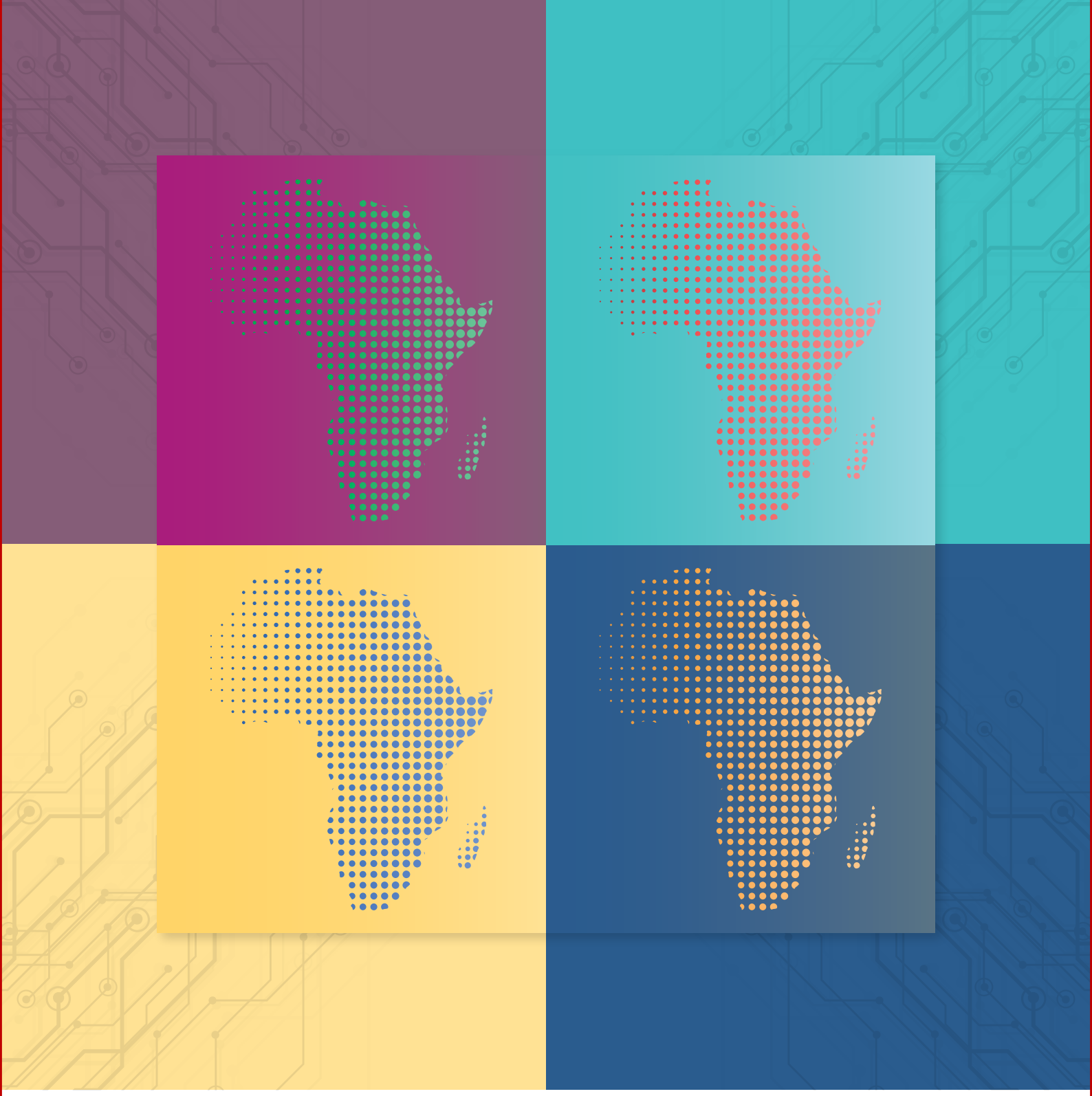

Digital Policy Studies

Digital Policy Studies is an open-access, peer-reviewed interdisciplinary academic journal focused on the empirical, critical and intersectoral study of subjects related to digital policy and the fourth industrial revolution, cybersecurity, the digitalisation of politics, the digital economy, information and communication technology, the convergence of technology and society, new media and related topics. The Journal publishes research articles, review articles and policy commentary in designated sections.

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Contents

EDITORIAL SECTION

Special Issue - Digitalisation and governance, legislative oversight, and service delivery in Africa

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African governments remain seized with the permanent goal of achieving development and a better standard of living for their citizens. Government is responsible for formulating public policies that address societal issues and delivering much needed basic services such as water, sanitation, electricity and waste removal, all of which are crucial to the affirmation of human dignity and facilitating an acceptable standard of living. The delivery of basic services is also crucial to creating an enabling environment for local economic development because businesses need such services to function and continue executing economic activities in a given subnational jurisdiction. Moreover, governments can enable economic development through sound development planning, policymaking, resource allocation, implementation, and the monitoring, review and evaluation of the performance of such plans and policies vis-à-vis their goals of economic stimulation. The process of digitalisation as a product of the Third and Fourth Industrial Revolutions presents important opportunities for governments to improve the efficiency of their processes and systems and drive socio-economic change.

Digital Policy Studies is an open-access, peer-reviewed interdisciplinary academic journal published by the Department of Politics and International Relations, University of Johannesburg. The Journal focuses on the empirical, critical and intersectoral study of subjects related to digital policy and the fourth industrial revolution, cybersecurity, the digitalisation of politics, the digital economy, information and communication technology, the convergence of technology and society, new media and related topics. The Editorial Board embarked on this Special Issue on Digitalisation and Governance in line with the 2020s push by Governments to digitalise their activities and operations, ensuring transparency and agility of public institutions. This Special Issue is constituted by peer-reviewed articles that respond to themes such as:

- E-governance in Africa
- Adoption of Information Communication Technologies (ICTs) in governance (planning, policymaking, budgeting, revenue collection)
- ICTs and their implications for national and continental economic development: potential and risks
- Comparative analysis of ICTs adoption in subnational government across Africa
- ICTs and their use in the relationship between governments and citizens

- Digitalisation and its impact on government performance
- African governments and their policy approaches to ICTs
- The implications of proliferating ICT innovations for national and human security in Africa
- Government knowledge management systems in the era of digitalisation
- Digital policy implementation best practices across Africa: opportunities for learning and adaptation for governments seeking societal digital transformation

The digital age has arrived in the Global South, changing the way we live, work and think. Governments are increasingly seeking to move from paper-based manual systems towards digital systems as enabled by ICTs. Africa is a continent constituted by developing countries with emerging as well as rudimentary ICT access. This Special Issue has explored the readiness, uptake and impact of digitalisation on African governance processes, systems and procedures. The Editorial Team is confident that readers will benefit from discourse on the interface between digitalisation and governance, and the impact thereof on the efficiency, effectiveness and responsiveness of governments vis-à-vis discharging their mandates.

The Editorial Team

Digital Policy Studies

Unveiling the Hidden Power of Water Services Development Plans

Decoding MuSSA and WSDP's Impact in the Dynamic ICT Space

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Abstract

South African Water Services Authorities (WSAs) have been grappling with the challenge of providing sustainable water and sanitation services which is a product of the sector's inadequate planning and practices systems. Consequently, majority of end-user communities endure inadequate access to sustainable water and sanitation services. This paper aims to highlight the pivotal role of ICT in local governance planning, proposing it as an innovative solution to enhance planning efficiency and improve water and sanitation service delivery in South Africa. Through an emic perspective, systematic search of literature, and document analysis, this paper examines the 2022 MuSSA reports of Western Cape and Gauteng to identify the challenges faced by the provinces. The findings reveal deficiencies in the Western Cape's investment in asset renewal, infrastructure management, reduction of non-revenue water, and adherence to national standards. Similarly, Gauteng requires comprehensive reforms to address financial instability, asset management, and regulatory compliance. The paper also examines the progress of WSDP development in the 2022-2027. Notably, both provinces are behind schedule, having been expected to initiate WSDP development in 2022. The findings of this paper give an invaluable snippet of the water services planning mechanisms at the local government to ensure proper monitoring and adequate intervention at a local level whilst ensuring the streamlining of resource allocation and recommends that the national government reflects on its shortcomings of ensuring legislative compliance by local government.

Keywords: Water Services Authorities; Water Services Development Plan; ICT; Municipal Strategic Self-Assessment; Planning; Water Services.

Introduction

The provision of reliable water and sanitation services remains a pressing challenge, not only in South Africa but also across the globe, spanning both developed and developing nations (Goldman, 2007; Moriarty, Smits, Butterworth, and Franceys, 2013; Renick, 2014). This enduring challenge stems from a multitude of factors, including the impacts of

climate change, the deterioration of essential water and sanitation infrastructure, rampant pollution, mismanagement of water resources, declining water quality, a shortage of skilled personnel, and the daunting financial constraints faced by local government (Buthelezi, Sutherland, Hordijk, Lewis, and Meyer, 2014; Lund, 2015; Rogers, Jalal, and Boyd, 2012; Wells, Vidmar, Webb, Ferguson, Verbyla, de los, Zhang, and Mihelcic, 2022). Addressing these multifaceted issues has become a conundrum for local governments worldwide.

In the South African context, various attempts have been made to address these complex challenges through initiatives such as water conservation and demand management, water services improvement plans, and municipal master plans for water and sanitation. Regrettably, the efficacy of these responses has been stifled by a lack of comprehensive planning, insufficient resource allocation, and a shortfall in the implementation of existing policies and legislative frameworks (McKenzie and Wegelin, 2009). To confront this daunting conundrum, Water Services Authorities (WSAs) are required by DWS to voluntarily assess their performance and future expected performance in providing water and sanitation services through MuSSA. Moreover, WSAs are mandated through legislation to develop Water Service Development Plans (WSDPs).

As a legislated requirement, the Water Service Development Plan (WSDP) serves as a strategic blueprint that captures an all-encompassing overview, strategic objectives, and a robust reporting framework within a WSA. The WSDP system ensures that planning occurs through a structured approach based on information and a knowledge system that integrates all topics related to Water and Sanitation Services provision (DWS, 2022). Despite the legal obligation to develop WSDPs, numerous WSAs are grappling with this imperative task, as it will be shown later in this paper. This predicament places the planning mechanisms of WSAs in a precarious state, ultimately contributing to the inadequate delivery of essential water and sanitation services.

The MuSSA and WSDP, operating as Information and Communication Technology (ICT) tools, equip WSAs with the essential planning tools necessary to navigate these challenges successfully. In recent years ICT has emerged as a pivotal instrument in automating and facilitating various aspects of business processes, scientific research, education, and communication. Strikingly, its adoption in the realm of municipal service delivery planning remains underutilised, not just within South Africa but on a global scale (Nasi, Frosini, Cristofoli, 2010; Virtudes and Sa, 2017).

This underutilisation can be attributed to the prevailing misconception that ICT solely serves as a technical means for information processing and communication. However, the true essence of ICT extends beyond this narrow view (Bibri, 2021; Bricout, 2021; Mohapatra and Rath, 2019).

To underscore the critical role of ICT in the local governance planning sphere, Virtudes and Sa (2017) assert that ICT should take centre stage in ensuring the efficiency of planning processes. This paradigm shift signifies that the utilisation of ICT in water services planning presents an innovative and transformative approach to enhance the efficiency and competitiveness of WSAs. In this context, the adoption of ICT in the planning space emerges as a strategic imperative to overcome the challenges and elevate the standard of water and sanitation service delivery in South Africa.

Traditional planning methods have shown that they are unable to deal with the complexities of water service delivery. Therefore, the problem that this paper investigates is the uptake

and effectiveness of Information and Communication Technology (ICT)-driven mechanisms, such as the Municipal Strategic Self-Assessment Systems (MuSSA) and the Water Services Development Planning (WSDP), in improving water and sanitation service delivery within the Western Cape and Gauteng provinces. The paper unfolds in a structured manner, beginning with a discussion on the methodology used. Following this, a conceptual framework is presented to explain key terms, succeeded by an exploration of legislative requirements. The subsequent section explores the "Empowering Progress: Unveiling Municipal Potential in the Western Cape and Gauteng Provinces through Strategic Self-Assessment" (Section 5). Thereafter, the focus is directed on "Cruising Towards Water Planning: Water Services Development Plans 2022-2023 in Western Cape and Gauteng" (Section 6). Subsequently, the paper addresses "Decoding Water Services Delivery Planning: Enhancing South African Municipalities with Integrated ICT Solutions" (Section 7). The paper concludes by summarising the key findings and insights drawn throughout the sections.

Methodology

This study applies a qualitative research design to delve into the intricacies of water and sanitation services planning facilitated by an Information and Communication Technology (ICT) tool known as the Municipal Strategic Self-Assessment and Water Service Development Plan. To collect data for this study, a comprehensive process was undertaken involving the identification, selection, appraising, and synthesis of evidence relating to the utilisation and comprehension of the Western Cape and Gauteng Municipal Strategic Self-Assessment (MuSSA) and Water Service Development Plan (WSDP). This comprehensive data collection effort was guided by the objective of encompassing all available evidence relevant to the research topic. The data collection method followed four key strategies: a) A formal exploration of academic databases was conducted, employing a carefully crafted master search string to ensure thorough coverage of scholarly works; b) A search of grey literature, extending to the websites of prominent organisations operating within South Africa's water sector. In addition, Google Scholar was also utilised, with a focus on keywords closely associated with MuSSA, WSDP, ICT, Planning, and Water and Sanitation Services; c) An examination of the Department of Water and Sanitation website, as a key information site since it hosts all the MuSSA and WSDPs of the WSAs in the country; and d) A diligent citation tracing approach was adopted, employing diverse snowballing techniques including engaging DWS officials with extensive knowledge on the topic at hand (Langer et al., 2017).

Western Cape and Gauteng are the case study areas which were consciously selected due to their remarkable achievements in providing widespread water services. In both provinces, residents enjoy extensive water accessibility, whether it be within their homes, in their yards, or through communal taps. Western Cape stands out with an impressive water access rate of 99.1%, accompanied by a commendable 95.4% access to sanitation services. Similarly, Gauteng exhibits a praiseworthy 97.9% water access and a substantial 96.9% access to sanitation services. These statistics are notably higher than the national average, which hovers around 91.3% for water access and 95.35% for sanitation services as reported by Stats-SA (2022). Studying these provinces will provide invaluable insights into how the planning mechanisms are applied in these provinces to achieve the following results, thus creating a blueprint for other provinces striving to enhance their water and sanitation services.

Within this research framework, content analysis is used for data interpretation and analysis. Content analysis, as widely acknowledged by researchers (Bowen, 2009; Stake, 2000; Yin, 1989), as a qualitative research method wherein the researcher scrutinises documents to extract insights and meaning relevant to the subject under investigation. However, Corbin and Strauss (2008) provide a more comprehensive definition, emphasising that content analysis is a systematic approach to reviewing and evaluating a variety of documents, including both print and electronic materials (computer-based and internet-transmitted). Similar to other qualitative analytical methods, content analysis and descriptive analysis entail a careful examination and interpretation of data to uncover significance, foster understanding, and generate empirical knowledge. The content analysis method employed in this research follows a precise procedure, involving comprehensive reading, analysis, and categorisation of relevant literature and reports to discern key themes. This approach enables the application of rational reasoning to explore the consistent relationships among articles and reports, prioritising depth of understanding over mere quantity (Bernard, 2006; Bowen, 2009; Labuschagne, 2003; Mohajan, 2018).

Conceptual Framework

ICT as a concept has been widely used in recent decades to refer to a broad range of technologies, devices, and applications. However, despite its popularity, there is no universally accepted definition of ICT. This lack of consensus stems from the ever-evolving nature of ICT, which encompasses a dynamic landscape of emerging technologies and innovations (Wellman, 2001). For this paper, Information and Communications Technology (ICT) is defined as the use of computing and telecommunication technologies, systems and tools to facilitate the way information is created, collected, processed, transmitted and stored (Rouse, 2023). ICT development and implementation is complex, and its success and failure especially in the government sphere are dependent on three dimensions: a) Social Design – this comprises the social component of an ICT design. Aspects such as the social context of the implementation, organisational structures, stakeholders, and how information is shared are key concerns in this dimension; b) Technical Design – the system appropriateness and technical correctness for the problem at hand; c) Program design – the support structure or the scalability and sustainability of the project (Castells, 2009; Norris, 2001; Yong-Hak, 2000).

This paper conceptualises the role of ICT in municipal decision-making and governance through three theories, Resource-based view: which argues that organisations can achieve competitive advantage by leveraging their unique resources and capabilities (Barney, 1991). ICT is well known to represent a valuable resource for municipalities, enabling them to improve service delivery, enhance efficiency, and foster innovation, as seen in many countries such as Ghana and Burkina Faso. The second theory is the Contingency theory: which suggests that the most effective management approach depends on the specific context in which the organisation operates (Lawrence & Lorsch, 1967). Globally, the local government is operating in a complex environment which necessitates the ability to be flexible and adaptable to the ICT governance framework that can respond to emerging challenges and opportunities. Lastly, Stakeholder theory: gives an emphasis on the importance of considering the interests of all stakeholders when making decisions (Freeman and Medoff, 1984). In the municipal context, stakeholders including citizens, businesses, employees, and other government agencies, need to form part of the decision-making processes. In South Africa, this is a legislated requirement. An effective ICT governance

framework must consider the needs of all stakeholders to ensure that ICTs are used in a manner that benefits the entire community, as envisioned by the National Integrated ICT Policy which was gazetted by the South African Government in 2016.

The successful adoption of ICT in planning can be seen in Ghana and Burkina Faso. Examining water and sanitation planning, the case studies of Ghana and Burkina Faso illustrate successful ICT integration. The transformative shift in Ghana through the District Monitoring and Evaluation Systems (DiMES) and Burkina Faso's innovative solutions demonstrate the potential of ICTs in realistic planning, budgeting, and adaptation, emphasising the importance of universal access to information (Dickinson and Bostoen, 2013).

Legislative framework governing the water and sanitation sector

The Constitution of South Africa of 1996 mandated the decentralisation of powers and functions to local government, and as it pertains to the water sector, the local government is strategically located between the policy-making level and water consumers. This points out that the local government has a significant role to play in water management. Moreover, both the Constitution and the Water Services Act (No. 108 of 1998) establish water service delivery as a fundamental responsibility of local government, whether acting as a water service authority or as a water service provider. According to the Department of Water and Sanitation (DWS) (2021), a water service authority is defined as any municipality possessing the executive authority to provide water services[1] within its jurisdiction in accordance with the Municipal Structures Act (No. 117 of 1998) or ministerial authorisations conferred under this Act. The authority to provide water and sanitation services is exclusively conferred upon Water Services Authorities (WSAs). This encompasses any municipality, including district or rural councils as defined in the Local Government Transition Act, 1993 (Act No. 209 of 1993), responsible for ensuring access to water services. This then points to the fact that not all municipalities have the capabilities or legal authority to provide water and sanitation services.

In support of the argument, Wegelin and Jacobs (2013) contend that municipalities, functioning as water service authorities, bear ultimate accountability for water service delivery and sanitation to consumers, even if they do not directly fulfil the provider function. This underscores the exclusivity of a single water services authority within a specific area to prevent overlap. However, it is crucial to note that the legislative framework allows for the provision of water and sanitation services either internally by the water services authority or through delegation to a water services provider. A water services provider is broadly defined as any entity supplying water services to consumers or another water services institution, excluding water services intermediaries. Importantly, the authority for planning within each Water Service Authority (WSA) remains vested in the WSA itself, not the provider (Water Services Act, 1998 (Act No. 108 of 1998). This then shows that water services are an important service under the custodianship of the WSA, its importance cannot be underscored.

To emphasise the importance of water, Jalisa (2022; and 2023) postulated that the significance of water can be conceptualised through four distinct dimensions. Firstly, water holds paramount importance as a basic human right. Secondly, water is pivotal for driving

1 Water services means both water access and sanitation access, this is according to the Water Services Act.

social and economic development. Thirdly, water is integral to the functioning of the natural ecosystem. Lastly, water plays a critical role in ensuring security. The importance of water transcends any underestimation or exaggeration.

The predicament faced by WSAs in delivering water and sanitation services to communities can be linked to the existence of inadequate planning mechanisms. This deficiency results in WSAs lacking a comprehensive understanding of their operational profile and requirements, thereby hindering their ability to effectively fulfil their mandate. Since the advent of democracy, WSAs have grappled with the challenge of delivering efficient and sustainable water and sanitation services to their communities. Despite recent statistics indicating a slight increase in water access from 91,2% in 2011 to 91.3% in 2022 and the increase of sanitation access from 90.6% in 2011 to 95.1% in 2022[2] (Stats-SA, 2022), achieving universal access to clean water remains an ongoing challenge. The primary water services-related planning tool at the local authority level is the Water Services Development Planning (WSDP) and the processes driving its development. The significance of the WSDP cannot be overstated, as it is a legally sanctioned plan under Sections 12 and 13 of the Water Services Act (No. 108 of 1997). Its primary purpose is to enhance comprehension of the Water and Sanitation Business. Functioning as the principal tool for ensuring the provision and expansion of water services and the allocation of resources for these services, the Water Services Development Plan is indispensable in steering the course of water service delivery. Importantly, the Water Services Act mandates that all Water Services Authorities develop a Water Services Development Plan (WSDP) as an integral component of the municipality's overarching Integrated Development Plan (IDP).

The importance of planning at the municipal level is not only encapsulated in the Water Services Act, but the Municipal Systems Act also compels municipalities to develop the Integrated Development Plans (IDP), which encompasses all plans of the municipality including that of WSDP. Section 26 of the Municipal Systems Act delineates the components of the IDP, a strategic planning tool formulated with community involvement. This document captures the Municipal Council's long-term vision for municipal development, with a specific focus on essential development and internal transformation requirements, as per Section 26(a) of the Municipal Systems Act. Concurrently, this long-term vision and critical development must align with the objectives of local government as outlined in Section 152 of the Constitution (Law Insider, 2021). This will ultimately give WSAs more control over their areas of jurisdiction and will allow for a more efficient level of service delivery.

