on virtualization and automation. This approach reduces complexity compared to traditional setups and makes it easier to scale, though it may require specialized knowledge of HCI platforms.

### **3.0 Governance**

Good governance is fundamental, while e-Governance is instrumental, and e-Governance is a tool. No e-Governance tool can be successful without focusing attention to process reforms for good governance. Good governance dictates the design and shape of e-tools for improving governance outcomes and processes. e-Governance can be an effective and efficient tool for good governance if and only the process reforms have been carried out. Automating complicated government processes will create more problems than it can solve. In e-Governance, the letter 'e' is small and the letter 'G' is big. With process re-engineering, effective implementation of e-Governance can take Information Technology (IT) to the common man, helping the government to align services with the changing needs of both citizens and other stakeholders.

The term governance can be referred to as a process of decision making through which the decisions are implemented or not implemented. Governance is an active concept which encompasses fast changing political, social and economic situation together with the international environment and conditions of operation. Modern concept of governance is participatory, responsive, consensus-oriented, transparent, accountable, effective and efficient, equitable and inclusive which follows the rule of law. Governance is related with efficient and effective

administration in a democratic framework an administration considered to be citizen friendly, transparent, citizen caring, responsive and respecting to human rights at large. In the era of globalization, there are many streams of discourses within the political arena and economic sociology at the national and international levels. In this contemporary age, democracy, development and participatory governance are greatly enhanced with the advent of Information and Communication Technology (ICT) for effective service delivery.

Governance comprises of many facets. It can be referred to as structure, process, mechanism and strategy (Bartolini, 2011; Rise, 2012). The distinction between these facets of governance can be clarified based on their usage in analytical and theoretical purposes. As a structure, governance indicates the architecture of formal and informal institutions; as a process it implies the dynamics and steering functions involved in process of policy making; as a mechanism it connotes institutional procedures of decision-making for compliance and control. Lastly, as a strategy it signifies the actors' efforts to govern and manipulate the strategy of institutions and mechanisms so as to shape choice and preferences (Levi-Faur, 2011)

### **3.1 Concept of Governance**

The concept of Governance has been in use at least since the fourteenth century. First it was used in France, during that period, it implied seat of government. Thus, it is regarded as the act or manner of governing its office or power, which made its synonymous with government, to being virtuous or wise in one's general behaviour. Governance refers to a process of the act or function of exercising (usually legitimate) authority to regulate affairs of the citizens in a given locality, state, territory or a country at large. In effect, it is the conduct of business of a policy or society, which generally implied orientation of people in favour of a democracy, defined as a government of the people, by the people and so for the people, the "good" and "welfare" or "interest" of people is assumed to be the necessary and sufficient condition of governance (not to speak of good governance) and its legitimacy (Arora, 2007).

In earlier period, the term governance was used in a border sense of government, which is not suitable in present times. Governance means more than maintaining law and order. In other words, we can say that it is a participative system in which those who are called upon to govern on behalf of the people are motivated with a will to giving their best, serving and doing good to the people, solving their day-to-day problems and making their lives more liveable, satisfying and enjoyable. Governance is the exercise of political, economic and administrative authority to manage a nation's affairs and it embraces all the modes good and bad that societies uses to distribute power and administer public resources. Governance is the manner in which power is exercised in the management of a country's social and economic resources for development (Frey, 2008).

According to the Organization for Economic Cooperation and Development (OECD), The concept of governance denotes the use of political authority and exercise of control in a society in relation to the management of its resources for social and economic development (Keping, 2018:1-8). thus, the organization lays down the key components of governance as follows:

- ❖ Legitimacy of government;
- ❖ Accountability of political and official elements of government;
- ❖ Competence of governments to make policy and deliver services, and

❖ Respect for human rights and the rule of law (Srivastava, 2009)

With regards to these key components, proper integration of Information and Communication Technology (ICT) into our system of governance, the above mentioned components will be more enhanced and strengthened for effective service delivery and productivity.

#### **4.0 Use of ICT for effective governance**

Information and Communications Technologies plays a very vital role in governance. Through a careful analysis of data, political, socio-economic decisions can be taken up by the government in the delivery of its policies and programmes. A successful implementation of ICT will be a one-stop solution for most if not all of governance problems.

#### **4.1 ICT & Governance**

The emergence of the digital economy has affected both the role and functions of public institutions. While undertaking traditional functions such as defence, law and order, justice, taxation, legislation, regulation, education, health care and social equity, the governments are now required to take new roles of harnessing the power of information technology and leading change. There has been a transformation of the role of the government from a buyer or producer of ICT services to that of a facilitator and a leader.