Both Integrated Development Planning and Water Service Development Planning (WSDP) processes are designed to facilitate meaningful discussions and debates among various stakeholders, including water service authorities, providers, intermediaries, and communities (Masia, 2022; Mukonavanhu, 2022; Ntombela, Masangane, Funke, and Nortje, 2013). These dialogues revolve around identifying water service needs and devising the most efficient and effective means to meet these requirements. It is, therefore, important that the significance of WSDP as an ICT tool should never be understated.

Before 2001, the regulation, management, and implementation of water services, encompassing both water supply and sanitation, rested primarily with the national government, specifically the Department of Water and Sanitation, formerly known as the

2 I have excluded access to sanitation through bucket system since the Department of Water and Sanitation regard this access to sanitation as undignified.

Department of Water Affairs and Forestry (DWAF, 2003; Palmer, Moodley, and Parnell, 2017). The year 2001 marked a pivotal turning point in South Africa's approach to water services provisions. In accordance with constitutional mandates, the responsibility for delivering water services transitioned to local government, while regulatory and monitoring functions remained under the purview of the national government (DWAF, 2003).

This shift in roles and responsibilities necessitated the introduction of the Strategic Framework for Water Services (SFWS). The SFWS presented a comprehensive strategy for delivering water services across the diverse spectrum of settlement types, ranging from small communities to large regional schemes (DWAF, 2003). It outlined the requisite changes in approach to fulfil the constitutional mandate of local government in delivering water services while also aligning with broader policy objectives within the sector.

The Strategic Framework for Water Services (SFWS) holds a significant position within the broader policy framework governing water services in South Africa. The SFWS is the first water services policy framework that presents a robust strategy for the management and planning of water services, and a critical component of addressing the water needs of the South African population. Its inception is rooted in the constitutional framework established by the Republic of South Africa in 1996, which delineated specific fundamental rights regarding water provision. The SFWS, thus, emerges as a response to historical injustices associated with apartheid-era water services and endeavours to redress these issues, incorporating principles of equity and gender equality (DWAF, 2003).

The primary aim of the SFWS was to articulate a vision for the South African water services sector spanning the period from 2003 to 2013. It also provided the framework necessary to translate this vision into reality (DWAF, 2003). The SFWS carried a ten-year strategic horizon, with 2014 earmarked as the year for its comprehensive review. The SFWS encompassed several critical strategic goals, including an institutional framework, a financial framework, a planning framework, national norms and standards, and a regulatory framework. These elements collectively underpinned the robust approach outlined in the SFWS to the provision of water services to the South African population. This framework symbolises a crucial milestone in South Africa's journey toward optimising water service delivery and fostering institutional growth within the evolving landscape of local government.

Empowering Progress: Unveiling Municipal Potential in the Western Cape and Gauteng Provinces through Strategic Self-Assessment

Originating from the American Water Works Association, the Municipal Strategic Self-Assessment (MuSSA) concept was carefully adapted to suit the South African municipal planning landscape (Dlamini, 2018). It is closely aligned with crucial frameworks such as the Integrated Development Plan (IDP), National Treasury (NT) guidelines, the Municipal Benchmarking Initiative, and the Blue and Green Drops Initiative. The MuSSA is an annual review process overseen by the Department of Water and Sanitation since 2006. MuSSA serves as a crucial electronic repository of strategic information, which mirrors the "business health" of the municipal water and sanitation sectors. It plays a pivotal role in pinpointing institutional vulnerabilities that demand immediate attention. This information holds significance not just for the Water Services Authorities (WSAs) and the Department of Water and Sanitation (DWS), but also serves as a guiding tool for strategic sector-driven processes such as planning and resource allocation led by other Departments such as the

Department of Cooperative Governance and Traditional Affairs (CoGTA), National Treasury (NT), and the Department of Planning, Monitoring, and Evaluation (DPME), as well as the South African Local Government Association (SALGA) (DWS, 2019).

WSAs may effectively communicate and control risks within their water and sanitation services by carefully monitoring the MuSSA data and putting into place the appropriate remedial actions. As a result, the DWS and its industry partners are better able to keep an eye on these weaknesses and offer assistance where it is most urgently needed (DWS, 2022).

MuSSA serves a dual purpose; it acts as an internal tool employed at the grassroots level by WSAs within local government. Simultaneously, it functions as a potent performance-monitoring instrument wielded by the DWS and its associated sector partners. Annually, municipal officials engage in a comprehensive assessment of the water and sanitation services' business health within their WSAs. This assessment delves into 18 essential Business Health Attributes[3] as illustrated in Figure 1 below. Post-assessment, WSAs receive a detailed report, illustrating their vulnerability percentage for each attribute and an overarching vulnerability index expressed numerically, as it will be shown in the case study of Western Cape and Gauteng. This report acts as a foundation upon which WSAs can construct a robust Municipal Priority Action Plan, addressing the findings effectively (WRC, 2020). The use of MuSSA can be aligned with the use of ICT tools for more effective information gathering about the challenges faced by the WSAs for monitoring purposes by the national government and other stakeholders.

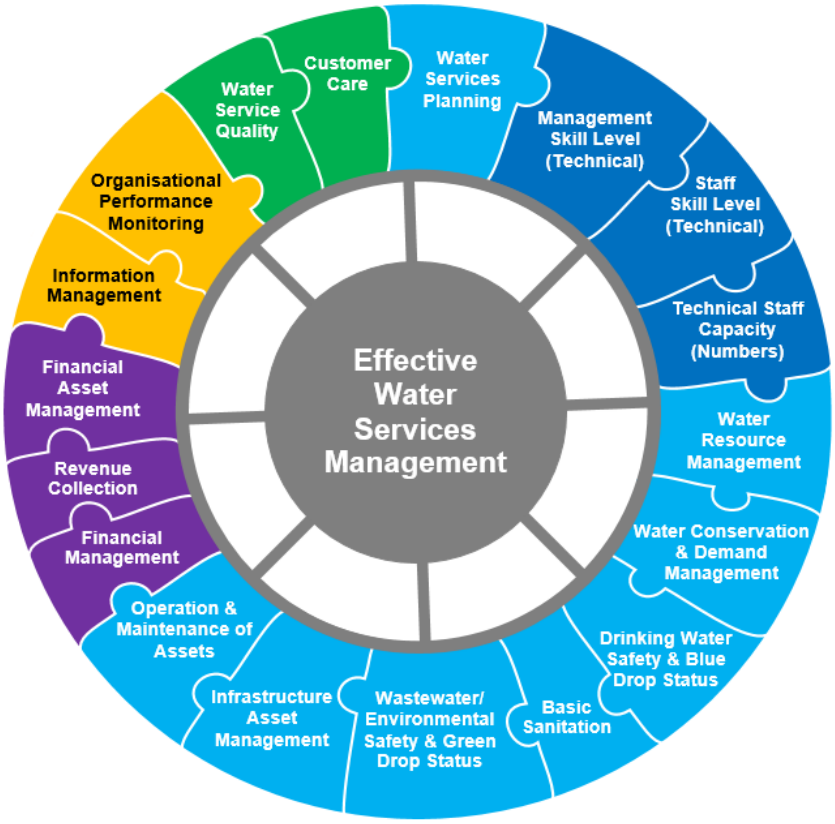

Figure 1: MuSSA Business Health Attributes (DWS, 2018)

3 It is important to note that there is a plan to expand the 18 key functionals to include Faecal Sludge, Policy and Resilience as additional attributes (WRC, 2020)

Cracking the Code: Unveiling Municipal Vulnerability in the Western Cape and Gauteng

The analysis of MuSSA data in the Western Cape province in Figure 2, gives an insight into the vulnerabilities in terms of effective water services management and operational deficiencies of Water Services Authorities (WSAs). Out of the 25 WSAs in the Western Cape only six WSAs namely Witzenberg Local Municipality, Saldanha Bay Local Municipality, Swartland Local Municipality, City of Cape Town, Overstrand Local Municipality and Bitou Local Municipality exhibited a low vulnerability, indicating a Business Health index of less than 25%. Contrary to that, nine WSAs demonstrated a moderate vulnerability, falling between 25% and 50%. Notably, five WSAs, namely Beaufort West Local Municipality, Prince Albert Local Municipality, Kannaland Local Municipality, Swellendam Local Municipality, and Stellenbosch Local Municipality, did not submit their MuSSA reports, accounting for 20% of the total WSAs. This absence of data leaves a gap in the vulnerability assessment for this subset (DWS, 2022).

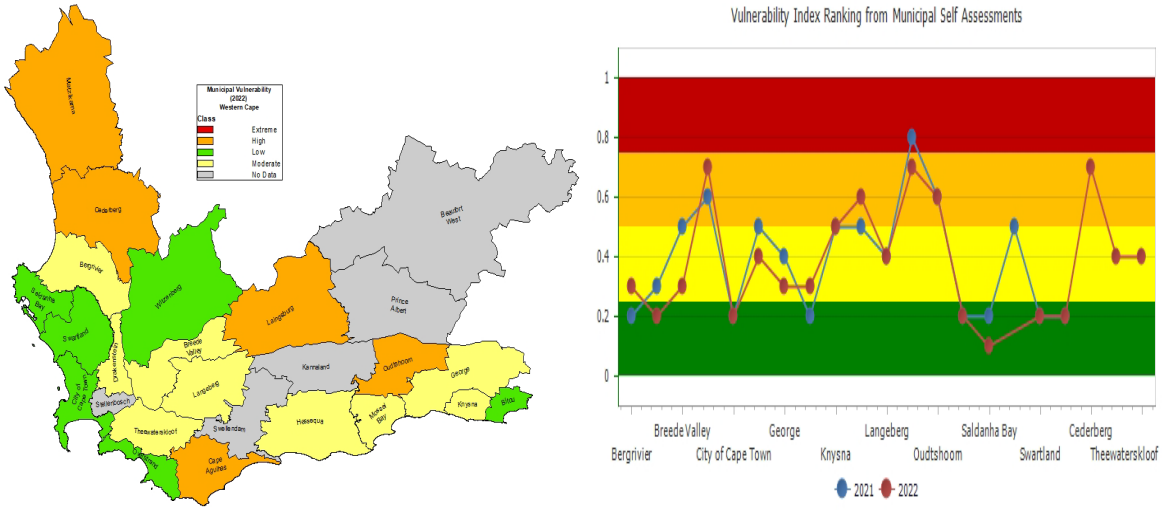

Figure 2: Western Cape MuSSA Report (DWS, 2022)

Upon analysis, of the provincial MuSSA report, 60% of the WSAs in the Western Cape that completed their MuSSA exhibited low to moderate vulnerability in terms of Business Health. However, 20% of the WSAs showed a high vulnerability, highlighting areas of concern within the region's water management systems. Notably, there is a lack of available data for the remaining 20% of WSAs, indicating a knowledge gap that needs to be addressed for a comprehensive understanding of the situation in the 2023 MuSSA (DWS, 2022).

Furthermore, the study identified several operational challenges among the WSAs in the Western Cape. A significant proportion, specifically 64.00%, did not invest adequately in asset renewal, allocating less than 75% of the required investment as a percentage of depreciation costs. Additionally, 64.00% of WSAs reported inappropriate Infrastructure Asset Management Plans, indicating inefficiencies in managing crucial water-related assets (DWS, 2022). This highlights the value of this electronic repository called MuSSA.

Non-revenue water, a key metric indicating distribution system efficiency, was a concern, with 52.00% of WSAs reporting values exceeding 30%, and all WSAs indicating non-revenue water exceeding 20%. Moreover, 44.00% of WSAs reported Water Treatment

Works (WWTW) operating either over capacity or rapidly approaching full capacity, posing potential challenges to water supply and quality (DWS, 2022).

Furthermore, 68.00% of WSAs did not dispose or reuse all their sludge in accordance with license conditions and guidelines, raising environmental concerns and indicating non-compliance with regulatory standards. Lastly, 44.00% of WSAs lacked an approved water resilience policy, which includes optimising existing water resources, diversifying supply to enhance water security, and optimising the overall water mix. This absence underscores the need for strategic planning and policy implementation to bolster the region's water infrastructure and resilience in the face of various challenges (DWS, 2022).

In Gauteng, a total of nine Water Services Authorities (WSAs) operate within the province. The 2022 MuSSA report in Figure 3 revealed that the City of Ekurhuleni is the only city that demonstrated a low vulnerability in terms of Business Health. The City of Johannesburg and Midvaal exhibited a moderate vulnerability, falling between 25% and 50%. While the City of Tshwane, Lesedi Local Municipality, and Merafong City faced high vulnerability of more than 50% but less than 75%. Mogale City and Emfuleni Local Municipality were particularly precarious, marked by an extremely high vulnerability exceeding 75%. This is no surprise since these Municipalities have been failing in their constitutional obligation of providing basic services (DWS, 2022).

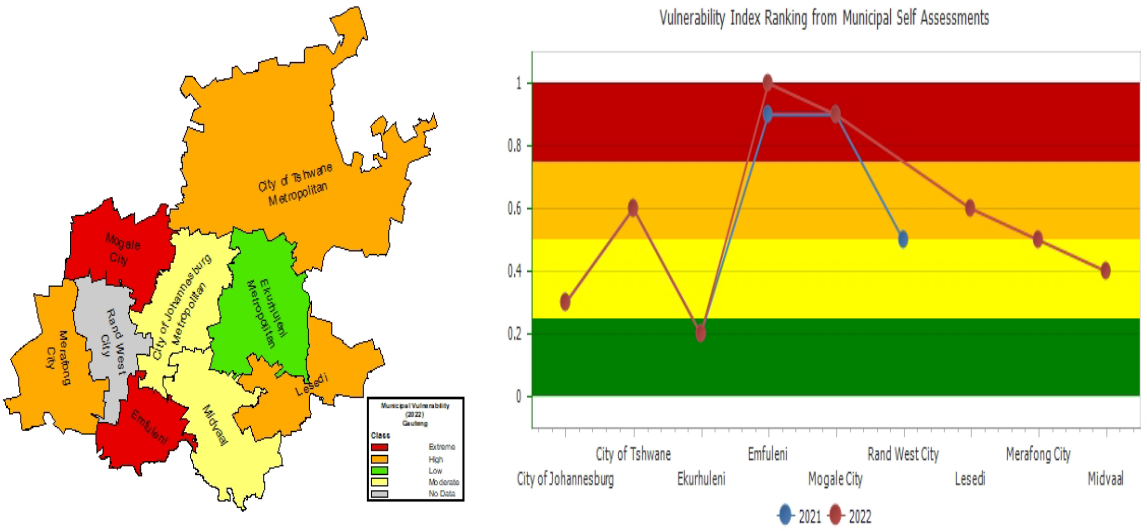

Figure 3: Gauteng MuSSA Report (DWS, 2022)

Several critical issues in the Business Health of the WSAs in the Gauteng province were identified. Firstly, 66.67% of the WSAs lacked an up-to-date and Council-adopted Water Services Development Plan (WSDP), highlighting a deficiency in strategic planning and implementation. Furthermore, 44.44% of the WSAs heavily relied on grant funding for more than 75% of their capital expenditure, indicating financial instability and a significant dependence on external funding sources (DWS, 2022).

Additionally, 77.78% of the WSAs failed to adequately invest in asset renewal, allocating less than 75% of the necessary investment compared to depreciation costs. This shortfall puts immense pressure on the province's water infrastructure, posing a risk to its long-term sustainability and service delivery capabilities. Another pressing concern was that

44.44% of the WSAs reported outstanding debts to major service providers like ESKOM and Water Boards on at least a quarterly basis, indicating a high potential for service disruptions in the province (DWS, 2022).

Moreover, 66.67% of the WSAs reported inappropriate Infrastructure Asset Management Plans, indicating inefficiencies in managing crucial water-related assets. Insufficient funding also impacted sanitation programs, with less than 75% of the required budget allocated. This not only hampers local service delivery but also compromises South Africa's international obligation to provide adequate sanitation services.

Water loss and inefficiencies in the distribution system were highlighted by 88.89% of WSAs reporting non-revenue water exceeding 30%. Furthermore, 66.67% of the WSAs indicated that their Water Treatment Works (WWTW) were either over capacity or rapidly approaching full capacity, with more than 90% of the WWTW exceeding their total design capacity. Such strain on existing infrastructure poses a significant threat to water supply and quality (DWS, 2022).

Additionally, 77.78% of WSAs reported non-compliance with regulations regarding sludge disposal and reuse, raising environmental concerns. The failure to implement required corrective actions and remedial measures identified through water safety planning and wastewater risk abatement planning was a prevalent issue, indicating a lack of responsiveness to identified risks. Lastly, 77.78% of the WSAs did not have an approved water resilience policy in place. Such a policy, including strategies such as optimising existing water resources, diversifying supply to enhance water security, and optimising the overall water mix, is essential for ensuring the region's long-term water sustainability (DWS, 2022).

Discussion

The analysis underscores a pressing need for strategic interventions and targeted programmes and policies to address the vulnerabilities and operational deficiencies within the Western Cape and Gauteng's water management and water services systems. The findings emphasise the urgency in the Western Cape of investment in asset renewal, improvement in infrastructure management, reduction of non-revenue water, and adherence to regulatory standards. Additionally, comprehensive strategic planning, including the development and implementation of water resilience policies, is essential to fortify the province's water infrastructure and enhance its resilience in the face of diverse challenges. Addressing these issues is imperative to ensure sustainable, efficient, and environmentally responsible water services for the residents of the Western Cape. For Gauteng, comprehensive reforms are needed to address the challenges faced by WSAs in Gauteng. Addressing these issues requires strategic planning, financial stability, efficient asset management, and regulatory compliance. Addressing issues related to financial management, strategic planning, infrastructure investment, regulatory compliance, and data reporting is imperative to ensure sustainable, reliable, and equitable water and sanitation services for the province's residents. The findings from Gauteng present an accurate portrayal of the on-ground reality. News reports and official statements from the Department of Water and Sanitation have highlighted the water provision challenges in many parts of Gauteng. The department's recent intervention, implementing water shifting as a temporary measure to stabilise low-storage reservoirs, reflects the urgency of the situation (DWS, 2023). These challenges are further underscored in the MuSSA report, indicating non-revenue water exceeding

30%. This discrepancy places an immense strain on water resources, revealing issues stemming from inadequate infrastructure maintenance and the need to address water losses effectively.

To address the vulnerabilities and operational deficiencies in the water management and services systems of the Western Cape and Gauteng, the strategic integration of Information and Communication Technology (ICT) is important. For the Western Cape, this involves implementing asset management systems powered by ICT for streamlined renewal processes. Utilising tools such as Geographic Information Systems (GIS), and Remote Sensing to enhance infrastructure management, implementing smart metering and sensor technologies for efficient water distribution, employing ICT for automated reporting systems to ensure real-time regulatory compliance, and leveraging data analytics for comprehensive strategic planning and the development of water resilience policies. Similarly, for Gauteng, the integration of ICT systems for financial management, implementation of asset tracking and maintenance systems, utilisation of ICT tools for real-time monitoring and reporting to ensure regulatory compliance, incorporation of data analytics in strategic planning, and establishment of online platforms for collaboration and stakeholder engagement are vital. Embracing ICT in these areas will empower both provinces to enhance water infrastructure resilience, elevate service delivery, and proactively mitigate risks associated with water provision challenges, ultimately ensuring the well-being of residents and fostering sustainable water management for the future (Bhatnagar, 2000). Collaboration between stakeholders enhanced financial management, and rigorous implementation of corrective measures are crucial steps toward resolving these challenges and building a resilient water infrastructure system for the future. Without the immediate corrective measures discussed above, Western Cape and Gauteng's water infrastructure and service delivery capabilities are at significant risk, jeopardizing the well-being of its residents.

Moving Towards Water Planning: Water Services Development Plans 2022-2023 in Western Cape and Gauteng

Currently, as of October 2023, the Water Services Authorities that have started with the development of their WSDPs for the term of 2022 to 2027 are sitting at around 56 out of 144, which is a percentage of 38.8%. Out of the 56 WSAs that have started with the development of their WSDPs, only 26 of them have submitted their WSDPs for comments. A total of 7 WSAs have submitted their WSDPs for council approval. No WSA has incorporated their current WSDP into their IDPS and only 14 WSAs have registered into the DWS online in the WSDPs system. Table 1 and 2, indicate the current status of the WSDPs in the Western Cape and Gauteng Province.

Table 1: Western Cape WSDP Statistics 2022-2023 (DWS, 2023)4

Water Services Development Plan Statistics from 2022-23 Western Cape							
Provinces	**No of Water Services Authorities**	**Name of the Water Services Authorities**	**WSDP Update Annual WSDP Performance and Audit 2022/2023**				
			WSDP 2022-2023[5]	**Submitted to DWS for comments?**	**WSDP adopted by the Council**	**Incorporated into IDP**	**Registered on DWS WSDP online**
WC	25	Beaufort West Local Municipality	No 2022/2023 (15.54%) Red	No	No	No	Yes
		Bergrivier Local Municipality	No 2022/2023 (6.88%) Red	No	No	No	Yes
		Bitou Local Municipality	Yes 2022/2023 (65.64%) Silver	No	No	No	Yes
		Breede Valley Local Municipality	Yes 2022/2023 (76.35%) Silver	No	No	No	Yes
		Cape Agulhas Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Cederberg Local Municipality	No 2022/2023 (8.75%) Red	No	No	No	Yes
		City of Cape Town Metropolitan Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Drakenstein Local Municipality	Yes 2022/2023 (67.96%) Silver	No	No	No	Yes
		George Local Municipality	Yes 2022/2023 (68.71%) Silver	No	No	No	Yes
		Hessequa Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Kannaland Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Knysna Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Laingsburg Local Municipality	No 2022/2023 (3.75%) Red	No	No	No	Yes
		Langeberg Local Municipality	Yes 2022/2023 (65.03%) Silver	No	No	No	Yes
		Matzikama Local Municipality	Yes 2022/2023 (67.40%) Silver	No	No	No	Yes
		Mossel Bay Local Municipality	No 2022/2023 (5.0%) Red	No	No	No	Yes
		Oudtshoorn Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Overstrand Local Municipality	Yes 2022/2023 (72.64%) Silver	No	No	No	Yes
		Prince Albert Local Municipality	Yes 2022/2023 (78.11%) Silver	No	No	No	Yes

4 Data generated on the 21st of October 2023

5 Red is any scored below 50%, Bronze ranges from 50.1% to 64%, Silver, 65%-79% and Gold is anything above 80%.

		Saldanha Bay Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
		Stellenbosch Local Municipality	Yes 2022/2023 (78.46%) Silver	No	No	No	Yes
		Swartland Local Municipality	No 2022/2023 (10.0%) Red	No	No	No	Yes
		Swellendam Local Municipality	No 2022/2023 (2.50%) Red	No	No	No	Yes
		Theewaterskloof Local Municipality	Yes 2022/2023 (69.92%) Silver	No	No	No	Yes
		Witzenberg Local Municipality	No 2022/2023 (0.0%) Red	No	No	No	Yes
TOTAL	**25**		**10**	**0**	**0**	**0**	**25**

Table 2: Gauteng WSDP Statistics (DWS, 2023

Water Services Development Plan Statistics from 2022-2023 Gauteng							
Provinces	**No of Water Services Authorities**	**Name of the Water Services Authorities**	**Annual WSDP Performance and Audit 2022/223**				
			WSDP 2022-2023	**Submitted to DWS for comments?**	**WSDP adopted by the Council**	**Incorporated into IDP**	**Registered on DWS WSDP online**
GP	9	City of Johannesburg Metropolitan Municipality	Yes 2022/2023 (88.49%) Gold	No	No	No	Yes
		City of Tshwane Metropolitan Municipality	No 2022/2023 (12.33%) Red	No	No	No	Yes
		Ekurhuleni Metropolitan Municipality	No 2022/2023 (18.33%) Red	No	No	No	Yes
		Emfuleni Local Municipality	No 2022/2023 (4.33%) Red	No	No	No	Yes
		Lesedi Local Municipality	No2022/2023 (3.85%) Red	No	No	No	Yes
		Merafong City Local Municipality	Yes 2022/2023 (63.04%) Silver	No	No	No	Yes
		Midvaal Local Municipality	No 2022/2023 (3.85%) Red	No	No	No	Yes
		Mogale City Local Municipality	No 2022/2023 (10.67%) Red	No	No	No	Yes
		Rand West City Local Municipality	No 2022/2023 (0%) Red	No	No	No	Yes
TOTAL	**9**		**2**	**0**	**0**	**0**	**9**

The table presents a comparative analysis of the progress in developing Water Services Development Plans (WSDPs) in the provinces of Western Cape and Gauteng. The focus is on the status of WSDP development, adoption by local councils, and registration into the Department of Water and Sanitation (DWS) online in the WSDPs system. Section 14 of the Water Services Act mandates the Water Services Authority (WSA) to develop its Water Services Development Plan (WSDP) with specific requirements. These include the obligation to (a) take reasonable measures to notify consumers, potential consumers, industrial users, and water services institutions within its jurisdiction about the draft WSDP; and (b) solicit public comments[6] within a reasonable timeframe. This process aims to enable communities to contribute their insights and participate in the planning of their municipality before the finalisation of the WSDP.

Western Cape

In the context of the Western Cape province, the data paints a revealing picture. Among the 25 assessed Water Services Authorities (WSAs), only 10 have taken the initial steps toward formulating their Water Service Development Plans (WSDPs). This cautious approach highlights a significant gap, with 15 WSAs still lagging in their planning processes. Adding to the complexity, none of the crafted WSDPs have received official endorsement from the local councils, underscoring a notable delay in formalising strategic water service plans across the province.

This situation becomes even more concerning given the backdrop of the challenges faced by the Western Cape, including water shortages due to drought and the destruction of water infrastructure caused by floods. Without concrete plans to address these issues, the province is exposed to the risk of unsustainable and ineffective water and sanitation services provision.

Gauteng

In contrast, Gauteng has made relatively more progress, with two WSAs having successfully developed their WSDPs. While this number is lower than in the Western Cape, all WSAs in Gauteng have taken the proactive step of registering their plans on the DWS, WSDP online system. However, similar to the situation in the Western Cape, none of the WSDPs in Gauteng have been officially adopted by the respective councils.

Discussion

The delayed development of Water Services Development Plans (WSDPs) in both Western Cape and Gauteng raises significant concerns about the strategic planning and the provision of sustainable water and sanitation services in these provinces. The failure of the WSAs in these provinces to adopt the developed WSDPs underscores a disconnect between strategic planning initiatives and local governance decision-making processes. This lack of adoption creates obstacles in the execution of planned water service improvements, hindering progress and service delivery.

6 Government seeks public input through diverse channels, such as public consultations (imbizo) and written submissions directed to a project manager.

The data presented, highlights a disparity in the proactive approach between Gauteng and Western Cape concerning the online registration of WSDPs. Western Cape and Gauteng's initiative in registering all its WSDPs online is commendable, as it ensures proper monitoring, evaluation, and coordination at the national level. Proper registration not only facilitates central monitoring but also promotes accountability and transparency in water management efforts, laying the foundation for efficient planning mechanisms.

To address these shortcomings, an urgent and accelerated effort is required in both provinces to develop comprehensive WSDPs. The oversight role of the council is important in ensuring accountability and compelling administrators to develop these plans, which should be subsequently incorporated into the Integrated Development Plans (IDPs). This integration ensures that strategic water service plans are not isolated but become integral components of the broader development agenda of each WSA. As depicted in table 1 and 2, both the Western Cape and Gauteng provinces are yet to finalise their WSDPs so that they can be adopted by the council and subsequently incorporated into the IDPs.

Furthermore, the Provincial Department of Cooperative Governance and Traditional Affairs (CoGTA) must strengthen its coordination with the Department of Water and Sanitation (DWS). Collaborative efforts are essential to ensure that all Water Services Authorities (WSAs) register on the DWS online WSDP system. Having a centralised monitoring and evaluation system which has been developed by DWS is commendable and fundamental in promoting transparency and accountability. By embracing online platforms, data accessibility is enhanced, fostering transparency and enabling stakeholders to actively participate in the planning mechanisms. The integration of technology, particularly online platforms, offers a viable solution, ensuring transparency and enabling informed decision-making. By adhering to these recommendations, both provinces can fortify their water service planning frameworks, ensuring sustainable and equitable access to water resources for all residents, thereby promoting the overall welfare and development of the regions.

Enhancing South African Municipalities with Integrated ICT Solutions

In the context of service delivery planning at the municipal level in South Africa, the integration of Information and Communication Technology (ICT) stands as a transformative opportunity, specifically through the development of online Water and Sanitation Development Plans (WSDPs) and the Municipal Strategic Self-Assessment (MuSSA) systems. As shown in this paper these, digital initiatives usher in an era of responsible governance and active citizen participation, fundamentally reshaping the traditional governance landscape.

The integration of ICT, particularly online MuSSA to identify the strategic vulnerability of the WSA and WSDPs, provides a transparent and accessible platform within Water Service Authorities (WSAs) planning processes. This transparency empowers stakeholders and consumers, fostering active participation and equity in municipal planning. Citizens can now review and engage with their municipality's plans, transforming them from passive recipients of services to active contributors in the decision-making process. This paper argues that the comprehensive adoption of the MuSSA system establishes self-assessment as a critical element in water services planning. Through MuSSA, local governments assess their performance, generating detailed reports on WSA business health. This approach not only fosters institutional cooperation but also ensures a high degree of transparency,

providing a basis for constructive dialogue between various stakeholders (Wehmeier and Raaz, 2012).

Scholars such as Douglas, Lennon, and Scott (2017); and Meerow, Pajouhesh, and Miller (2019) have argued that the synergy between technology and planning addresses the nuanced approach in policy and planning integration. A comprehensive policy framework deeply rooted in the embracing of ICT becomes of paramount importance. Policymakers at the local level must actively ensure that ICT becomes an integral tool across all planning processes. This approach ensures a bottom-up methodology, not just in policy development but also in the actual planning processes at the municipal level (Mawela, Ochara, and Twinomurinzi, 2017). By doing so, inclusivity and active community involvement become foundational principles.

In conclusion, it is imperative to integrate ICT into MuSSA and WSDPs in South Africa as this signifies more than just technological adoption. Through effective and inclusive ICT integration, South African municipalities can ensure efficiency, transparency, and equity. This transformative journey not only addresses immediate challenges but also lays the foundation for a sustainable, vibrant, and engaged society (Joseph and William, 2022; Kassongo, Tucker, and Pather, 2018). Furthermore, the MuSSA and WSDP framework offers national and provincial governments an unparalleled opportunity. By actively monitoring local governments and identifying areas for immediate support, these higher levels of governance can proactively contribute to the nation's progress, fostering a more inclusive and responsive governance structure that truly reflects the needs and aspirations of the people.

Conclusion

The paper has demonstrated that the challenges surrounding water and sanitation services in South Africa, as well as globally, are complex, encompassing factors from climate change impacts to institutional deficiencies. Despite legislative efforts, many Water Services Authorities (WSAs) continue to grapple with delivering efficient and sustainable water and sanitation services to their communities. This struggle is rooted in inadequate planning mechanisms, resource mismanagement, and a limited understanding of operational needs within WSAs. This study emphasises the transformative potential of Information and Communication Technology (ICT), particularly the Municipal Strategic Self-Assessment (MuSSA) and Water Service Development Plan (WSDP) in addressing these challenges.

The legislative framework, including the Water Services Act of 1997 and the Municipal Systems Act of 1998, compels WSAs to develop Water Services Development Plans (WSDPs) as integral components of their Integrated Development Plans (IDPs). The paper has shown that in selected provinces only a few WSAs complied with this legislative requirement. The paper also showed that tools like the Municipal Strategic Self-Assessment (MuSSA) offer valuable insights into the health of municipal water and sanitation sectors. Analyses in provinces such as Western Cape and Gauteng reveal vulnerabilities, especially in strategic planning, financial stability, asset management, and regulatory compliance. Addressing these vulnerabilities necessitates a synergistic approach that combines planning and ICT. By harnessing ICT tools effectively, WSAs can enhance their planning, decision-making, and performance monitoring processes (Kassongo et al. 2018; Shava and Vyas-Doorgapersad, 2021). The integration of MuSSA data, WSDP, and ICT can enable real-time monitoring, predictive analysis, and informed decision-making, leading to more efficient resource

allocation, improved asset management, and enhanced service delivery (Muralidhara, 2017; Nova, 2023; Sheng, Amankwah-Amoah, Khan, and Wang, 2021). Moreover, fostering a culture of data-driven decision-making within WSAs is paramount to achieving sustainable water and sanitation services.

Bridging the gap between policy intent and on-ground implementation requires a paradigm shift. Embracing ICT, especially when integrated with existing planning frameworks, presents a transformative opportunity. Investment in advanced technological solutions, inter-departmental collaborations, and ensuring data accuracy and accessibility empowers WSAs to navigate the complexities of water and sanitation service provision effectively (Brynskov, 2022; Morabito, 2015). This approach enhances water infrastructure resilience and moves South Africa closer to its goal of providing universal access to clean water. Access to clean water, a fundamental human right, is essential for the well-being and development of its citizens. Collaborative efforts, transparent data sharing, and ICT integration are vital steps toward establishing a responsive, inclusive, and sustainable water service planning framework (Joseph and Williams, 2022). The integration of ICT into the planning process is positioned not as an end in itself, but as a broader societal objective of WSAs. This transformative approach not only addresses immediate challenges but also shapes a future where efficient, transparent, and equitable water services become fundamental pillars of community well-being and national progress. For all this to happen, the paper therefore, recommends that the voluntary self-assessment tool called MuSSA should be made mandatory and DWS can enforce this by coming up with regulations that will indicate that any WSA that fails to complete their MuSSA will not get any funding from the Department same as the MuSSA and WSDP. Most of the blame is put on the local government for non-performance, but also the national government should take responsibility for not ensuring that they compel the local government to perform using either carrot or stick measures. In the space of policy and decision-making within provincial spheres, there exists a pressing need for the DWS to delve into methods of consolidating and generating comprehensive provincial WSDP reports. These reports serve as invaluable snippets, offering provincial departments a clear window into their strategies and objectives. By doing so, not only does this streamline the allocation of resources, but it also provides a cohesive framework, enabling seamless coordination among various departments involved in the crucial task of providing water and sanitation services.

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Empowering Societal Digital Transformation at the Local Level

A Case Study of Pemba Town Council

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Abstract

Digital transformation has revolutionised the way businesses operate through the utilisation of technology. Digital tools enable citizens to access government services quickly and at their own convenience, whilst also facilitating more efficient and effective administrative processes. While many national governments have embraced digital tools, the same cannot be said for local governments, particularly in developing nations as they have not yet taken advantage of the benefits of digitalisation. Whereas some experiences of digital transformation have a top-down approach. This paper shares the experience of a collaborative and participatory process of design and development of a Digital Strategy for Pemba Town Council in rural Zambia. The aim was to enhance service delivery to its citizens by harnessing the potential of digital tools for a five-year period (2022-2026). Pemba Council faced challenges due to a lack of basic Information and Communication Technology (ICT) infrastructure and ICT-enabled systems. Guided by Andrew's (1971) model of strategy formulation and implementation, and employing an action research methodology, the study engaged the local community and the council through focused group discussions and key informant interviews to understand their challenges, explore solutions to improve service delivery, and to develop a digital strategy for the council, the first of its kind. The study noted that while digitalisation for the council could be hampered by challenges such as the digital divide, digital literacy, infrastructure challenges, lack of human resources, among others, both the council and community stakeholders displayed enthusiasm for the process. The study underscores the crucial role citizens play in shaping local decisions and therefore, the need for their engagement in such processes that affect how they engage with local authorities. The paper also presents a guide on how to engage citizens and government officials to develop a participatory digital strategy that is adapted to local needs, infrastructure, and context. The study not only contributes to scholarship

on digitalisation and its potential to improve service delivery, but it is also useful for local governments operating in similar contexts as Pemba Town Council and seeking digitalisation.

Keywords: Local community; local government; digital transformation; digital strategy; Zambia

Introduction

As the world undergoes the Fourth Industrial Revolution marked by the integration of technology into society and even the human body (Davis, 2016), the resulting innovations in information technology and digital devices propel the world toward a paradigm shift known as digital transformation. This transformative process involves strategic changes in infrastructure and operational approaches, leveraging current Information and Communication Technologies (ICT) (ElMassah and Mohieldin, 2020). The primary goal of digital transformation in the public sector is to enhance the adoption and use of digital tools, thereby improving how government serves its citizens and other stakeholders within the community.

This paper shares the experience of a collaborative and participatory process of design and development of a digital strategy for Pemba Town Council located in rural Zambia. Pemba Council faced challenges due to the lack of basic ICT infrastructure and ICT-enabled systems. With an impact research grant, researchers, together with representatives from Pemba Town Council engaged in discussions to incorporate digital solutions to address operational challenges and enhance service delivery by harnessing the potential of digital tools for a five-year period (2022-2026).

While the use of ICT-enabled systems to streamline services is not a novel concept in Zambia (Chipeta and Ngoyi, 2018), its widespread adoption has mainly been at the national government level. It is worth noting that while the uptake of digital financial services has increased significantly since 2016, Zambia is still among the top ten least developed countries based on the category of the E-Government Development Index published by the United Nations (Chipeta and Ngoyi, 2018). A digital economy diagnostic report by the World Bank (2020) recommends the development of a digital transformation strategy for Zambia, focusing on meeting the Seventh National Development Plan (7NDP) targeting and improving the country's fiscal space. Many local authorities, particularly newer councils like Pemba Town Council, have yet to fully leverage the benefits of digitalisation. Therefore, this research is useful not only for Pemba Town Council but also for other local governments facing similar challenges, providing insights into approaching digital transformation.

Despite being in existence as a local authority since 2013, Pemba Town Council still lags behind in terms of basic ICT infrastructure and ICT-enabled systems as it is largely manual based. The current system setup lacks in terms of the classification of services, data, and information. This is demonstrated by two broad but related problems: a) The inexistence of an internal-to-external system that facilitates engagement between the council's internal systems and the citizens, therefore, limiting the engagement between the local authority and the citizens; b) The inexistence of an internal data strengthening system, a digital platform that helps with storage, and access to information between the various council departments.

The above issues affect both citizens and the operations of the Council in that citizen engagement is limited to physical meetings, causing information gaps and excluding many citizens from the decision-making process as the flow of information is mostly ineffective and costly to the citizens, most of whom are far flung. Furthermore, financial management and synergy between departments are hampered by data inconsistencies across council departments, resulting in inaccurate reporting and costly data retrieval. The lack of standardised service, data, and information classifications leads to operational inefficiencies causing delays and loss of revenue for the local authority.

Adoption of ICT can thus enable citizens to access the services quickly and at their own convenience, whilst also facilitating more efficient and effective administrative processes for Council staff (Bousdekis and Kardaras, 2020). Furthermore, since local governments are responsible for a range of vital services for people and businesses in defined areas, it is important to provide these services efficiently. Citizen engagement, that can be defined as the process by which governments engage the people in democratic discourse on public problems (Nabatchi and Amsler, 2014) is an important topic and concept in public administration. Globally, e-participation or digital participation is becoming more common as a means of encouraging citizen involvement using digital technologies (Steinbach, Sieweke, and Süß, 2019). Engagement can be focused on more general governance problems such as local government policies, or on more focused ones like small-scale concerns about planning parks, or rubbish collection. Engagement may thus relate to long-term processes or single activities (Kurkela, Jäntti, Paananen, and Kork, 2023).

Guided by Andrew's (1971) model of strategy formulation and implementation and employing an action research methodology, the study engaged the local community and the Council through focused group discussions and key informant interviews to understand their challenges, explore solutions to improve service delivery, and to develop a digital strategy for the Council, the first of its kind. The next section discusses literature around digital transformation, with a focus on the lessons that existing literature shows regarding embarking on and sustaining a digital transformation exercise in the public sector, and emphasising the participatory and collaborative processes that engage the community in such actions. Thereafter, it presents Andrew's framework. In the methodology, the paper presents sociodemographic and contextual information about Pemba Town Council which are relevant for this study. The research design is then described including the different techniques used for data collection and data analysis. The paper then proceeds to present the results, then an analytical discussion of the results follows including a guide for the development of the strategy. Subsequently, the paper concludes with an emphasis on the critical role that citizens played in the development of Pemba's digital strategy and some limitations for future research.

Literature Review

Within the public sector, digital innovation entails bringing new ideas, concepts, and technology into service delivery through dissemination and assimilation (Nambisan, Lyytinen, Majchrzak, and Song, 2017:224). It includes innovative ways of working with stakeholders, setting up new frameworks of service delivery, and developing different types of relationships. According to Grönlund (2010), digital transformation is a comprehensive process that requires a well-thought implementation roadmap called a strategy. Digital government has the potential to empower citizens by enabling convenient access to public

services. It facilitates enhanced interaction with public administrations across government tiers and promotes the "once only" principle, reducing the burden on citizens and businesses to provide the same information repeatedly (OECD, 2019). The transformation extends beyond digital technologies, encompassing changes in business processes and management structures (Warner and Wäger, 2019).

While some nations, particularly in the global north have made significant advancements, others have made less progress or have even exhibited resistance to the trend for digitalisation reform (Ma and Zheng, 2019; Melitski and Calista, 2016; cited in Kulmann and Heuberger, 2023). In the African context, the use of digital tools at government level is not a new phenomenon. Several cities have seen a rise in the use of digital technologies, particularly ICT, as a means of enhancing citizen-local government contact and creating possibilities related to ICT (Shava and Doorgapersad, 2021:141). Notable examples have indicated that digital tools have been proven to be effective in fostering accountability and transparency in service delivery (Mutungi, Baguma, Janowski, University, and Austria, 2019; Barasa, 2022; Pade-Khene, Sieborger, Ngwerume, and Rusike, 2020). Apart from fostering accountability and transparency, digital tools have also been used to enhance public health delivery systems and interaction between government and citizens (Pade-Khene et al. 2020; Orton et al. 2018). The ability of digital tools to eliminate conditions that favour corruption whilst enhancing transparency and accountability has led to countries like Kenya, South Africa, Tanzania, Ethiopia, Malawi, Mali, Nigeria, Rwanda, and Uganda to implement digital transformation programmes aimed at streamlining government services (Mutungi et al. 2019).

It is also worth mentioning that digital transformation in different countries involves different stakeholders and therefore, the output of the process can vary. Most importantly, this process must reflect the particular needs and circumstances of the society. As digital transformation differs based on country size, its history, and context, it is important to understand the characteristics, the barriers, and the strengths of a country's digital transformation in various domains of the public sector (Bousdekis and Kardaras, 2020). Bousdekis and Kardaras (2020) further argue that the challenges of adopting digital technologies and the success factors of digital transformation for local governments are centred on a number of factors. These include ensuring citizen-centred services, strategic digital culture, interoperability, digital skills of employees, and technology procurement. In addition, implementation of digital tools brings institutional and procedural changes, which have an impact on the staff and administrative procedures (Kuhlmann and Heuberger, 2023). Problems related to acceptance and satisfaction or even technophobia are common. These issues have many different causes ranging from unhappiness with how new technical tools perform to resource shortages and organisational issues associated with the adoption of new technologies (Dukic, Dukic, G. and Bertovic, 2017). However, research also indicates that public personnel value the benefits of digital connection with residents, particularly the quickness and simplicity of using digital technologies (Berger, Hertzum, and Schreiber 2016).