#### **4.2 Role of Government in IT**

The role of government in ICT for proper utilization can be identified in the following Categories:

- 1-** Laying IT infrastructure, producing ICT equipment, financing public resources and development.
- 2-** Creating the macroeconomic environment for growth and innovation in ICT, including fiscal policies (cost, innovation, investment, venture capital e.t.c.), legal and regulatory environment (competition, independent regulator, rule of law, intellectual property protection e.t.c.) and channeling and mobilizing resources for ICT.
- 3-** Education policy for the right amount and quality of manpower resources for a network-ready economy – curricula, ICT training facilities, wiring/networking of educational institutions.
- 4-** Addressing ‘digital divide’ domestically and internationally; giving signals to markets – articulating a national vision of ICT, according national priority to ICT, undertaking large projects, championing national interests in international forums.
- 5-** e-government: services online, e-procurement, trade facilitation, civil society participation, accelerating the adoption of ICT by government departments and agencies and establishing credibility.

#### **4.3 ICT for Good Governance**

The advancement of Information and Communication Technologies (ICT) and the internet provide opportunities to transform the relationship between governments and citizens and business in new ways that contribute to the attainment of good governance. They provide opportunities for people and business to involve in the process of governance at all levels. They facilitate better service delivery to clients, in terms of timelines and quality, thus making governance more efficient and effective.

In addition, the use of ICT may lower transaction costs both for citizens and government operations, and public services can be made more affordable to the people at large by considering the following:

1- ICT presents many avenues for improving governance; It has opened up new opportunities for governments to manage things differently and in a more efficient manner by utilizing information effectively and re-engineering processes. ICT tools are emerging as important instruments towards the goal of "good governance". Many countries have launched specific initiatives for open government. Freedom of information is being redefined and supported by statutes.

2- ICT has facilitated a conscious attempt to place the citizen at the centre of a governance network. Citizens are being perceived as customers and clients rather than beneficiaries. The Internet revolution has proved to be a powerful tool for governance. An important dimension of the Internet potential is the possibility of providing public services anytime, anywhere.

3- A defining characteristic of traditional public sectors has been the existence of a large physical infrastructure. This was to deliver programmes through a network of service delivery points and offices. Physical infrastructure was the most effective way to deliver public services directly to citizens. ICT now allows governments to experiment successfully with new ways of organizing themselves; cost-effective delivery of services is now possible without the service providers and clients being physically close to each other.

4- Large scale implementation of e-governance initiatives can lead to demystification of complicated government processes and empowerment of citizens. It can lead to enhanced government performance and generate a multiplier effect on economic progress.

5- ICT has enabled citizens to demand information and better services from governments. With increased citizen awareness, governments today are under increasing pressure to deliver a range of services – from ration cards, motor driving licenses and land records to health, education and civic services – in a manner that is timely, efficient, economical, equitable and transparent.

6- The application of ICT to government processes - e-Governance - can have a profound impact on the efficiency, responsiveness and accountability of the government, thereby, on the quality of life and productivity of citizens, especially the poor; and ultimately, on the economic output and growth of the country as a whole.

Electronic governance goes far beyond mere computerization of stand alone back office operations. It is a means to fundamentally change how the government operates and this implies a new set of responsibilities for the machinery of the government.

## **5.0 e-Governance**

Due to the rapid outgrowth of the internet technology and digitization, governments all over the world are initiating steps to involve IT in all governmental processes. This is the concept of e-government. This is to ensure that the government administration becomes a swifter and more transparent process.

e-Governance can be defined as the application of communication and information technology for providing government services, exchange of information, transactions, integration of previously existing services and information portals.

Information and Communication Technology (ICT) has been instrumental in changing the way in which the government operates through horizontal and vertical interactions and information flows. It has provided unique opportunities to governments in terms of new ways of doing business through e-Government and e-Governance applications. e-Government is about leading the transformation of government to provide efficient, convenient and transparent services to citizens and businesses through the use of Information and Communication Technologies (ICT).

Electronic government, also known as e-Government, refers to the use of digital technologies, such as the internet and mobile devices, to deliver government services and information to citizens. The ultimate goal of e-Government is to provide an increased portfolio of public services to citizens in an efficient and cost-effective manner, while promoting transparency, accessibility, and accountability.

e-Government is not about 'e' but about 'government'; it is not about computers and websites, but about services to citizens and business. e-Government is also not about translating processes; it is about transforming them. e-Government concerns about the transformation of government, modernization of government processes and functions for better public service delivery mechanisms through technology, for the the Citizens as the recipients in e-Government.

e-Governance, on the other hand, comprises decisional processes and the use of ICT for wider participation of citizens in public affairs, thus, Citizens are participants in e-governance. The purpose of implementing e-Governance is to improve governance processes and outcomes with a view to improving the delivery of public services to citizens.

### **5.1 Advantages and Disadvantages of IT in Governance**

While there are many potential advantages to e-Government, there are also several disadvantages that must be considered in using ICT in governance as identified below:

#### **1) Advantages of IT in Governance**

### **i- Improved Efficiency**

One of the main advantages of e-government is the potential to improve the efficiency of the current paper-based system. By digitizing government services and information, e-government can streamline administrative processes, reduce paperwork, save time and money.

### **ii- Better Communication**

e-Government also facilitates better communication between governments and businesses, creating a more open market and a stronger economy. For example, e-procurement allows smaller businesses to compete for government contracts, while larger businesses can access information and services more easily.