Infrastructure readiness is a barrier identified from the perspective of technological challenges. It includes precise and detailed infrastructure requirements, the availability of qualified human resources to handle the infrastructure, and infrastructure budget support for example, internet facilities, computer servers, data centres, and disaster recovery centres (Wang and Feeney, 2014; Leroux and 2022; Chang, 2011). The impacts of digital transformation on citizens and staff have, however, been largely understudied in e-government research

regarding the local public sector, despite empirical findings suggesting that the success of digital transformation is positively related to citizen satisfaction (Ma and Zheng, 2019). This means that officials must be aware of the needs of the citizens and the likelihood that those needs will conflict, as well as the internal (bureaucratic and political) difficulties that will arise during the process. The digital transformation processes must be citizen focused (Chipeta and Ngoyi, 2018). Effective leadership is thus necessary for digital transformation, and there is a greater possibility for success if officials act in accordance with a strategy and plan. Moreover, since planning is vital for digital transformation, a plan must identify, define, and address the agreed outcomes, outcome metrics, key activities, key inputs, and the delivery and performance agreements (Hartley and Seymour, 2011).

Kane, Palmer, Phillips, Kiron, and Buckley (2015) note that it is the digital strategy that drives the digital transformation as opposed to the popular notion that technology is the driver. Moreover, what has been observed is that a technological change does not follow a predicted path, and particularly important in the public sector, technological changes are conditioned and constrained by organisational and institutional arrangements (Fountain, 2009), interacting and co-evolving with them in complex and recursive ways (Luna-Reyes and Gil-García, 2011). Therefore, it is recommended to draw lessons from success cases from different countries and contexts to create awareness and caution to avoid potential problems during the initial phase of digital transformation. When embarking on digital transformation, there is a need to draw a plan that clearly specifies the elements of the transformation that align with the information, technology, processes, objectives and values, staffing and skills, management systems, and structures (Hartley and Seymour, 2011). This presents a holistic view of the digital solutions that address the problems experienced and a holistic approach to solving the problems since service delivery can be affected by the lack of adequate input in the form of people, technology, and infrastructure (Hartley and Seymour, 2011).

Participation and collaboration for digital transformation in local government

The importance and aims of citizen participation have been widely discussed in public governance literature (Kurkela et al. 2024; Nabatchi and Amsler, 2014; Schmidthuber, Piller, Marcel, and Hilgers, 2019). Digital participation innovations hold the potential to expand citizens' possibilities to actively participate in public decision-making processes and to enable two-way communication between residents and local governments (Jäntti et al. 2023; Kurkela et al. 2024). Due to their closest institutional level to people's everyday lives, local governments are also viewed as organisations where newly developing forms of democracy manifest in concrete form (Kurkela et al. 2024). Studies have shown that open, creative, adaptable, facilitative, and stimulating attitude of council members are beneficial to effectively organise citizen engagement (Siebers and Torfing, 2018). In addition, operational transparency in line with 'open governments' can stimulate both citizens' attitudes toward government and their levels of engagement (Schmidthuber et al. 2019).

As local governments generally serve diverse communities with different socio-cultural, educational, and economic backgrounds, each community has its level of digital technology adoption capacity. Higher-level educated stakeholders tend to be more perceptive of technology advancements in terms of affordability and knowledge to utilise. Nevertheless, lower-level income and education communities may be unable to afford and access digital technologies due to income and digital literacy constraints (Danial and Velasquez, 2022; Renz, 2022; Maulana and Haerah 2021; Lim, 2010).

The strategic impact of digital technologies on local government is undeniable. The evolution from Web 2.0 to Web 3.0 has disrupted local government operations, necessitating adaptation to technological developments and the creation of new business models (Nadkarni and Prügl, 2021). Digital transformation in local authorities is, however, an underexplored area as much research in the literature has focused more on central government (Bousdekis and Kardaras, 2020). This is despite the argument that local governments are in a better position to integrate government, private, and citizen data to deliver beneficial new digitally enabled public services (Montezami and Pittaway, 2020). The adoption of ICT by local authorities in Africa for service delivery, citizen engagement, and transparency is also a relatively recent phenomenon. South Africa, however, provides a good example of e-government in this area, as strides are being made for municipalities to be digital (Nzimakwe, 2021).

Local authorities in general are battling with a variety of barriers (ethical, infrastructural, legal, and informational) that affect policies to enable widespread acceptance and implementation of digital technologies in the delivery of public services (Moody, Plat and Bekkers, 2019:271). It is imperative that municipalities aim to adopt participatory methodologies that aim to seek the views of the local communities that they seek to serve. To successfully implement a digital transformation programme, authorities must thus identify key areas of implementation as raised by stakeholders and prioritise them (Filgueiras, Flávio, and Palotti, 2019). Governments must also consider that the key areas of the digital transformation programme can change thus, they must act accordingly as was significantly expressed in a recent global pandemic (Fletcher and Griffiths, 2020). A crucial step in creating policies for digital transformation is, therefore, to have a clear understanding of citizen's needs and their behaviour, support from local public administrators is important for transformation, as they help to promote social change (Datta, 2020). Feller et al. (2011) also note that the benefits from information technology investments are not automatically as a result of introducing new technologies, rather from coordinated efforts that align with the main strategy of the organisation such as process improvements, staff training, and setting better organisational standards.

However, there is limited data in the literature regarding digital transformation in the local governments, especially in an African context and particularly, as they relate to empirical participatory approaches. Most studies display a top-down approach, given the disadvantages of such approaches in digital innovation and their impact on uptake, a bottom-up approach that can be employed within the public sector to enhance service provision is suggested. According to their desired attributes, groups, companies, and individuals can work together to cocreate the applications and services they want to serve their goals (Tilson, Lyytinen, and Sørensen, 2010:752). The City of Tshwane's Innovation Strategy for instance proposed stakeholder engagement, among other pillars which include strategic intent, organisational capabilities, and innovation sustainability (Ncunyana, 2016). While embracing digital technologies that can speed urban service delivery in South African local government, Shava and Vyas-Doorgapersad (2022) note that institutional readiness, increased revenue streams, and a stable regulatory and legislative environment are critical for success.

Andrews' Model of Strategy Formulation and Implementation

The Model of Strategy Formulation and Implementation was proposed by Andrews in 1971 as a framework for guiding organisations to build patterns that determine organisations'

strategic direction. The model defines strategy as a key aspect that determines the organisation's "objectives, purposes, and goals" aiming to shape the organisation's policies and plans that take it forward (Foss, 1997:52). Apart from revealing organisational goals, Andrews (1971) argues that strategy also determines how resources are to be organised to fulfil the goals. Consequently, strategy ought to support both short and long-term goals and decisions hence his argument that strategy has to be heavily tied to the organisation's structure, behaviour, and culture (Andrews, 1971).

The model identifies strategy formulation and strategy implementation as two closely related aspects that are central to organisational growth (Andrews, 1971; Anima, 2014; Foss, 1997). According to Andrews (1971), there is a thin line between these two aspects as they are closely tied to each other and are only separable for the purpose of analysis. Wernerfelt (1989:4) in trying to differentiate between the two aspects, argued that strategic formulation, unlike implementation, focuses on processes of identification, deployment, and development of resources. Building from Andrews (1971), Anima (2014) identifies strategy formulation as a process of deciding what to do whereas implementation deals with the practical ways of achieving the results. The framework of strategy formulation and implementation stipulates that both formulation and implementation are iterative processes that continuously inform each other in repeated cycles over time (Andrews, 1971; Anima, 2014).

Key pillars of the framework

Andrews' model of strategy formulation and implementation hinges on four core pillars namely environmental conditions and trends, distinctive competencies, opportunities and risks, and corporate resources. These pillars are key to strategy formulation and help the organisation to scrutinise, not only its immediate and far environment and goals, but also question its short- and long-term ambitions and possible drawbacks to its endeavours. The pillars are critical when considering the strategic direction an organisation takes and an evaluation of the pillars in their varying permutations will likely determine the most feasible and appropriate match of opportunities and resources (Andrews, 1971; Foss, 1997). The framework can be applied by organisations to explore their strengths and limitations, as well as reinventing themselves in the changing environment; and it is essential for an organisation to establish a criterion for the appraisal of each key strategic attribute or pillar (Andrews, 1971).

Identification and scrutinisation of opportunities and threats constitutes the second core pillar in the process of strategy formulation, which should be treated as a rational decision. Not only is the identification and scrutinising of opportunities and threats a core of the framework, but also "attaching some estimate or risk to the discernible alternatives" is a core aspect of the framework (Andrews, 1971:53). The purpose of the framework as a guiding tool is to help strike an equilibrium between opportunity and capability of the organisation in building a strategy, and defining goals and a roadmap to achieving the goals (Andrews, 1971).

The third pillar of the framework is the consideration and analysis of the organisation's distinctive competencies. This core pillar focuses on the organisation's resources that give the organisation its purported strength, particularly its human resources and the potential they hold (specifically with regard to their strengths and weaknesses) (Andrews, 1971). A focus on the organisation's human resources extends to their level of rapport in fulfilling

the organisation's goals (Anima, 2014; Foss, 1997). According to Andrews (1971), the capabilities are also drawn from experience that is gained through the execution of the previous strategies. Furthermore, the competence to exploit opportunities is yet another important key aspect of the second pillar (Andrews, 1971:55).

The fourth pillar hinges around corporate resources where the organisation has to scrutinise its resource base in the process of strategy formulation and implementation. Strengths and weaknesses are to be identified. According to Andrews (1971), strengths are distinctive competencies above what the organisation does and they can be transferred to opportunities and should be tallied to the skills that underlie the organisational and strategic success. The final pillar scrutinises the environmental conditions and trends, including economic, technical, physical, political, technological, and social (Andrews, 1971; Foss, 1997). Bakos and Treacy (1986) argue that the inclusion of technology as an environmental issue is shifting the focus to the opportunities that information technology provides. A holistic analysis of the four pillars will assist organisations find matching opportunities and competencies enabling them to formulate strategies that will drive the organisation in the positive direction.

Figure 1 shows a schematic representation of Andrews' framework in the design of Pemba Town Council's digital strategy. Each box represents special factors that are key to strategy formulation, which also partly forms the basis for implementation. Of particular interest is the fact that environmental factors range from internal to global, triggering and necessitating a holistic approach to digital transformation. The arrows are bidirectional implying the bidirectional nature of the relationships between these factors. However, it is also worth to note that some key elements of strategy formulation are generic whilst others are context dependent (Korachi & Bounabat, 2020). Even though some of the key elements are generic, there are no universally agreed approaches to strategy formulation hence the importance of context. Furthermore, it should also be noted that the model in its core form addresses the pertinent traditional elements of strategy formulation and implementation and is not specifically focused on digital strategy formulation/implementation. Since it is a generic model, its application was for the purpose of understanding the generics of strategy formulation and implementation.

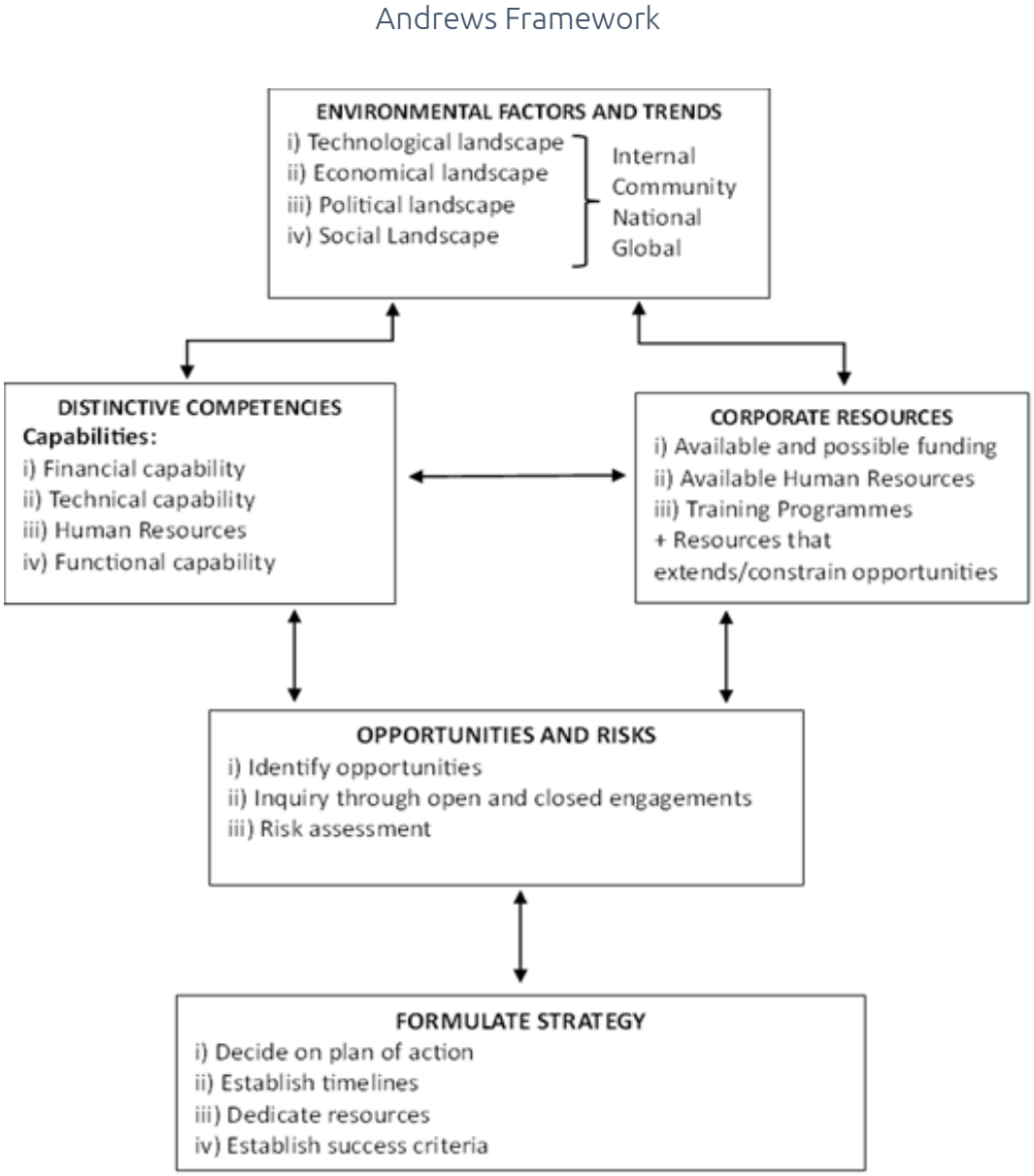

Fig 1: (Schematic representation of the framework: Adapted from Andrews (1971)

Methodology

Case site- Pemba Town Council

Pemba is a small town located in the Southern Province of Zambia. With a population of over 80,000 citizens (Zamstats, 2022), Pemba is predominantly a rural area, with agriculture being the main economic activity. Pemba Town Council was recently elevated from being a district council to a town council. As the population of Pemba expanded, the number of services that the local authority provides to its citizens has also increased. With the growing portfolio of services emerged the need for synchronised operations. The local authority is organised into various departments dealing with citizens at different levels. Citizens also interact with the local authority at different levels depending on the services required.

Research Design

The research was qualitative in nature and was both exploratory (aimed at exploring ways to improve service delivery through digital tools) and descriptive (aimed at describing the digital challenges facing Pemba Town Council in delivering services to the community). Led by Andrew's (1971) Model of Strategy Formulation and Implementation and employing an action research methodology, the study engaged the local community and the council to develop a digital strategy for the council, the first of its kind.

An action research design approach was used as it was deemed the most appropriate to answer the research question "how can digital tools be used to improve service delivery for Pemba Town Council?". An action research project emerges from, and has to contribute to the solution of existing practical problems (Hult and Lennung, 1980:242). Action research is also ideal and suggested for local governments wishing to make a meaningful impact within their communities (Aimers, 1999). Furthermore, the research was guided by insights from Gooch, Wolff, Kortuem, and Brown (2015) regarding a practical model for getting citizens involved in projects, particularly in digital transformation projects.

Action research refers to research that involves formulating a plan, carrying out the intended intervention, evaluating the outcomes and developing further strategies in an iterative trend (Stringer and Aragon, 2020). There are various types of action research, but the literature generally makes a distinction between two types: participatory action research, and practical action research (Stringer and Aragon, 2020). Compared to participatory action research which focuses on bringing about social change on some level and empowerment of individuals and groups (Holter and Schwartz-Barcott, 1993), this research followed a practical action research, which is aimed more at addressing a specific problem rather than improving the quality of lives of individuals or communities (Fraenkel, Wallen, and Hyun, 2012).

According to Holter and Schwartz-Barcott (1993), in a practical action research project, the researcher and practitioners work as a team together to identify the problem, the underlying reasons for the problem, and possible interventions to resolve the problem. The problem is defined after negotiations between the researcher and practitioner and a mutual understanding of the problem and solution is reached. The research followed this approach. Researchers, tasked with assisting Pemba Town Council to clearly define and understand the problem and develop a plan of action worked with representatives from the Council to do so.

Field Trip Planning

As presented in the previous section, the research project started with a comprehensive literature review on digital services and e-government. To try and answer the main research question on how digital tools can be used to improve service delivery for Pemba Town Council, the question was broken down into three specific questions:

1. What are the main issues or digital challenges/inefficiencies facing Pemba Town Council regarding service provision?
2. What challenges do community members face in accessing the various services offered by the council?
3. What improvements can be made, and what does it take to make these improvements?

In order to have a deeper understanding of Pemba's digital background and the possibilities of solutions that would best fit the municipality and the citizen's needs, researchers conducted different procedures of research. During the first two months of the project, virtual meetings with the Pemba Town Council team were held to further understand the problem, the needs, the current ICT infrastructure, and the political issues that could affect the implementation of the project.

Following these engagements, researchers prepared for a field trip. Two of the researchers went on a three-days working trip to Pemba from 9-11 November, 2022 with the goal of connecting with different stakeholders, understanding their local context, and to collaboratively design solutions. For this purpose, it was relevant to meet with stakeholders who represented different actors in the scenario - so both citizens and local authority representatives - and also with people from different backgrounds can have access to public services, such as community members and stakeholder representatives, civic leaders, and youth (students). The researchers engaged almost 200 people, with the largest group consisting of students. For the meetings with the community and civil society representatives, researchers used focus groups, whereas for meetings with public servants, individual key informant interviews were conducted. These are further described below.

Data Collection Methods

Data collection involved focus group discussions and key informant interviews. Four focus group discussions were conducted. These drew an audience from community members and representatives, college students and their educators, civic leaders such as ward development leaders and zone leaders, and Community Development Fund Committee (CDFC) members. In the focus groups, individuals were asked to discuss the municipal services that they usually used and discuss how these services could be improved. The first activity required them to list the public services that members of the group used whether frequently or not. The second activity required them to choose one or more services that they thought could be more efficient if it were digital. And the third activity asked them to discuss the main problems encountered while using the service, digital solutions that could help to address the problems, and the risks of the digital solutions.

Three key informant semi-structured in-depth interviews were conducted. These were conducted with the District Commissioner, the Council Chairperson, and the Council Secretary. It was important to receive views from both the council management, and the district head regarding the digital transformation plans, challenges anticipated, and political will.

Mertler and Charles (2011) state that depending on the nature of the action research project, there may never be a clear end to the study. There may be a need to continue going through subsequent cycles of planning, acting, observing, and developing a new course of action which can go into the following year. The researchers think of this project in a similar manner in that while it has been completed for now, the planning, acting, reflecting, etc., will continue throughout the digital transformation process and Pemba Council will continue to pick lessons in each action or implementation phase, to be applied in the next.

Data Analysis

Thematic analysis guided the analysis of the data, whereby insights from the analysis were clustered in relevant categories (Braun and Clarke, 2006). In addition, following Yin

(2015)'s planning, the analysis was carried out in five stages: 1) compilation of the data set; 2) data decomposition; 3) re-composition, so that the data is more interesting for the research objectives; 4) data interpretation; 5) conclusion. The steps are not necessarily sequential, they can alternate throughout the process and all are guided by the previously established research questions. The analysis was carried out through an inductive method, with a purpose to allow research findings to emerge from significant, dominant or frequent themes, based on the raw data (Thomas, 2003).

Results

Services Prioritised for Digitalisation

After conducting the focus group meetings and interviews, as described in the methodology, this section compiles the main results obtained from the informants perspectives. Even though one of the purposes of these interactions was to engage participants to prioritise services to be digitalised, the general feedback was that they wanted all council services to be digital. One of the reasons was that as some of the participants live far away from where the Pemba Town Council is located, they indicated that it was expensive to travel to the council offices to inquire about services or get something done. The other main reason was that even for people for whom distance is not an issue, going to the city council and spending a part of the day waiting to be attended is more time consuming. One participant said "we spend a lot of time at the council, several hours waiting for one thing. I should be able to do these things at my convenience", and evidenced the hope that digital services could be more convenient and accessible.

Certain participants, specifically members of the CDFC, identified several services that they deemed highly sought after by citizens. They specifically emphasised the prioritisation of projects funded by the Community Development Fund (CDF) to facilitate online applications and follow-ups. Some of the services that could be digitalised for convenience and transparency included school buildings, job adverts, land applications and payments, and roads, borehole, and other public infrastructure maintenance.

Although there were strong arguments for the digitalisation of services like CDF applications, there were also other sections of the participants who felt that digitalising this service would marginalise the other section of the population who are not digitally literate, and those who had no devices to use. The aspect of trust in technology was also raised as an important factor that would determine whether some people will accept and embrace digitalisation or not. A resolution was made that if this service is successfully digitalised, both the traditional and the new (digital) systems would run parallel to each other in order to cater for all sections of the population. The general consensus among the participants was that communication from the council was not effective. Currently, the council uses a Short Messaging Service (SMS) and other third-party public digital platforms like WhatsApp to communicate with stakeholders, but this is not enough. The consensus is that there is a need to digitalise council services for convenience and cost saving on the part of the citizens and to reach a wide audience on the part of the council.

For some of these services, the council could take advantage of the readiness of the citizens for example, in the area of making payments using mobile money services. For revenue collection, the council could adopt mobile payments where citizens can make use of the USSD codes. The use of USSD was also identified as advantageous for people who have low

technical skills, and those who stay in areas where network connections are poor. This would cater for citizens who do not own smartphones. Business registrations can also be moved online where both the council and the citizens can make follow-ups. In terms of providing information for example, on CDF applications, participants suggested that the council could use social media, especially Facebook since a lot of people use Facebook.

Challenges

The data collected evidence that participants were also well aware of the challenges that can potentially affect the process and rate of the digital transformation exercise. While their optimism regarding digital transformation was evident, they voiced reservations tied to several critical challenges that necessitated attention. Foremost among these challenges was the digital divide, manifesting in two distinct groups: those with access to technology and those without. Participants recognized the risk of leaving certain citizens behind due to a lack of access, prompting suggestions for the coexistence of manual and digital systems. Emphasising the importance of device and internet access, participants aimed to mitigate the digital divide's adverse effects.

Another identified challenge was digital literacy, particularly among senior citizens who would encounter difficulties due to limited digital literacy and literacy skills. To address this, participants recommended the parallel operation of both systems, acknowledging that the success of digital transformation hinges on the digital literacy of civil servants and citizens alike.

The study also revealed infrastructure challenges as impediments to the digital transformation exercise. Council authorities cited the absence of a local area network for resource sharing and departmental integration. The District Commissioner highlighted the impact of inadequate council office buildings on infrastructure rollout. Despite these challenges, the council recognised the potential to work with the existing poor network infrastructure initially, but underscored the need for proper ICT infrastructure, including servers for citizen data storage. Concerns were also raised about the absence of cell phone networks and electricity in remote areas, posing obstacles to the accessibility of digital services.

Lastly, human resources and technical challenges were noted with the council lacking technical personnel to drive the transformation. Despite the absence of infrastructure and technical expertise, there was a notable determination from the people, council staff, and politicians to support the initiative.

Potential solutions

Participants were also keen on pointing out solutions that could be adopted to tackle the challenges of digitalization. The issue of digital education for digital readiness emerged several times. Sensitisation of the community regarding both the digital transformation exercise and the services that the council offers emerged as key areas that should be focused on according to the participants. Other suggestions that were made included the need for the council to get down to the zones and continue to engage the community on how best to collaborate. Also, awareness and sensitisation campaigns must be done continuously as the processes evolve and the digitalisation matures. To increase digital portal usage, suggestions were made to use local languages on the portal. In terms of ICT infrastructure, suggestions were made to engage with telecommunication operators and

other stakeholders to support the digitalisation project through the setting up of digital infrastructure like e-centres, and the provision of telecommunications networks to enable citizens to connect to the Internet without difficulties.

In a nutshell, the vulnerable members of the community were said to be at the higher risk of missing out if all services were to be solely migrated to online. It is against this background that some participants suggested that the two systems run parallel to each other. To avert some of the challenges, participants suggested building centres that are solar powered and equipped with computers in remote areas to cater for the local communities. Although the issue of sustainability was raised as one of the challenges associated with the setting up of such centres, other participants suggested that volunteers and public servants could be capacitated to support citizens in these centres. One participant suggested that digital champions within the communities would be useful to drive the transformation exercise: "we could have digital champions in the community, those who are a bit computer savvy to help the rest of the community"

Discussion

The stakeholder engagements via focus group discussions and key informant meetings were very informative for the purposes of this research. The study's findings demonstrate the critical role that citizens play in political processes in general and municipal administration in particular with a focus on digital transformation. Moreover, the significance of local community leaders in uniting people and collaborating towards a shared objective like this one was evident. Since they serve as a liaison between local residents and council representatives, including them in the process of digital transformation was essential to its success. Furthermore, it is still advised to gradually implement digital systems alongside traditional methods as part of the digital transformation process because problems like low digital literacy and low digital readiness hinder digital transformation, especially in poorly resourced and rural environments such as this case.

The results presented in the section above indicate how participants' expectations and concerns regarding digital transformation are connected to the existing literature on the topic. The main contribution to the development of the digital strategy is that the stakeholders' contributions helped the researchers to identify and deepen the already known aspects in the local context, understanding the dimensions that shape the current scenario and the potential challenges for the implementation of a digital strategy. The findings support the notion that processes of digital transformation typically include some uncertainty about how people's responsibilities will change over time.

Studies on the adoption of new technologies have revealed that uncertainty is often present when these technologies are introduced. For example, people may wonder if their occupations will remain stable or if the technology will replace them (Dengler and Gundert, 2021). Real or perceived, there is fear and anxiety that one would not be deemed valuable during such changes, and it is critical that these concerns are addressed, as well as the new or evolving responsibilities of individuals conveyed to all. The fear that digital transformation would lessen the responsibilities that community leaders played in helping their members on various issues relating to municipal services was dispelled in this situation. Engaging stakeholders is therefore critical for assuaging any concerns.

Moreover, the study indicated that local authorities are dedicated to serving their constituents and should actively strive to engage citizens in crucial decision-making processes. By convening both the council and community members in conversations about the prospective utilisation of digital tools, it presented a chance for the council to enhance communication and address additional concerns beyond digitalization. This encompassed collaborative brainstorming on optimal methods for sharing information to ensure its efficacy.

Digital Strategy

Based on these findings, researchers and stakeholders developed a digital strategy for Pemba City Council, which will be implemented between 2022–2026.[1] The digital strategy is based on four overriding principles namely People, Technology, Processes, and Sustainability (Hartley and Seymour, 2011), and aligned with the four pillars of Andrews (1971)'s model by addressing environmental conditions and trends, distinctive competencies, opportunities and risks, and corporate resources in a methodical manner. The strategy demonstrates a deliberate approach to digital transformation, emphasising the need of coordination, alignment with organisational goals, and constant monitoring and evaluation.

Environmental Conditions and Trends

To analyse the external environment in order to understand opportunities and threats, the digital strategy considers Pemba's unique situation as well as local and national development goals. It emphasises the need for sustainability and collaboration in mobilising resources, building capacity and developing environmentally sound technologies. The strategy takes into consideration local, national, and global trends in the technological, economic, political, and social landscapes and fuses them together, creating solutions that respond to citizens' needs, fostering participation, and responsible use of technology. The environmental conditions and trends pillar also addresses the adjustments necessitated by the changes in the trends for example, the alignment of the strategy and approaches to the legal frameworks (Demushina, Li, and Youssif, 2021).

Distinctive Competencies

In evaluating the organisation's strengths and weaknesses, particularly in human resources, the strategy recognises the significance of people as one of the key principles. It emphasises ongoing engagement with staff, citizens, local leaders, and stakeholders to support the transformation process. By focusing on people, this pillar emphasises on the internal capabilities necessary to drive the digital transformation exercise. It reiterates the importance of continuous evaluation of the capabilities vis a vis the necessary adjustments as dictated by the environmental factors. Furthermore, it is necessary to evaluate the town council's distinctive capabilities in order to effectively manage change (Holten, Hancock, and Bøllingtoft, 2019). A co-focus on distinctive competencies and corporate resources helps to drive change management.

1 The Pemba Town Council Digital Strategy is not available online but you may read more about it here https://icld.se/en/researchproject/using-digital-tools-to-improve-service-delivery-in-pemba-district-zambia

Opportunities and Risks

The principles on which the strategy is built display a systematic approach to identifying and scrutinising opportunities and threats in a rational decision-making process. It emphasises the importance of ongoing monitoring and evaluation, which aligns with assessing risks in Andrews' model.

Corporate Resources

Scrutinising the organisation's resource base including strengths and weaknesses is important, and Andrews' model places focus on corporate resources and their role in strategy formulation. In line with this, the strategy acknowledges the importance of technology and processes as key principles. This includes considerations for technology infrastructure such as software, hardware, and e-centres, as well as processes for data and information sharing, and to receive feedback from stakeholders. Training programmes are key in expediting key competences required to drive digital transformation.

Figure 2 shows the elements of a digital strategy, a fifth principle is added in order to reinforce the importance of having constant monitoring and evaluation of the digital strategy and the innovations implemented.

In this paper, researchers share a general guide to digital transformation that may serve as inspiration for public entities such as local authorities seeking to digitalise. The guide outlines six major steps that are vital to follow, but should be adapted to suit the context under consideration.

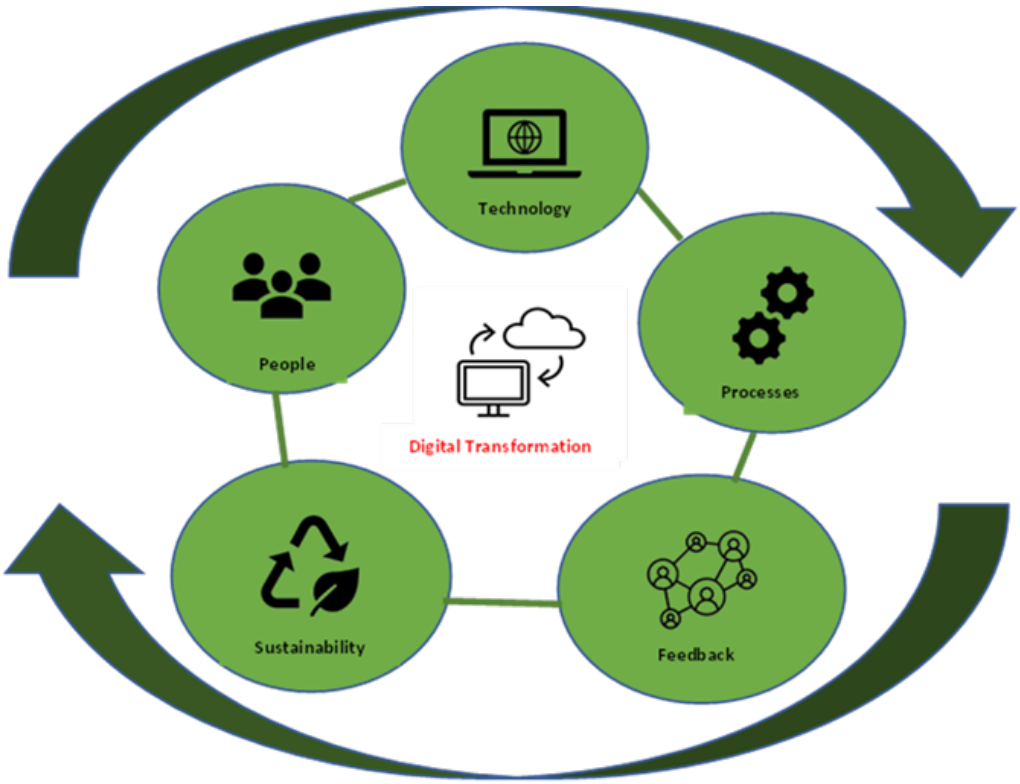

Figure 2: Elements of the digital strategy framework (Source: Authors' own adaptation)

Guide to develop a digital transformation strategy

Determine the reason for digitalisation

Initially, it is crucial to pinpoint the rationale behind digitisation, and accomplishing this necessitates a clear understanding of the issue (Andrews, 1971). Because digital transformation can serve different purposes, it is important to understand the local context and identify if digitalization is a solution for the existing problems – and if it is not, digital transformation should be deprioritized as it can also have side effects that can prejudice the affected ones. In the Pemba case, before developing the proposal, the researchers worked with the local authority to appreciate the challenges posed by the lack of digital systems and explored potential solutions together.

Stakeholders mapping

As action research was proven to be an efficient method for the formulation of digital transformation strategies, the second step is to map all stakeholders that should be involved in the process. For the case of Pemba Town Council, guided by Council staff, it was identified that the important stakeholders to be involved were citizens, council employees, and politicians recognising that these three groups had different roles and goals in a multifaceted and multi-sided process of digital transformation. In addition, these were the key stakeholders in the community that the Council engaged in decision making processes.

Initial stakeholder consultation

The next step is not only to introduce the concept to the wider stakeholders in the community but also to solicit their input on the proposals. Stakeholder consultation should aim to be as inclusive as possible so that the common person is represented. Focus groups, interviews, public consultations, digital forms are some of the methods that can be used for this. When developing the digital strategy cited in this paper, researchers held focus groups meetings and interviews in the municipality – all in person due to the necessities of the community.

Data analysis

Evaluating existing data on the processes held by the government, as well as feedback, is crucial to understand the local context. Doing so allows one to establish common themes, the priorities of the stakeholders, and how these align with the recommendations from the local authority. At this stage the local authority should also determine how the process would proceed, and suggest the services to prioritise for digitalisation.

Stakeholder feedback

The local authority must go back to the community to keep them informed about forthcoming changes derived from their input. The importance of stakeholder involvement is this process cannot be overemphasised (Anima, 2014), and must be a continuous exercise throughout the process. This helps to ensure continuous buy-in and contributes to the success of the digital transformation process.

Implementation

Depending on what has been decided upon by stakeholders involved, the timelines for implementation may vary to take into account the type of service, digital literacy, resources required, the urgency, among other things. It is important to note the fact that traditional modes of service delivery may have to run parallel to the new digital systems during the roll out phases and as more people become acquainted with the technology. For Pemba, the strategy divided the timeline for implementation into short, medium, and long-term actions so that the people in charge of the government could work on this and the strategy could have sustainability over electoral changes.

Monitoring and Evaluation

Once systems are running, continuous monitoring and evaluation is recommended so as to establish the challenges and determine strategies for improvement. Engaging the community in these actions is also beneficial for the success of the implementation.

Conclusion and Recommendations

The study noted that the success of the digital transformation process hinges around a clearly defined, well-thought, and holistic digital strategy. Empirical evidence, analysed through the lens of Andrew's framework, indicates that a careful consideration of the council's internal and external environments, its capabilities, opportunities and threats, and its resources through a consultative process potentially enhances the depth and breadth of its digital strategy. This is advantageous to the council as such consultations enhance citizen by-in, and the holistic approach reduces chances of important aspect of the digital strategy from being overlooked. Furthermore, the study emphasised the role of people and the continuous nature of their influence in the process of digital transformation. With the changing environmental factors, both internally and externally, there is a need to adjust the strategic parameters that drive the transformation process. Given the shift of stakeholder roles, responsibilities, and influence, tensions are likely to emerge due to shift in power dynamics. Citizens yield new level of influence calling for a review of internal processes and adjustments as a continuous improvement exercise where necessary.

Limitations and Future Research

This study has some limitations that warrant further investigation. Firstly, it was conducted in a context where there was already a well-established relationship and good level of trust between the Council and citizens, which may not be typical in other settings. Therefore, it cannot be assumed that mobilizing citizens in different contexts will be as straightforward. However, the importance and values of citizen engagement remain crucial. Secondly, the empirical data primarily focused on the introduction of digital tools by the Council to enhance service delivery and engage community members. Future studies could delve deeper into how employees and citizens perceive and participate in public sector innovation processes and the outcomes thereof, which were beyond the scope of this research.

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Effects of Digital Technologies on Africa's Electoral Democracy

Perspectives from South Africa

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Abstract

This paper uses a South African case study to closely examine how the recent explosion of digital technologies has impacted electoral democracy in Africa. It seeks to answer a key research question about the risks and benefits of using technology in elections on the continent. Although South Africa has not adopted e-voting, the Independent Electoral Commission (IEC) piloted the use of thousands of new voter management devices in the 2021 local government election. At the time, the IEC also stated that it had delivered its 'most technologically advanced election' yet. Despite embracing some of the technological changes, the IEC argues that it is not yet cost-effective to introduce new voting technology in South Africa. There is strong evidence from other African countries as well, suggesting that the constitutionality and feasibility of electronic voting devices is questionable. The integrity of elections can also be doubtful if the process is not inclusive of the population. Aside from a thorough literature review, this paper analysed a combination of official IEC statements and reports on technology and e-voting in South Africa, including public pronouncements on the use of digital technologies on the African continent. Insights from this work will benefit election officials, policymakers, scholars, and others interested in the advancement of research in this growing field of study.

Keywords: Digital Technologies, E-Voting, Electoral Democracy, Voter Management Devices, South Africa, Africa.

Introduction

Most recent accounts of several scholars and practitioners have painted a gloomy picture of democracy globally, especially in Africa. There are many challenges that are often linked to a country's social-political climate marked by prolonged periods of exploitative colonialism, neo-colonialism, imperialism, and a brutal apartheid system (Khapoya, 2012). According to Fombad (2021), the evolution of electoral democracy on the continent in the last three decades points to an authoritarian mobilisation and resurgence. He argues that while elections have become the norm in many African nations, they are increasingly being used to disguise various forms of undemocratic practices. This begs the argument that the future of electoral dem:ocracy in these countries may not be secure.

Details of the Democracy Index of the Economist Intelligence Unit 2022 will be discussed later in the study, but generally, the results show that 2022 was a disappointing year for democracy, with an immeasurable stagnation in democratic practices especially in Sub-Saharan Africa. The report also shows that a positive effect of the restoration of individual freedoms in some countries was temporarily curtailed by the COVID-19 pandemic as nations sought to find ways of halting the spread of the disease (Sambo, 2021). The index ranks 167 countries based on their democratic quality using five main categories including their electoral process and pluralism, functioning of government, political participation, political culture, and civil liberties (Economist Intelligence Unit, 2022).

Based on this observation above and many other factors still to be discussed, Fombad (2021), Sambo (2021), and several other scholars argue that a rethink is needed to improve the quality of elections in Africa, promote democracy, and constitutionalism. A global boom in the use of digital technologies especially during the height of the COVID-19 pandemic could provide an answer to some of these challenges. According to Gumede (2016), African regimes have fallen previously because of popular mobilisation against them on social media. For example, during the so-called Arab Spring in 2011/2012, young people in North Africa used social media, the Internet, and blogs to organise protests and make their voices heard in ways that were not possible before (Gumede, 2016). However, based on the research problem, Maphunye (2019) warns that the use of digital technologies in elections could present several problems for election management bodies. Their feasibility and constitutionality provoke several questions, including whether they comply with national election legislation (Maphunye, 2019). Furthermore, African countries must also contend with a lack of digital infrastructure, costly foreign technologies, high illiteracy levels, minimal or weak connectivity, low bandwidth, poverty, and acute inequalities (World Bank, 2018; Sambo, 2021).

The author hopes that the lessons drawn from this paper will assist scholars, researchers, and practitioners in their quest to better understand the complexities presented by digital technologies in cyberspace. This paper also aims to provide recommendations on how to address Africa's information and communication technology (ICT) challenges. Therefore, this study's contribution is the practical and policy insights into the impact of digital technologies on the continent's electoral democracy through a focused case study analysis. It is hoped that scholars, researchers, and practitioners will be inspired to do more research in this field while keeping up with the demands of a global digital explosion and a worsening digital divide in the developing world. Collaborations between digital media companies who care about democracy and policymakers can help the world understand the threats posed by digital transformation to democracy in Africa. This is particularly important given the numerous benefits of democracy towards improving the lives of ordinary citizens on the continent.

The rest of the paper is organised to include a section explaining the main terms being investigated by this study such as digital technology and electoral democracy, and the two main research questions to be answered based on the risks and benefits of using digital technology in elections in Africa, and how risks can be managed such that digital technologies can improve the quality of electoral democracy in Africa. Thereafter, the methodology explains how the data was collected and analysed, and an explanation of what constitutes a 'strong' democracy is provided to contextualise how digital technologies can offer platforms for enhanced citizen participation in electoral processes and public deliberation. This study also includes an overview of the literature further explaining the

concepts of digital technology and electoral democracy using country-specific examples from the African continent and South Africa in particular. The findings of the study are presented, and a conclusion is made to highlight what scholars and practitioners can do moving forward above developments in the digital space and democracy.

Conceptual framework

The two concepts defined below are critical to understanding and answering the research questions of this paper. The definition of *digital technology* is broad and can also include the use of tools, systems, and devices such as personal computers and mobile phones to generate, create store, or process data (Johnston, Kervin, and Wyeth, 2022; Laverty 2012). In keeping with the aims of this paper, the term is used interchangeably with Voter Management Devices (VMDs) and other technologies to achieve improved citizen engagement and increased participation in elections. Fombad (2021) argues that over the centuries, philosophers and students of politics have offered overlapping definitions of democracy. However, there are key elements endorsed by Bratton and Van de Walle (1997); Peters (2002), and others. These link the definition of democracy to a form of political regime in which citizens choose their leaders in competitive elections that are free and fair, there is freedom of the press, a separation of powers, and so-called checks and balances related accountability. Freedom House (2023) argues that *Electoral Democracy* is a narrower concept that includes a competitive, multi-party-political system, the holding of regularly contested elections conducted through secret ballots, reasonable ballot security, and the absence of massive voter fraud. It also includes significant public access of major political parties to the electorate through the media and open political campaigning. Furthermore, countries with electoral democracy have some respect for the rule of law and civil liberties such as freedom of assembly (Freedom House, 2023).

Research Questions

This study aims to answer the following key research questions,

- What are the risks and benefits of using digital technology in elections in Africa?
- How can risks be managed such that digital technologies can improve the quality of electoral democracy in Africa?

Methodology

This study relied on qualitative data collection methods. According to Teherani, Martimianakis, Stenfors-Hayes, Wadhwa, and Varpio (2015), qualitative research is the systematic inquiry into social phenomena in natural settings, and the researcher is the main data collection instrument examining why events occur, what happens, and what those events mean to the participants. Weiss (1995) also argues that qualitative research provides a better understanding of a phenomenon, especially when the goal is to obtain coherence, depth, and density in the data. Furthermore, this type of research involves collecting and analysing non-numerical data such as text to understand concepts, opinions, or experiences (Bhandari, 2023). Weiss and Bhandari add that qualitative research is commonly used in the social sciences to gather in-depth insights into a problem or generate new ideas for research.