### **iii- Accessibility**

As society becomes more mobile, e-Government services can be accessed by citizens from anywhere in the country, at any time of the day. This increases the accessibility of public services and improves the overall customer experience.

### **iv- Transparency**

e-government can improve government transparency by allowing the public to be informed about what the government is working on and the policies they are trying to implement. This creates a more informed and engaged citizenry, which can lead to more accountability and better decision-making.

### **v- Speed**

Technology makes communication swifter and faster. Internet, smartphones have enables instant transmission of high volumes of data all over the world.

### **vi- Saving Costs**

A lot of Government expenditure goes towards the cost of buying stationery for official purposes. Letters and written records consume a lot of stationery. However, replacing them with smartphones and the internet saves a lot of money in expenses every year.

### **vii- Transparency**

The use of e-Governance helps make all functions of the business transparent. All Governmental information can be uploaded onto the internet. The citizens access specifically access whichever information they want, whenever they want it, at their convenient. However, for this to work, government has to ensure that all data are to be made public and uploaded to the Government information forums on the internet.

### **viii- Accountability**

Transparency directly links to accountability. Once the functions of the government are available, we can hold them accountable for their actions.

## **2) Disadvantages of IT in Governance**

### **i- Lack of Equality in Public Access**

One of the main disadvantages of e-government is the lack of equality in public access to the internet. While many people have access to the internet, there are still many who do not, particularly in developing countries. This can create a digital divide, where some citizens are unable to access government services or information online.

### **ii- Reliability of Information**

The reliability of information on the web is also a concern. Citizens may not be able to discern between accurate and inaccurate information, which could lead to misinformation and biased public opinions.

### **iii- Hidden Agendas**

There is also the concern that government groups may have hidden agendas that could influence and bias public opinions. e-government systems must be designed to prevent this from happening and promote transparency and accountability.

### **iv- Impacts on Economic, Social, and Political Factors**

The implementation and design of e-government can have potential implications for economic, social, and political factors. e-government can lead to the disinter-mediation of the government and citizens, which can impact power dynamics and potentially lead to social unrest.

**v- Vulnerability to Cyber Attacks:** e-government systems are vulnerable to cyber attacks, which can compromise sensitive information and undermine public trust in the government. E-government systems must be designed with security in mind to prevent these types of attacks.

### **vi- Cost**

Although a large amount of money is spent on the development and implementation of e-government, the outcomes and effects of trial internet-based governments are often difficult to gauge or unsatisfactory. Technology keeps changing, and if the technology becomes obsolete, it can prohibit the effectiveness of e-government. The adoption of any technology platform needs to be assessed carefully and balanced not based on what is needed now, but also what the future requires.

### **vii- Inaccessibility**

e-Government sites that provide web-based access and support often do not offer the potential to reach many users, including those who live in remote areas, have low literacy levels, or exist on poverty line incomes. Some sort of hybrid system may be required to co-exist as the e-government journey transitions.

### **viii- Loss of Interpersonal Communication**

The main disadvantage of e-governance is the loss of interpersonal communication. Interpersonal communication is an aspect of communication that many people consider vital.

### **ix- High Setup Cost and Technical Difficulties**

Technology has its disadvantages as well. Specifically, the setup cost is very high and the machines have to be regularly maintained. Often, computers and internet can also break down and put a dent in governmental work and services.

#### **x- Illiteracy**

A large number of people are tech-illiterate and do not know how to operate computers and smartphones. e-Governance is very difficult for them to access and understand.

#### **xi- Cyber crime/Leakage of Personal Information**

There is always the risk of private data of citizens stored in government servers being stolen. Cyber crime is a serious issue, a breach of data can make the public lose confidence in the Government's ability to govern the people.

### **6.0 Recommendations**

1. Government should provide a robust IT infrastructure for efficient services
2. All necessary facilities for IT infrastructure should be provided for effective delivery.
3. Proper training should be provided to personnel for effective handling of IT infrastructures.
4. High level security should be provided in the IT infrastructure for efficient services.
5. There should be proper and regular maintenance of the IT infrastructures for proper functioning.

### **7.0 Conclusion**

The concept, use of ICT in governance focuses on the process of governing, involving interactions between various formal and informal institutions as well as influencing the policies and decisions that concern public lives using Information and Communication Technology (ICT) has been very effective in yielding positive results in governance. The success of governance depends on the reinvention of the government, re-invigoration of non-government sectors, with a social motive. For effective governance to be well implemented and monitored, proper integration of ICT into the governing system should be adopted. On the hand, e-government has the potential to greatly benefit society by increasing efficiency, improving services, and providing better accessibility to public services. It also allows for more transparency and accountability in government operations. However, it is important to consider the potential disadvantages such as unequal access to the internet, reliability of information, hidden government agendas, hyper-surveillance, cost, and inaccessibility for a certain populations. As with any new technology, the adoption and implementation of e-government should be carefully assessed to ensure that the benefits outweigh the risks.

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