An extensive literature review was also executed regarding issues and factors affecting the applicability of digital technologies in elections in Africa, including political, social, technical, and legal factors. These factors were selected after critically analysing contemporary issues in various countries. The study also analysed a combination of official IEC statements and reports on digital technology in South Africa, including public pronouncements on the use of digital technologies across the rest of the African continent. The content discussed in these statements and reports covers information on the introduction of digital technologies, technology implementation, challenges, benefits, regulations, and policy considerations.

What constitutes a democracy?

Perspectives in this paper are drawn from an understanding of what constitutes a democracy. According to the Civics Academy (2024), the presence of six main features may indicate a strong democracy. They argue that features include respect for basic human rights as outlined in a country's constitution (including the right to vote and freedom of speech and assembly), a multi-party political system paired with political tolerance (and also promoting the use of dialogue to resolve conflict), a democratic voting system (the holding of regular free and fair elections in line with the constitution in a representative democracy), respect for the rule of law (public officials can exercise power and make decisions if authorised to do so by law and independent courts uphold the rule of law), democratic governance (including the separation of powers between the executive, judiciary and legislature), and citizen participation (empowering individuals to participate freely in social and political life).

However, Anderson, Fish, Hanson, and Roeder (2001) caution that democracy itself is insufficient and needs consolidation. According to Stokes (1999), political parties play a key role in organising politics in modern democracies, however, there is another scholarly side that argues that the same parties can give voice to extremists and reduce the responsiveness of governments to the citizenry. Unpacking this debate amongst scholars is crucial for understanding the challenges that new democracies have with issues of representation and governance. It is also key to examining the role and opportunities for digital technologies to make democracies healthier.

Literature Overview

According to Ayawli, Samuel, and Dotse (2015), most elections in Africa are conducted using ballot papers, and often this process is accompanied by numerous irregularities including ballot box stuffing, double or multiple voting, and intentional/unintentional miscounts of votes. They further argue that sometimes, the result is political unrest which can go on for long periods. Globally, countries such as Brazil, India, the United States of America, and Estonia have reported numerous successes whilst using digital technologies in their elections, some for over two decades (Omarjee, 2019). However, it has not all been cheerful in these countries. For example, after the US Congress passed the Help America Vote Act (HAVA) in 2002 mandating the reform of election processes to include more modern technologies, there have been some concerns about the introduction of precinct-based optical scanners and direct recording electronic (DRE) voting machines (Verified Voting, 2005). Such concerns include the extensive reliance on voting machines to record and tally votes exclusively through electronic means while providing no paper ballot that can be verified by the voter. According to Verified Voting (2005), there are also concerns

about software errors that are unavoidable, the difficulty in performing meaningful counts without a voter-verified paper ballot, and the existence of possible fraud in case of human interference in electronic voting systems.

Countries such as Paraguay, Germany, Ireland, and the Netherlands abandoned the process for various reasons including opposition from political parties (Ayawli et al. 2015). According to Omarjee (2019), these countries and various experts in the field have argued that digital technologies can strengthen the credibility of their elections by reducing the risk of double voting and spoilt ballot papers.

Not much has changed recently in the way Africans can register and cast their votes in elections. Peters (2002) argues that healthy democracies are critical for Africa's rebirth. She adds that various socio-economic and political programmes such as the New Partnership for Africa's Development (NEPAD) are evidence of the commitment of many African countries to eradicate poverty, promote sustainable growth and development in Africa, integrate African economies in the world economy, and accelerate women's empowerment. According to Peters, the NEPAD charter also undertakes to respect global standards of democracy, political pluralism, the existence of several political parties and workers' unions, and free and fair elections. Indications from various literature readings are that the current system of governance in Africa is challenged in many ways that governments of Western countries are not. Sambo (2021) argues that election management bodies in Africa have been using manual voting systems in their elections for long periods resulting in disputed results and high operating costs. He further argues that the COVID-19 pandemic has not helped the situation, forcing many countries into extended lockdown and compelling some of them to postpone their elections. The rise in the use of digital technologies, especially social media platforms can offer solutions to some of the movement restrictions imposed by the pandemic including promoting election campaigning online, speedily dissemination of political information, and facilitating public debate (Dad and Khan, 2023).

The introduction of digital technologies, especially the Internet is seen by cyber-optimists as one of the biggest tools for democratisation and political freedom (Shirky, 2008; Diamond, 2010). They also argue that digital technology assists activist groupings aiming to reinvigorate democratic processes. Such technology enables citizens to report news, expose wrongdoing, express opinions, mobilize protest, monitor elections, scrutinize government, deepen participation, and expand the horizons of freedom (Diamond, 2010). Cyber-optimists argue that governments and citizens alike have little choice but to embrace technological changes in a digital world. According to Mickoleit (2014), several examples can be made globally about the successes of digital technologies in influencing political agendas and policy processes. These include the Arab Spring of 2012 hailed as a game-changer for global politics leaving many to believe that digital democracy was on the rise, the #BlackLivesMatter first coined in 2013 following the acquittal of George Zimmerman in the shooting of unarmed Black teenager Trayvon Martin in the United States of America. Since then, there have been several other online campaigns discussing important topics such as elections, political campaigns, disasters, and emergencies.

Electoral Democracy Overview in Africa

Africa is made up of 55 countries with diversified democracies. Most of them hold regular manual elections as demanded by the United Nations Universal Declarations on elections. Eritrea is the only country that does not hold regular elections (Sambo, 2021). A militarized

authoritarian state, national elections were last held in 1993 following its independence from Ethiopia (Freedom House, 2023). Furthermore, citizens are required to perform national services often for their entire working lives and the government shut down all independent media in 2001 (Freedom House, 2023). According to the Economist Intelligence Unit's (EIU)'s 2022 Democracy Index, out of a score of zero to 10 and based on the five main categories highlighted earlier, many nations, especially in Sub-Sharan Africa continue to be concentrated at the bottom of the Democracy Index rankings. Mauritius is the continent's only *full democracy*, which means that the country respects basic political freedoms and civil liberties, its political culture is conducive to the flourishing of democracy, the functioning of government is satisfactory, and media are independent and diverse and there is an effective system of checks and balances. Furthermore, Mauritius' judiciary is independent, and judicial decisions are enforced.

The EIU's Democratic Index shows that there are six *flawed democracies* in Africa, including South Africa, Namibia, Botswana, Lesotho, Carbo Verde, and Ghana. Furthermore, countries in this category are typically classified as those with free and fair elections, and basic civil liberties are respected even though there are problems such as infringements on media freedom. The democracy index states that countries with flawed democracies have significant weaknesses in other aspects of democracy, including problems in governance, an underdeveloped political culture, and low levels of political participation. Fourteen countries such as Kenya, Liberia, Malawi, and others are classified as *hybrid regimes*, meaning their elections have substantial irregularities often preventing them from being free and fair. The government puts pressure on opposition parties and candidates, and there are serious weaknesses in political culture, the functioning of government, and political participation. The democracy index also states that corruption in hybrid regimes is more widespread, and the rule of law and civil society are weak. Typically, there is harassment of and pressure on journalists, and the judiciary is not independent.

Authoritarian forms of government continue to dominate the African continent, with 23 countries still classified as such. The democracy index states that countries in this category are outright dictatorships and state political pluralism is absent or heavily circumscribed. Some formal institutions of democracy may exist, but these have little substance. Elections, if they do occur, are not free and fair and there is disregard for abuses and infringements of civil liberties. The democracy index shows that media is typically state-owned or controlled by groups connected to the ruling regime. Furthermore, the democracy index shows that as of 2022, there has been a stagnation of democracy especially in West Africa. There have been three successful military coups in Chad, Mali, and Guinea in 2021 and Burkina Faso in 2022. Failed coup attempts also occurred in Guinea Bissau, São Tomé and Príncipe, and The Gambia in 2022.

Overall, the 2022 Democracy Index shows that electoral institutions in Angola, Kenya, and Senegal proved resilient as they were tested against a backdrop of heightened public discontent and an anti-incumbent backlash. Maphunye (2019) argues that Africa's elections require constant innovations and improvements to deliver results that enjoy wider acceptance and universal legitimacy. However, there seems to be polarisation between so-called traditionalists and reformists/modernists around the adoption of digital technologies to boost electoral democracy. Aker and Mbiti (2010) argue that Africa has some of the lowest levels of infrastructure investment in the world, even though access to mobile technology has increased dramatically in some regions such as Sub-Saharan Africa in recent times. According to Fombad (2021), another reason for the decline in the quality of electoral

democracy in Africa is the repeal of presidential term limits in many countries. He further asserts that democracy entails the sharing of power, which means that no leader, no matter how competent and effective, can consider himself/herself indispensable.

In a bid to promote electoral democracy and deal with some of the challenges highlighted in this paper, regional groupings such as the Economic Community of West African States (ECOWAS) try and confront the issue of military dictatorships in West Africa (Campbell and Quinn, 2021). However, ECOWAS has been less effective in preventing third-term bids by incumbents. The Southern African Development Community (SADC) has also been criticised for its inability or unwillingness to address some critical political matters in the region. This includes its alleged failure to confront the ruling ZANU-PF in Zimbabwe about human rights abuses in that country (Campbell and Quinn, 2021).

Digital Transformation and Africa's Elections

Dad and Khan (2023) argue that the nature of elections around the globe has been transformed due to an explosion of digital technologies in recent times. They also argue that various technologies such as social media have impacted election campaigning, dissemination of information, and opinion formation with various election management bodies such as the Independent Electoral Commission (IEC) also adopting digital technologies to boost the administration of their elections. Meanwhile, Fatai (2022) argues that in Africa, nearly all recent general elections have used some kind of digital technology be it biometric voter registration, smart card readers, voters' cards, optical mark recognition, direct electronic recording, or electronic result transmission. Amongst the principal reasons for using technology is to contain electoral fraud and promote the credibility of elections, especially during the height of the COVID-19 pandemic (Fatai, 2022). However, the reliability of some of these devices has been questioned, with some experts blaming problems in the management of elections rather than malfunctioning devices.

Ibeanu (2022) argues that two main issues lie at the heart of the debate about the quality of elections in Africa. Firstly, it is the concern around the level of human intervention in determining the outcome of elections. He also argues that the question is one of trust in election managers – whether they will respect the rules, ensure that citizens can participate fully and freely in elections, and have a level playing field for all candidates and political parties registered. Ibeanu notes that the level of trust by citizens in African elections has progressively declined since the 1990s as evidenced by the many contestations of election results. Secondly, the efficacy of election managers to deliver quality elections. In most African countries, elections are poorly planned, the procurement and delivery of materials is slow, the casting of ballots and the tabulation of results are archaic, and the declaration of outcomes is tardy and inefficient (Ibeanu, 2022). These challenges create opportunities for the promotion of digital technologies as the future of credible elections on the continent.

Kolade, Obembe, and Olufemi (2023) argue that the adoption of digital technologies in Africa's elections has disrupted the balance of power between citizen voters and state actors. They say state actors are struggling to maintain control amid an emergence of systemic loopholes in the application of digital technologies. As Fatai (2021) also put it, while digitisation holds great prospects, some political actors remain unconvinced due to technology failure, structural and systemic problems, including the lack of funding for election management bodies. Generally, the perception in Africa is that those who organise elections will use their positions to promote self and sectional interests (Ibeanu, 2022).

He argues that the trust of the electorate in election management bodies has declined. Furthermore, many parts of Africa are still very remote with poor communication facilities, weak electricity connections, and weak civil society organisations that cannot promote civic engagement and civic education in election matters (Ibeanu, 2022).

According to Runde and Bryja (2023), changing demographics, increased urbanization, and digital transformation are affecting all nations. They argue that much of Africa is also experiencing this trend as many people move to live in cities. Digitalisation has played a key role in accelerating the dissemination of information and increasing connectivity with the number of Internet users on the continent crossing 570 million in 2022 (Runde and Bryja, 2023). According to Sambo (2021), countries such as Kenya, Libya, Mauritius, Nigeria, Morocco, Seychelles, and Tunisia have a higher national Internet penetration factor, while countries such as Somalia, South Sudan, and Mozambique have often been affected by ravaging wars which destroy digital infrastructure. Runde and Bryja (2023) also agree about the Internet coverage and usage gaps raised by Sambo.

> Overall internet penetration in Africa was only 40 percent in 2022, compared to the global average of 66 percent. There are also major spatial inequalities in access to digital tools. Only 5 percent of intermediary cities in Central Africa and 20 percent in West Africa are currently within 10 kilometres (7 miles) of fibre-optic cables, and just 6 percent of rural areas have any digital connectivity. Bridging this gap will require substantial investments in broadband infrastructure, user skill development, and the establishment of appropriate regulatory frameworks. In order to achieve Africa's full potential and leverage the skills of the continent's growing young population, over a billion new users will need to be connected to affordable and high-quality broadband internet access by 2030, necessitating an additional $100 billion in new investments over the next 10 years (Runde and Bryja, 2023:1)

Runde and Bryja's sentiments are shared by Ibeanu (2022) who also argues that technology divides between young and old, urban and rural, rich and poor, and between men and women have led to the exclusion of many Africans in elections. While the young generations have embraced technology as they use smartphones and laptops as communication and business tools, a large population in African countries lives in rural communities (Sambo, 2021). Furthermore, many people in rural areas cannot afford to buy gadgets, power, and data used for Internet services and there is also a lack of digital skills (Sambo, 2021).

Ibeanu (2022) argues that digital technology in Africa and its application in election management has been disadvantaged due to its production in Western countries as opposed to being sourced locally. Mayet (2023) concurs with Ibeanu and others arguing that digital technologies can be used to improve the electoral process, but they can also stifle democratic proceedings. The most impoverished civilians are likely to be intimidated by various technologies and therefore choose not to engage in this way (Mayet, 2023). Other concerns about digital transformation for many African countries include the spread of misinformation and disinformation campaigns during political and/or election campaigns, issues around the safeguarding of personal information collected during the electronic voter registration process, and cybersecurity challenges (SA Government News Agency, 2023).

South African perspectives

South Africans go to the polls once every five years to choose national, provincial, and local leaders. The IEC manages the process. South Africa is a representative democracy, meaning citizens do not govern the country themselves, but vote for others to represent them in the national, provincial, and local spheres of government. The country's Constitution of 1996 is often referred to as the most progressive in the world in local media and it makes provision for public participation (Fombad, 2021). Every citizen over the age of 18 who is registered can vote. The country became a democracy in 1994 after transitioning from apartheid (Siddle and Koelble, 2016; Rossouw, 2019). Its history is rooted in colonialism, systematic racism, apartheid, sexism, and oppressive legislation, with governance problems also exacerbated by worsening poverty, inequality, and gender-based violence (World Bank, 2018). Exactly three decades since the introduction of democracy, promises of a better life by the ruling African National Congress have failed to narrow the imbalance between the rich and the poor (Sguazzin, 2021), and inequality has also manifested itself in unequal access to education, health services, and jobs (World Bank, 2018). South Africa's youth unemployment rate increased to 62.1 % in the first quarter of 2023 (Statistics South Africa, 2023).

Furthermore, South Africa's ranking by the Economist Intelligence Democracy Index of 2022 leaves much to be desired, although it may appear to be better than that of other African countries. According to the Economist Intelligence Unit (2022), South Africa is ranked 45th out of 167 countries reviewed. The results show that the country is not a full democracy but is classified as a *flawed democracy*. As already stated, this means that while elections are free and fair, there are still problems with infringements on media freedom and basic civil liberties. South Africa also suffers significant weaknesses in governance as evidenced by rising violent service delivery protests, poor management of local government structures, and generally low levels of citizen participation in elections. Schrire (2021) argues that the outlook for democracy is not promising partly due to the country's dependence on opposition politics to ensure accountability, and there's evidence of state capture emphasizing widespread corruption in government.

The advent of new technologies has impacted democratic and political engagement in South Africa. With over 40 million active Internet users (*representing over 70% of the population*) at the start of January 2022, the country has one of the highest numbers of Internet users in Africa (Statista, 2023). However, it has been a long-standing general concern that Internet availability to access and use digital technologies is largely confined to urban areas, which constitute 68.33% of the population (Statistics South Africa, 2023). Matsheza (2011) also warns that online connections are still out of reach for most South Africans as many people cannot afford to pay for them. If they can afford to pay for connections, they must wait for long periods for installation.

IEC officials were forced to look at other alternatives after manual voting presented various challenges in the 2021 local government elections following the outbreak of the COVID-19 pandemic. The IEC piloted the use of VMDs to boost electoral management and deployed over 30 000 such devices countrywide to collect personal data from voters. The devices that replaced worn-out Zip-Zap barcode scanners came with a lot of promises. According to the IEC (2021), the devices were a game-changer for voter registration, allowing the IEC to capture voter information electronically and to locate voters in the correct voting district. They were also a live tracking tool for voter participation on election day, served as an administrative and management tool within the voting station, could report incidents at

the station on registration and voting days, and could track and pay election officials. The VMDs require Internet access customized for election management only (IEC, 2021). While the organisation said their deployment was a success, there were some challenges as noted by Mzekandaba (2021) who argues that the details of over 60 000 voters were not uploaded into the electoral system and as a result, they could not vote. Proposals by the IEC to test e-voting were also rejected by Parliament's Portfolio Committee for Home Affairs, citing fears of hacking and insufficient budgets.

According to the IEC (2008), other major challenges since the dawn of democracy have been low voter turnouts during local elections as opposed to national elections. The organisation noted that the trend was more noticeable among younger voters. It also noted that this was happening despite a rise in the number of political parties. It remains unclear whether the answer lies in apathy, lethargy, or disillusionment. At a strategic conference in Johannesburg to discuss electoral democracy in South Africa, the IEC also noted the absence of a compulsory voter system which could potentially help with voter apathy, the problem of managing special votes in municipal and ward elections leading to allegations of disenfranchisement of people in the elections of local representatives, the formula used in the funding of political parties limited the capacity of smaller parties to mobilise their memberships and sustain themselves, and the implantation of floor crossing raised serious concerns and challenges for South Africa's democracy.

The explosion of the Internet in the late 1990s presented an opportunity for the South African government to respond to some of the challenges presented here, but it appears that the process has been slow. On one hand, Internet-based technologies have opened the political space for representative democracy. On the other hand, there is a consistent culture to continue with politics and governance the way that they are, benefitting the interests of a small elite. The benefits of digital democracy have been widely documented, including improved citizen participation.

Findings

Benefits of using digital technologies

Three main benefits were reported following the piloting of VMDs in South Africa's 2021 local government elections. Firstly, South Africa's elections were declared free and fair by both the IEC and international observers suggesting that democratic practices are alive and well. An application to postpone the elections was heard in the courts. This is an important lesson for African countries and their leaders to always respect the rule of law, even in times of uncertainty as observed during the pandemic. Furthermore, the use of technologies in elections, whether partially or fully, does not replace the importance of respecting the rule of law when disagreements arise.

Secondly, the use of VMDs helped to peacefully resolve the issue of restricted political mobilisation, freedom of movement, and association experienced during the COVID-19 pandemic. This suggests that the VMDs achieved their aim of upholding the credibility and integrity of the elections.

Thirdly, South Africa's IEC asserts that the use of VMDs has enabled it to deal with the issue of double voting and spoilt ballot papers experienced in previous elections. This is because

a live and centrally connected voters' roll gets updated nationally after people cast their votes at voting stations.

Risks of using digital technologies

Three main risks were reported following the piloting of VMDs in South Africa's 2021 local government elections. Firstly, the new VMD technology presented some serious challenges including the exclusion of an estimated 100,000 people from the voters' roll due to malfunctioning devices and some elements of human error. There were also reports of poor Internet connections at some voting stations during the 2021 local government elections. Democracy is devalued and the credibility of an election can be questioned if citizens are excluded from participating. Nevertheless, the outcome of the election was peaceful despite this anomaly.

Secondly, South Africa's 2021 elections highlighted the need for proper budgeting by African governments. According to the Electoral Commission Annual Report (2022), budget cuts amounting to R382 million in the 2020/21 and 2021/22 financial years led to the cancellation of planned voter registration ahead of the elections. Furthermore, the IEC argues that South Africa has not formally adopted a position on e-voting and a business case for biometrics is not viable. Such a move is deemed expensive to monitor and could reduce transparency in the voting process even though it has the benefits of speed and accuracy in vote counting.

Thirdly, VMDs did not resolve the issue of voter apathy, low voter registration numbers, and low voter turnouts. This points to a need for IEC officials and other African countries to find lasting solutions. Roodt (2021) argues that about 46% of all eligible voters turned out to vote in South Africa in 2021, the lowest figure since the fall of apartheid. A crisis looms for African governments if patterns of non-participation in elections persist.

Recommendations

The following recommendations are made to address Africa's ICT challenges and improve the quality of electoral democracy.

- African leaders should prioritise innovation in their democratic processes and look for new ways to harness technology in an ever-changing digital era.
- African governments should build stronger partnerships between themselves and digital giants operating in their space to reduce the impact of cybersecurity concerns, including spreading misinformation and disinformation.
- An enabling socio-political environment must be introduced to promote the participation of the private sector in the equitable delivery of ICT services to benefit all citizens. Some healthy competition may help to reduce data costs and increase access to ICT services for citizens.
- Africa's policies and strategies for development must include clear ICT visions, be action-oriented, and have measurable and achievable targets to strengthen democracy.
- At the very least, African countries should use both traditional and modern methods of participating in an election while they find more effective ways to digitalise.

Conclusion

The purpose of this article was to provide better insights into the complexities presented by digital technologies in cyberspace and make recommendations on how to address Africa's ICT challenges. While digital technologies offer promising opportunities to enhance electoral processes in Africa by improving access, they equally present significant challenges related to the digital divide and misinformation. Even in countries with free and fair elections and good Internet connectivity such as South Africa, there are still some concerns about the failures of digital technology to deliver on its promises. This means more work for researchers through potential collaborations with practitioners and other stakeholders to further investigate the root causes of the persistent ICT challenges. The evidence also shows that while digitalisation undoubtedly exposes democracy to new threats across the continent, its benefits cannot be understated. It is also evident from this paper that holding regular free and fair elections does not mean that a country's democracy is not without problems as we have seen in the example of South Africa.

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Understanding Digital Rights in An Era of Digital Politics in Africa

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Abstract

As more African countries connect their citizens to the Internet and other digital technologies in a bid to improve services, questions are being asked about the protection of human rights for nationals online. The wake of the COVID-19 pandemic forced many countries on the continent to search for alternative ways to provide services. Varying national shutdowns impacted democratic processes such as elections and accompanying actions such as voter registration and campaigning. This paper aims to assess the trends and challenges around the implementation of digital rights and propose a way forward for scholars and practitioners promoting digital rights. It uses a South African example to demonstrate the protection of human rights (*by default digital rights)* by a Constitution deemed as one of the most progressive in the world. Data was collected using desktop research to identify and assess common themes and differences across the continent. The results show that as technologies continue evolving at a fast pace, it is fundamental for African governments to reassess and adapt their laws to maintain and protect the rights of their citizens online.

Keywords: Digital Technology, COVID-19, Digital Rights, Digital Politics, Africa

Introduction

The digital age has brought with it many opportunities to explore the offerings of fast online information sharing to inform, mobilise, and engage citizens politically. However, there are challenges regarding how to harness these opportunities while enjoying and protecting human rights. Scholars and researchers in the field of governance are still trying to find answers to how African governments can guarantee and protect human rights online. Digital rights are human rights brought to prominence by the United Nations Human Rights Council resolution of 2012 when it resolved that the 'same rights that people have offline must also be protected online.' This includes the right to freedom of expression, privacy, and access to information (Media Defence, 2020).

Digital rights are an important and evolving subject in contemporary human rights research and policymaking (Centre for Human Rights, 2022). In understanding them, it is also important to explore the role of the Internet in promoting such rights. According to Bussiek (2022), the 1st of January 1983 is considered the official birthday of the Internet. He argues that it all started as a tool of exchange among scientists and professionals and gradually expanded to draw more people in the new millennium. Due to the success of the Internet, the video/voice calling service Skype was launched in 2003, Facebook in 2004, Twitter

(*now known as X*) in 2006, Instagram in 2010, Google in 2011, and TikTok in 2017 (Bussiek, 2022). Today, billions of people worldwide use the Internet daily, including participating in political processes online.

Due to the Internet revolution, 495 million people, or 46% of the population in Sub-Saharan Africa subscribed to mobile phones in 2020 (Bussiek, 2022). He further asserts that,

> All in all, 4.95 billion people around the world actively use Internet. The new digital technology turned the world into a global village. Humanity in all parts of the globe became connected. The speed of information increased exponentially. People now communicate with each other in real time over long distances. Questions are answered within seconds on Google. And the internet was about to democratise the entire world. The Arab Spring 2010, starting in Tunisia, was termed a 'Facebook revolution', the Sudan uprising 2019 would not have been possible without social media. People come together and organise for a common cause by digital means. Online media have sprung up and multiplied, bloggers started blogging, everyone is able to have her or his say (Bussiek, 2022:1).

Digitalisation has no doubt played a key role in increasing Internet connectivity in Africa (Runde and Bryja, 2023) even though the continent is still struggling to modernise its ageing telecommunications infrastructure (Mare, 2023). Its rapid acceleration during the COVID-19 pandemic was evident as citizens became increasingly dependent on digital technologies for financial transactions, socialisation, education, political engagement, news and information, remote working, and religious meetings (Mare, 2023). With this responsibility comes the protection of digital rights to ensure that individuals enjoy the same rights online as when offline.

According to Goggin, Vromen, Weatherall, Martin, Webb, Sunman, and Bailo (2017), it is difficult to ensure that individuals have the same rights in digital spaces as in analogue ones given the fast pace of the use of technology. Using insights from various sources including the Centre for Human Rights, this paper will show that the development of digital rights in Africa is slow, and it coincides with a poor democratic climate and weak protections for human rights. Furthermore, the continent is facing serious challenges of digitalisation including weak infrastructure, hardware, software, and issues of access lie across gender, economic status, and rural-urban lines (Centre for Human Rights, 2022).

The rest of this paper is organised into various sections to include a definition of the key terms used in the arguments, followed by the problem statement, research aims, and methodology. These are followed by a contextual background with sub-sections on the state of democracy in Africa, an overview of how technology interlinks with politics, and the state of Africa's human rights record.

This paper also has a section on the state of Internet access in Africa with a sub-section discussing issues of affordability and the extent of the digital divide. This section is followed by discussions on the important issues of online privacy and data protection leading to a reflection on cyberspace laws. The impact of Internet shutdowns and fake news on digital rights is also highlighted. The findings section is followed by recommendations and a conclusion on the next steps for governments, scholars, and others interested in the promotion of digital rights.

Definition of Key Terms

Digital rights - Broadly, digital rights refer to human and legal rights in the digital realm or cyberspace, or in interaction with technology (Reventlow, 2017). Reventlow (2017) argues that these rights allow citizens to access, use, create, and publish digital content on devices such as computers and mobile phones. These rights are protected under provisions of the United Nations and the African Human Rights Framework and in practical terms, they aim to protect citizens from oppression, deprivation, and violence that jeopardize human interests (Mathiesen, 2014).

Digital politics – Refers to the intersection of digital technologies and forms of political engagement. In the last decade, global and local politics have been completely transformed by new technologies (Manchester Metropolitan University, n.d.). They argue that there has been a surge in the politicised use of technologies such as social media and smartphones by governments, corporations, activists, and non-profits. Politicians and civilians also use these tools to mobilise, engage, and protest.

Digital technology - Johnston, Kervin, Wyeth (2022), and several other scholars argue that the definition of digital technology is also broad. They state that it includes tools, systems, and devices (including personal computers and mobile phones) that can generate, create, store, or process data. In keeping with the aims of this chapter, the expected result of using digital technology in politics is improved citizen engagement and increased participation using various online tools.

Governance - Governance refers to the action or manner of governing (Munshi, Abrahan, and Chaudhuri, 2009). Therefore, government is expected to make decisions, resolve conflict, organise elections, and distribute resources among other functions (Cole, 2008).

Problem Statement

Examples of digital rights issues in Africa are many and complex. The following have been selected to explain the problem statement. According to the Centre for Human Rights (2022), despite the gains that came with the Internet revolution, its penetration rate remains comparatively low in Africa. For instance, they argue that in 2020, only the Seychelles, South Africa, Mauritius, and Botswana had access to the Internet for half of their populations. Limited Internet access has even led to a debate about whether it should be considered a human right (Media Defence, 2020). Countries such as Somalia, South Sudan, and Mozambique have often been affected by ravaging wars that destroy their digital infrastructure (Runde and Bryja, 2023) and limiting Internet access for citizens.

There are also reported Internet shutdowns, the disruption of online networks and social media sites in countries such as Ethiopia and the Democratic Republic of Congo (Maseko, 2024), and the blocking and filtering of content is considered a form of prior restraint to freedom of expression (Media Defence, 2020). Furthermore, serious patterns of digital rights violations have been reported in many countries including unlawful surveillance practices (Centre for Human Rights, 2022). Implementing a 'social media tax' in Uganda in 2018 led to a drop in Internet penetration by five million users within three months (Media Defence, 2020). Moreover, using digital media can be complicated (Pangrazio and Sefton-Green, 2021). They warn that the process comes with the potential for invasions of privacy, increasing dataveillance, and the erosion of the democratic sphere among other risks.

Research Aims

This paper has two main aims which are,

- To assess important trends, developments, and challenges in respect of digital rights in Africa.
- To propose recommendations for various role players promoting digital rights.

Methodology

Data for this paper was collected using a comprehensive desktop review of global and African literature on digital rights and digital politics. The author also relied on data from official policy documents, research reports, and other scholarly resources that were duly referenced. This paper uses a South African example to demonstrate the protection of human rights (*by default digital rights)* by a Constitution deemed as one of the most progressive in the world. South Africa's human rights record was assessed based on more recent reports and interpretations from three key organisations such as the South African Human Rights Commission (SAHRC), Amnesty International, and Human Rights Watch covering the periods of 2022 and 2023. This list of organisations is not exhaustive but will provide the reader with a good idea of the country's human rights standing. The data was analysed by carefully reading the information from various sources and then reviewing the findings. This method made it easier to compare the results of the different sources and then choosing the most important information.

Contextual Background

The Londa Report of 2022 argues that access to digital life has become increasingly important as the world recovers from the effects of the COVID-19 pandemic. They posit that technology has not only connected marginalised communities in an increasingly globalised society, but it has also significantly impacted human rights. The Institute for Security Studies (2021) argues that most of Africa's problems in implementing democracy stem from bad governance. It asserts that many leaders are failing to effectively manage their economies, cultural and social diversities, and political inclusion. This leads to a loss of trust in state institutions and in their capacity to execute basic functions and deliver services. According to the organisation, the economic and political inclusion of women, youth, minorities, and other marginalised groups remains a major challenge for many African countries.

Coetzee (2017) argues that the idea of good governance is critical for the continent to promote the idea of prosperity, proper living conditions, and progress. She adds that good governance practices are globally supported by institutions such as the World Bank and the International Monetary Fund, and they are important for developing countries if they want to achieve better lives and living conditions for their people. Coetzee (2017) argues that good governance practices include openness, honesty, and integrity which sadly are not always maintained in some African countries. It is against this backdrop that a case for the protection of human rights, especially digital rights is made on the continent.

Coetzee's sentiments are also shared by Fourie and Schoeman (2010) who also argue that it would be difficult for development to take place anywhere without good governance. They also add that norms and values such as political transparency are also critical for the

development of various countries. The challenge, however, in Africa, is the declining state of democracy which will be explored in detail below.

State of Democracy in Africa

Africa has experienced a democratic decline in the past ten years accelerated by the COVID-19 pandemic (Campbell and Quinn, 2021). Furthermore, they argue that an increasing number of Africans are also living in authoritarian states meaning their governments are outright dictatorships. According to the Economist Intelligence Unit's (EIU) most recent 2022 Democracy Index, in authoritarian states, some formal institutions of democracy may exist, but these have little substance. Elections, if they do occur, are not free and fair and there is disregard for abuses and infringements of civil liberties. Mauritius is the only country with a full democracy on the continent, which means that basic political freedoms and civil liberties are respected and the political culture and functioning of government are conducive to the flourishing of democracy (Economist Intelligence Unit, 2022).

Furthermore, some African leaders have failed to fix historical challenges linked to colonialism, apartheid, and racism, leading to shallow and compromised democratic values Taylor (2018). Democratic citizenship on the African continent is also happening less often due to failures in traditional methods of participation known as invited spaces of participation (Masiko-Kambala, Görgens, and van Donk, 2012). According to Fombad (2021), democracy and constitutionalism are still not firmly consolidated and secure in Africa. He argues that the number of countries with failed or flawed electoral processes far exceeds those that have improved records.

An analysis of citizen participation in some democratic societies paints a picture of people who have lost confidence and trust in the government system (Masiko-Kambala et al. 2012). Young people in many countries feel disempowered by their political parties and other officials in leadership positions, hence they withdraw from participating in governance processes (Lues, 2014; Tshuma and Zvaita, 2019). In 2021, the European Parliament also raised a concern about restrictions on the freedom of expression both online and offline in many African democracies and the undermining of term limits by some governments and presidents.

Campbell and Quinn (2021) also argue that in a bid to promote democracy, some African countries have been re-organising themselves along their regional groupings. They argue that the Economic Community of West African States (ECOWAS) has devoted serious energy and resources to defending democracy. It has done this by playing a major role in rolling back military dictatorships in West Africa and opposing military coups. However, they note that ECOWAS has been less effective in preventing third-term bids by incumbents. Campbell and Quinn (2021) also argue that the Southern African Development Community (SADC) has been derailed by its inability or unwillingness to address political matters in countries such as Zimbabwe, because of the ruling ZANU-PF's origins as a liberation movement. They also highlight that the Economic Community of Central African States (ECCAS) is stocked with autocrats, while the East African Community (EAC) has been weak.

Overview - Emerging Technologies and Politics

The world once relied on communication mediums such as radio, print, or television to connect people. These so-called traditional methods of communication were in many instances tightly controlled by governments. The emergence of the Internet and digital

technologies has empowered people to speak up, organize, and challenge the government on its policies affecting the progress of society (Anthonio, 2022). He argues that some governments, especially in authoritarian regimes will often suspend Internet usage if users contradict their authority. Furthermore, Anthonio (2022) posits that digital technologies have been useful in times of elections and the Internet has been used by politicians and activists to campaign online and mobilise as evidenced by the Arab Spring in Egypt in 2011, the #IAmSudanRevolution in 2019 and the #EndSARS in Nigeria in 2020.

Since the 1980's, the digital revolution has moved beyond the Internet to include mobile devices, social media, big data, and computing clouds (Clarke, 2012). The rapid adoption of digital technologies has also fundamentally changed global politics. According to Mare (2023), as far as political participation and engagement are concerned, digital spaces have allowed activists and citizens to circumvent the shrinking democratic space. Citizens have used digital technologies to expand the civic space while a few authoritarian governments have employed the same technologies to survey citizens and implement state-ordered internet shutdowns (Mare, 2023). Goyayi (2021) argues that the intersection of corruption, determination to win elections, and other widely reported concerns such as database hacking, media manipulation, and foreign technological interference are another deadly combination threatening the integrity of elections. In this way, technology is both a weapon and a crippling agent to the election.

Africa's Human Rights Record and Digital Rights

Anthonio (2022) argues that the Internet is an enabler of fundamental human rights, including the freedoms of opinion and expression, freedoms of assembly and association, the right to access information, and the right to education. In 2018, the United Nations Human Rights Council reaffirmed its 2012 resolution on the promotion, protection, and enjoyment of human rights on the Internet. This resolution, adopted by consensus at the 38th Session of the council in Geneva, stated that the same rights that people have offline must also be protected online. However, Anthonio (2022) warns that when the Internet is purposefully disrupted or manipulated, so too are the rights of those using it.

The state of Africa's human rights record leaves much to be desired. It is highlighted in this paper to give a better understanding of how it might impact general thinking about digital rights. The International Human Rights organisation Amnesty International argues that in 2022, almost all countries on the African continent had been battling with devastating economic impacts of the COVID-19 pandemic and their recovery is impacted by conflicts, economic disruptions arising from Russia's invasion of Ukraine, and other factors such as extreme weather conditions. It says millions have fled conflicts in countries such as Ethiopia and Burkina Faso, while the basic rights of millions of people regarding access to food, health, and an adequate standard of living have also been severely compromised. Furthermore, the organisation argues that human rights defenders, activists, journalists, and opposition members face intimidation and harassment, arrests, detention, and prosecution as authorities tighten their grip on the rights to freedom of expression and association.

> The number of people fleeing conflict or climate crises continued to rise. Yet, international funding shortfalls left authorities barely equipped to adequately address refugees' urgent basic needs. The prevalence of violence against women across the region reflected the entrenched patterns of gender discrimination and other forms of inequality. In some countries, LGBTI people and people

> with albinism were not protected from discrimination and violence. The high risk of environmental degradation or displacement of communities resulting from planned or existing mining or infrastructural projects persisted (Amnesty International, 2022:1)

The 2022 Human Rights Watch report shows that human rights violations continued in 26 African countries monitored by the watchdog, with the situation worsening in most of them. These countries include Cameron, the Central African Republic, Chad, Ethiopia, Mozambique, Nigeria, South Sudan, Angola, Burundi, Eswatini, Rwanda, Uganda, and Zimbabwe. For instance, pro-democracy protests resulted in scores being killed and thousands arrested in Eswatini as the embattled King Mswati tried to maintain power.

Internet Access in Africa – Overview

The global average Internet penetration rate stood at over 66% as of December 2021 and that of Africa stood at just 43% (Anthonio, 2022). He argues that many African governments restrict access for various reasons, including implementing access-limiting laws and digital tax policies.

According to Bussiek (2022), the African Commission on Human and Peoples' Rights adopted the Declaration of Principles on Freedom of Expression and Access to Information in Africa in 2002. This declaration was updated in 2019 to include digital rights. It makes provision for universal, equitable, affordable, and meaningful access to the Internet to realise these rights (Bussiek, 2022). He also cautions that the conditions in many countries are not encouraging as discussed below.

Affordability and Digital Divide

Affordability

One of the main hurdles to Internet access in Africa is bad policies that are pricing people out of technology (Anthonio, 2022). He argues that even when citizens have Internet access, authorities, and service providers find new ways to prevent large sections of their populations from entering the digital world. Furthermore, Anthonio (2022) argues that high data costs also remain a barrier to widespread Internet use even for people living in spaces with sufficient connectivity. This view is also shared by Bussiek (2022) who also asserts that governments, especially in Sub-Saharan Africa are renowned for restricting access to the Internet to limit critics and opposition parties, especially ahead of elections. Bussiek argues that a precondition for access to the Internet is access to a stable power supply. However, this does not occur in many countries including South Africa where the phenomena of mass rolling power cuts also known as loadshedding are the order for the day.

According to the Centre for Human Rights (2022), the cost of mobile data is higher in Africa and there are big price differences from country to country. For example, they state that 1GB of mobile data cost less than US$2 in Mozambique in 2020, and less than US$2.50 in Tanzania and Zambia, while in Eswatini and Namibia, 1GB cost as much as US$10. Excessive data prices have been blamed on poor infrastructure, which necessitates costly

upgrades and investments (Centre for Human Rights, 2022). Furthermore, the low-income status of many countries is a contributing factor to the lack of affordability for mobile data.

Digital Divide

Africa's persistent and worsening digital divide also presents barriers to digital access for specific demographics in both urban and rural areas, including women and children, and people living with disabilities (The Digital Rights Landscape in SADC Report, 2022). They argue that some countries have limited data on gender disparities in Information and Communications Technology (ICT) making it hard to determine the real needs of those countries. Mutsvairo and Ragnedda (2019) argue for the need to fix digital gaps in Africa, but policymakers need to ensure that their solutions are in line with their constitutional responsibilities. According to the Centre for Human Rights (2022), there is ample data on how the gender digital divide widens the gap of inequality, particularly in disadvantaged areas. They argue that in Africa, women are less likely to have a smartphone and internet access when compared to men. On a positive note, countries such as Mauritius, Namibia, and South Africa have been having increasing Internet usage by women (Centre for Human Rights, 2022).

Privacy and Data Protection

Bussiek (2022) argues that government surveillance is widespread in many African countries without sufficient legal basis. For example, in Zimbabwe, the interception of private communications is permitted without a warrant issued by a court. He adds that the Transport and Communication Minister has the authority to order such surveillance. Meanwhile, the Centre for Human Rights (2022) argues that as of 2022, 61% of African States have enacted data protection and privacy legislation, but the implementation of such laws has been slow (Digital Rights Landscape in SADC Report, 2022).

Privacy and Data Protection laws have also been signed in countries such as South Africa whose introduction of the Protection of Personal Information Act (POPIA) is discussed further below. Either lack of funding or the failure to establish implementation agents has led to implementation challenges (Bussiek, 2022). He also argues that countries such as the Democratic Republic of Congo do not have data protection laws but a Digital Code which includes provisions relating to data protection. According to CIPESA (2019), many African countries have mandatory SIM card registration where subscribers are required to furnish telecom companies with extensive personal details, including their names and home addresses. Moreover, some of the personal information is collected by government departments and some private sector entities with no safeguards for safekeeping such information. This puts the personal data of users at big risk of abuse by state and non-state actors (CIPESA, 2019).

Cybersecurity Laws

Many African countries have passed cybercrime legislation in recent years or are in the process of doing so (Bussiek, 2022). He also argues that the general concern is that many of these laws are over-ambitious and lack clear definitions of terminology. For instance, Sibe (2022) argues that in Nigeria, Parliament enacted the Cybercrime Act 2015. The National Information Technology Development Agency (NITDA) also rolled out the Nigerian Data

Protection Regulation (NDPR) in 2019. Furthermore, Sibe (2022) argues that Ghana passed its Cybersecurity Act 2020 to coordinate the nation's response to the prevention and management of cyberattacks and breaches. The country also previously signed into law the Data Protection Act in 2012 to protect the privacy and personal data of individuals.

Meanwhile, Sibidla (2021) argues that several draft laws are currently under consideration in some African countries. For instance, the Computer Crime and Cybercrime Bill 2020 and Data Protection Bill, 2020 was posted on the Government of Eswatini's website on 10 May 2021 in Eswatini. In Ethiopia, the government continued with its consideration of the draft Data Protection Proclamation, 2020, which has been under consideration since April 2020. In 2021, Kenya gazetted the Computer Misuse and Cybercrime (Amendment) Bill, 2021. The Bill seeks to provide for the prohibition against the sharing of pornography through the internet. Sibidla argues that in Malawi, the Ministry of Information is leading a Task Force to draft the data protection law for the country.

Internet surveillance is used to keep in check those who are critical of the government (Bussiek, 2022). According to Mare (2023), digital rights and responsibilities do not operate in a social vacuum. They must be actualised in different political, social, and economic environments. Some of these environments are permissive, whilst others are restrictive. Mare (2023) argues that countries such as Angola, Eswatini, Mozambique, and Zimbabwe can be classified as having restrictive legislative frameworks. These countries can also be classified as authoritarian according to the 2022 Democracy Index. Botswana, Lesotho, Namibia, Malawi, and South Africa boast of permissive legal instruments, although the situation remains tenuous in some of these countries (Mare, 2023). Furthermore, he posits that the passage of draconian laws that allow for the interception of communications in countries such as Angola, Eswatini, Mozambique, and Zimbabwe have also contributed to the shrinkage of the civic space.

Gibson (2022) argues that the world remains optimistic about a proposed Global Digital Compact by the United Nations, which is a set of shared principles for the globe's digital future. According to Gibson (2022), member states are expected to reach an agreement on the compact in September 2024, and it will outline shared principles for an open, free, and secure digital future for all. She further argues that the application of uneven laws across different countries and unregulated private Internet providers has resulted in multinational tech companies largely regulating themselves and failing to control harmful narratives online, including hate speech and disinformation.

Internet Shutdowns and Fake News

Internet shutdowns are a growing threat to freedom of expression across the globe, especially on the African continent. According to Anthonio (2022), authoritarian regimes impose them to control protests and demonstrations. Furthermore, he argues that the use of repressive measures often results in the violation of the fundamental rights of citizens, including access to information, assembly, and the right to life. Experiences and literature from the African continent have, however, shown that Internet shutdowns are not always effective in silencing citizens who continue to mobilise despite the closing of digital spaces.

The Centre for Human Rights (2022) argues that in July 2021, the UN passed a resolution that condemns Internet shutdowns which often take the form of blocking websites or digital applications known as apps, network throttling, and partial or full disruptions to mobile or

broadband services. It posits that civic participation in digital political processes is limited during shutdowns, and the ability of the media and politicians to share and disseminate information is compromised. For instance, Internet shutdowns have been reported during elections in December 2018 in the Democratic Republic of Congo in areas with a strong opposition presence (Centre for Human Rights, 2022). There have been similar incidents in Tanzania in 2020 and Zambia in 2021, with shutdowns also imposed in response to protests and civil unrest in Eswatini, Ethiopia, Gabon, Senegal, and South Sudan (Anthonio, 2022). He argues that Ethiopia remains the biggest perpetrator in Africa with at least 23 recorded shutdowns since 2016.

Bussiek (2022) also argues that *fake news* is another growing challenge in the era of digital rights and digital politics. He adds that misinformation and disinformation have become the focus of debates and policy measures in recent times. Misinformation refers to false or misleading information without the intention to cause harm, whilst disinformation is false or misleading information that is deliberately created and intends to cause confusion, stoke divisions, or spread falsehoods (Bussiek, 2022).

Human Rights in South Africa

Considering that digital rights are an extension of human rights for the Internet age, it is important to map out the state of human rights in South Africa. It has been widely reported by institutions such as the World Bank that South Africa with a population of over 60 million remains one of the world's most unequal societies, although it has one of the largest economies in Africa. According to the SAHRC (2021), human rights are protected under the Constitution of South Africa, Act 108 of 1996 which is the supreme law. The Bill of Rights contained in Chapter 2 of the Constitution is the foundation that enshrines the democratic rights and values of human dignity, equality, and freedom for all who live in South Africa (SAHRC, 2021). Furthermore, they argue that under the country's laws, the commission is not only empowered to promote, respect, observe, and assess a culture of human rights, but it can also investigate and take steps to redress where human rights have been violated among its many functions. Nationally, Human Rights Day is observed annually on 21 March as a reminder of citizen rights and those who sacrificed their lives for the country's freedom. South Africa's human rights record has been assessed based on reports from three key organisations discussed below.

SA Human Rights Commission

In its trends and analysis report released in 2021, the SAHRC argues that the COVID-19 pandemic negatively impacted human rights, especially in healthcare, security, and education. It also observed the widening inequality gap and its impact on the poor who are struggling to access basic rights. The commission also acknowledged the challenges it faces due to budget cuts and a low staff complement. It recorded a total of 499 complaints during the 2020/2021 financial period linked to the pandemic and the violation of social and economic rights. According to Schimmel (2023), since the fall of apartheid, Black South Africans have experienced the most severe human rights violations. She argues that aside from Black women and children, lesbian/gay/bisexual/transgender individuals face extremely high rates of violent assaults. According to Schimmel (2023), South Africa appears to be failing to protect certain groups in society. She argues that ongoing corruption is another measure by which South Africa is failing to fulfil human rights.

Amnesty International

Amnesty International (2023) also lists incidents of gender-based violence as a concern in South Africa while perpetrators enjoyed impunity. The organisation argues that education authorities are failing to eradicate pit latrines in schools, the National Health Insurance Bill will likely negatively impact access to quality healthcare, and a worsening energy crisis marked by power cuts known as load-shedding affects the rights of citizens to access water, health, and education.

Human Rights Watch

In its World Report (2023), Human Rights Watch argues that South Africa failed to take meaningful measures to improve the protection of social and economic rights which have been undermined by widespread unemployment, inequality, poverty, the government's response to the COVID-19 pandemic, and corruption. According to the report, a combination of poor governance and unethical business practices has left many communities living in poverty.

South Africa's Digital Rights Record

According to the Paradigm Initiative (2021), South Africa retains a good reputation in respect of internet rights and freedoms. In the 2022 Inclusive Internet Index, South Africa scored 74.3 points ranking it first in Africa and 49th out of 120 countries worldwide. The index is a tool to measure, track, and assess country-level progress toward creating an accessible, affordable, and relevant Internet that all citizens are ready to use (Inclusive Internet Index, 2022). Furthermore, the Paradigm Initiative (2021) argues that despite its number one ranking and efforts to move towards an inclusive digital environment, South Africa still faces substantial hurdles in advancing digital rights linked to existing inequalities and other barriers to access.

By in large, the constitutionally protected right to freedom of expression is well respected in South Africa (Paradigm Initiative, 2021), and the use and enjoyment of this right is moving online where there are an estimated 45.34 million active Internet users (Statista, 2024). According to the same report, close to 26 million Internet users or 42.8% of the total population used social media to access and disseminate information as of January 2024. However, there are concerns about the gender gap in Internet access also prevalent in Sub-Saharan Africa (Inclusive Internet Index, 2022).

The recognition and protection of the right to privacy is also considered a fundamental human right in South Africa's Constitution. In 2020, the country enacted POPIA to regulate the collection, use, and processing of personal data. Through POPIA, citizens are empowered with enforceable rights over their personal information (POPIA, 2024). According to Sibe (2022), the 2021 Cybercrimes and Cybersecurity Act was also passed a year later mandating electronic communication service providers and financial institutions to act when their systems suffer a cybersecurity attack or breach.

According to the Paradigm Initiative (2021), high data costs remain a challenge in South Africa and an obstacle to Internet access and connectivity. In turn, they are a barrier to exercising digital rights. They also argue that a stark rural/urban digital divide and the failure to advance digital skills in rural areas are also concerning. Following a decision by

the country's Competition Commission in December 2020, that pricing in South Africa was unacceptably high, mobile operators MTN and Vodacom were instructed to reduce their prices by 30– 50% (Research ICT Africa, 2020). However, data pricing remains high.

Findings

This paper had two aims which are assessing important trends, developments, and challenges in respect of digital rights in Africa, and proposing recommendations for various role players promoting digital rights. This paper found that substantial barriers to Internet access for many African communities are continuing. Despite the persistent inequalities and digital divides, some governments such as South Africa are making efforts to include more of their nationals in digital transformation programmes. However, a lack of funds, mounting cases of violations, and no follow-throughs against those who break the law remain a challenge. Problems such as high data costs and unstable power supplies persist in many African countries posing further threats to efforts by citizens to engage online. This paper also found that while some governments are making progress in developing data protection policies, implementation remains a problem. Existing laws are not adequate to safeguard the personal information of citizens online and their right to privacy. This means that an effective way to stop the flow of fake news, for instance, might still be a long way off.

Recommendations

Like similar studies before, this paper recommends the reform of surveillance laws in several countries through policymaking and jurisprudence to improve oversight. As already discussed, infringements on the human and digital rights of citizens impact their freedom of expression, their right to privacy and data protection, access to information, and dignity and equality. Civil society groups can do more to apply more pressure on authoritarian governments to follow and respect international human rights laws. They can also do more to mobilise marginalised groups so that their voices are heard more in ongoing debates about the benefits of digitalisation. Governments, private companies, academia, civil society, media, and private citizens can also join hands as Anthonio (2022) recommended to fight Internet shutdowns and close the gender gap in Internet access. Legislatures and the executive could also be involved in efforts to preserve access to a free, secure, and open digital space. They need to ensure that governments are held accountable and uphold their constitutional responsibilities to ensure vibrant democracies in Africa that allow healthy choices, debate, and engagement without fear of persecution. Governments must also end the harassment and intimidation of human rights defenders and others promoting digital rights.

Conclusion

The evidence gathered in this paper paints a bleak picture of the state of digital rights in Africa. Once hailed as a beacon for human rights, South Africa's own human rights record leaves much to be desired yet the SAHRC maintains that it has continued to serve South Africans dutifully. It remains to be seen if South Africa can also 'dutifully' protect digital rights. The evidence also shows that many African countries must still do more to ensure the protection of digital rights in line with international best practices. Countries with existing

privacy laws are struggling with implementing them for various reasons. Civil society organisations can do much more to promote and defend digital rights through education programmes targeting the youth. The potential of the Internet to disseminate information and encourage citizen engagement cannot be understated, so it goes without saying that many countries are violating the digital rights of their citizen to express themselves freely. Internet shutdowns only serve to promote fake news. Therefore, frank discussions need to take place between scholars, government representatives, and civil society about the real threats of Internet shutdowns to devalue democracy in Africa.

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ICTS and e-Governance in Africa

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Abstract

Information and Communication Technologies (ICTs) have widely affected the world of governance which has led to a growth in e-governance in African countries. Public institutions have slowly adapted ICTs in order to achieve new levels of efficiency and more effective means of service delivery. These technologies continue to strengthen not only communication within society, but also further fosters the accountability and transparency of governments and government officials. A common dispute against ICTs in Africa is based on the knowledge that some African countries have a lack of access to ICTs due to weak infrastructure. For instance, Frans and Pather (2021:1) elaborate on the costliness of data in a country like South Africa, which has easily led to numerous households having minimal access to the internet. Furthermore, due to high levels of poverty and rural areas in some African countries, many people do not have access to smartphones, nevertheless, data or internet connection. However, in this time, the Covid-19 pandemic has accentuated the need to be 'in the know' for many people, which has thus led to a high demand for ICTs in countries (Frans and Pather, 2021:1). With the assistance and utilisation of secondary sources, this paper aims to highlight the benefits that come with incorporating ICTs in government as a mechanism to foster a relationship between government and its people. Through the consideration and incorporation of governance principles such as accountability, transparency, decision-making and participation, this paper elaborates on how these principles can be achieved in African countries through the use of ICTs in governance. This research observes the following countries as case studies: Ghana, Rwanda, Egypt, Kenya and South Africa. The study analyses these countries' approaches in incorporating ICT and how it has benefitted them and will further benefit them. It will explore various aspects that determine a country's ICT readiness whilst further considering the risks, limitations and benefits that an incorporation of ICTs in governance brings.

Keywords: ICTs, Technology, Governance, Governments

Introduction

The four industrial revolutions have brought many changes in the world. From the first industrial revolution that introduced the steam engine to the second industrial revolution that brought an array of inventions with the most notable being the telephone that contributed to an easier means for communication. The third industrial revolution brought

about a technological and scientific evolution for technology, which only continues to evolve in the Fourth Industrial Revolution through an emergence and push for ICTs in not only everyday life, but in everyday government governance. This has led to numerous countries around the world incorporating ICT technology in their government structures to strengthen their governance. But one question remains, what are ICTs? ICTs refer to the use of technology such as computers and cell phones for the storage, processing and sharing of information (Aja and Chukwu, 2019:18). This is achieved by minimising the distance between government and its people by providing technological means of communication that allow for an easier communicative flow between the government and the people of its Republic. Therefore, this study highlights the benefits of using ICTs in government as a mechanism that strengthens governance in countries. This argument will be achieved through the provision of a methodology section that will be utilised by the study in order to highlight the type of methodology that will be undertaken in order to answer the following research questions: (1) What are the enablers, barriers and benefits of using ICTs in governance in Africa? (2) Is there a plausible link between using ICTs and achievement of good governance? (3) What are the challenges faced by the case studies of Ghana, Egypt, and South Africa regarding ICTs, and can any lessons be drawn from those challenges? Following this, the paper provides a conceptualisation of ICTs which will expand upon the definition of ICTs. Moreover, literature on ICTs and their effect on governance globally and in the African continent is examined. Thereafter, principles of governance are introduced in order to highlight the linkage between governance and ICTs. In addition, case study countries will be explored to further elaborate on the argument of the study. Lastly, a discussion will be conducted by the study before the study concludes with recommendations.

Methodology

This research makes use of secondary research which refers to a compilation and analysis of previously collected and existing data (Enaifoghe, Dlamini, Jili and Mthethwa, 2023:494). This is used to provide an answer to the following research questions: (1) What are the enablers, barriers and benefits of using ICTs in governance in Africa? (2) Is there a plausible link between using ICTs and the achievement of good governance? (3) What are the challenges faced by the case studies of Ghana, Egypt, and South Africa regarding ICTs, and can any lessons be drawn from those challenges? The secondary data will be utilised in order to highlight what other scholars have indicated are the determinants of ICT readiness for countries, what they have identified as challenges to ICT implementation in governance, and what the pros and cons for the adoption of ICTS / e-governance. Furthermore, the qualitative research method will be the central method, which will be utilised for gathering and analysing data. The qualitative research methodology was chosen due to its capability to establish data collection and analysis and to provide an end product which is descriptive (Haradham, 2018:17). This then is what the paper sets out to do. Furthermore, case studies will also be included in which five countries will be discussed with regards to the relationship between their governments and ICTs. These countries will be the following: Ghana, Rwanda, Egypt, Kenya and South Africa. Chanyagorn and Kungwannarongkun (2011:100) define case studies as a type of methodology that provides an in-depth investigation of a certain or a specific group of individuals, and in this study, countries. This paper will make use of five countries that were chosen as a way of representing the five subregions of Africa. Additionally, they were chosen due to each of the countries' recognition as a leading country in terms of ICT and e-governance implementation. They were however, to

an extent, chosen randomly thus not all may be the first or most recognised country within their subregion for ICT and e-governance implementation or adoption.

Conceptual Framework

Information and Communication Technology, commonly referred to as ICTs have had an impact and proceed to have an impact on the general everyday life of people's livelihoods (Singh, 2021:n.p). They exist to improve the social, political, and economic lives of people through the use of technology for communication or for the provision of information (Singh, 2021:n.p). Moreover, they improve the efficiency and speediness of distributing and communicating information globally regardless of the time zone or the distance (Aja and Chukwu, 2019:19). ICTs utilise telecommunication technologies and equipment such as satellite communication, digital technologies, teletext and the internet, amongst other tools to exercise its abilities (Aja and Chukwu, 2019:19).

Furthermore, ICTs have the ability to empower citizens' choices whilst reducing poverty and leading to the overall development of the citizens in a country, if correctly implemented (Frans and Pather, 2021:1). However, even with their number of advantages and their abilities to lead to a development in citizen participation and receptiveness, ICTs have their own disadvantages and demands in order to be successfully implemented such as the demand for internet connection (Frans and Pather, 2021:1). This determinant amongst others determine a country's ICT readiness which further determines whether a country can not only afford to but can successfully implement ICTs in governance through structural developments.

Governance versus e-governance

This section will elaborate on the definition of the term 'governance'. This will be followed by the definition of 'e-governance' and their implications.

Governance

Governance refers to the interaction between government and their stakeholders, other government institutions, the private organisations in which they are engaged in Private-Public Partnerships with, and so forth (Ysa, Albareda and Forberger, 2014:8). Ysa, Albareda and Forberger (2014:8) further note that governments are not the only actors in the process of governance, even more so, governments are not always the entities that hold the most power and authority in the process of governance and thus, do not always have the most influence. Ysa, Albareda and Forberger (2014:8) further elaborate on the role of governance in decision-making and implementation by stating that government entities collaborate with the civil society, private institutions and other government institutions through engagements when the implementation of certain policies or decisions has to occur. However, there is also Fasenfest (2010:771) who views governance as the task or activity of governing someone or a group of people. According to Fasenfest (2010:771) governance mainly occurs when decisions and processes that reflect the expectations of society are made.

Pareek and Sole (2020:8) introduce a similar definition to the one that is favoured by Fasenfest (2010:771) who views governance as the processes that have an intention to

promote and ensure transparency, accountability, equity, responsiveness, the rule of law, and so forth in the country. But, simultaneously, Pareek and sole provide an expansion of their definition of governance that then also resonates with Ysa, Albareda and Forberger's (2014:8) by stating that governance is exercised between and by a network of actors in the form of a relationship between the government of a country and its civil society, the markets, (private institutions) and the state itself through state-owned enterprises and other government departments and institutions and this is referred to as network governance (Pareek and Sole, 2014:10). However, network governance is not the only form of governance that Pareek and Sole recognise as they further introduce collaborative governance which they state that it occurs when various actors such as civil society and private institutions collaborate to improve consistency or to check and conduct oversight through engagement amongst the different actors (Pareek and Sole 2014:11).

Fukuyama (2013:3) seems to support Pareek and Sole, Fasenfest and Ysa, Albareda and Forberger by citing governance as the ability for the government to administer service delivery and to enforce their laws regardless of its governing style, meaning even whether it is democratic, autocratic, and so forth. Governance is thus viewed as the manner in which the execution of achieving the wishes set by the principals is exercised by the government and its actors (Fukuyama 2013:5). It involves decision-making to deal with problems that affect the public or are of public concern (Pandey and Risal, 2020:93).

e-Governance

e-Governance refers to the utilisation of ICTs to render support to government relations, civil society, democratic processes, government administration and public service delivery (Bannister and Connolly, 2012:4). Pandey and Risal (2020:93) further describe e-governance as an engagement between the government and the public during the decision-making process as well as the sharing of information by the government to the public. e-Governance is further described as a means of boosting the authority and abilities of the government to meet the requirements and expectations of the public in an effective manner (Pandey and Risal, 2020:94).

Pandey and Risal (2020:93-94) state that ICTs in governance can lead to a higher possibility of governance roles being achieved such as through telemedicine and distant education, amongst others. Bhuvana and Vasantha (2020:2705) introduce their view of e-governance which they define as the utilisation of ICTs to improve the interaction and communication between the government and its stakeholders.

Bhuvana and Vasantha (2020:2705) further introduce four different e-government interactions in government which include the Government to Government (G2G) interaction, the Government to Citizen (G2C), the Government to Business (G2B) and the Government to Employee (G2E). G2G refers to the electronic communication of information between government and its departments or government institutions such as parastatals (Bhuvana and Vasantha, 2020:2707). G2C, however, refers to the delivering of information and services online to the citizens of the country (Bhuvana and Vasantha, 2020:2707). Furthermore, G2B refers to the interaction between the government and business sectors online in such a manner that the government gains access to online services and information (Bhuvana and Vasantha, 2020:2708). Lastly, G2E occurs through the availability of online facilities that allow employees to apply for leave online, get access to their payroll, and so forth (Bhuvana and Vasantha, 2020:2708).

Literature on ICTS and Governance Globally and in Africa

This section will examine a number of literatures to define and acknowledge the literature related to this topic that was done before this research. This will begin by providing the manner in which ICTs are utilised globally will be discussed. This will be followed by the provision of tools or mechanisms that determine the readiness of ICTs within countries with the assistance of literature that elaborate on what ICTs require in order to be successfully active in governance. Lastly, the benefits and disadvantages of ICTs will be examined.

The utilisation of ICTs in governance globally

Good governance is viewed as the key to success for many countries, however, in this era of digital governance, technology through ICTs is utilised to reduce the cost of the traditional manner of governance and the drawbacks in order to foster good governance (Pandey and Risal, 2020:93). Through ICTs, government processes and the communication and interaction with citizens improves, which contributes positively to good governance (Pandey and Risal, 2020:95). Through the usage of e-administration, and the interaction and communication with citizens through e-services, good governance further improves as well as citizenry through their participation (Pandey and Risal, 2020:95).

Costs and drawbacks can be reduced in governance whilst improving public administrations through the exclusion of unnecessary human capital during the delivery of public services (Mukherjee and Roy, 2016:276). Through ICTs, the government introduces two versions of communication in their websites- these include one-way communication and two-way communication (Mukherjee and Roy, 2016:276). One way communication occurs when government websites only allow citizens to view the information on the websites without access to commenting or adding information or input, whereas with a two-way communication website, the government allows for the citizens to respond or give feedback (Mukherjee and Roy, 2016:276). Examples of one-way communication include websites that give access to view policies, laws, government gazettes and downloadable forms, whereas two-way communication websites are websites that allow citizens to comment or fill in questionnaires and documents such as government booking platforms or election registration websites (Mukherjee and Roy, 2016:276).

To elaborate on the definition of good governance, first and foremost, it has been stated by Gisselquist (2012:1) that good governance results in growth and development when successfully achieved in countries. It is an objective that some scholars have argued for and have advised to be implemented in the centre of development policies as it promises the possibility of eradicating poverty and improving development (Gisselquist, 2012:1). According to Gisselquist (2012:6), governance is referred to as good and democratic when it is transparent in its processes. Furthermore, good governance can be defined as a stage of governance in which public service is efficient, administration is transparent and accountable to the civil society and the judicial system is unbiased, honest and reliable (Gisselquist, 2021:10).

Challenges for the utilisation of ICTs in governance

Although the introduction of ICTs is able to introduce efficiency in governments and the way that they deliver public services, it is encountered with challenges. Khan (2018:137-138) highlights that e-governance has allowed for the to be a reduction in time for the

provision of services which benefits clients, however this places public administrators in a slightly more uncomfortable position as they are encountered with constant pressure. Pressure which some public administrators are not prepared for (khan, 2018:138), and are therefore not always able to respond adequately to.

Dike (2019:191) additionally, notes that the threat of there being a growing digital divide persists as it may lead to the exclusion of others as they may not be able to access the government services which are offered online (Dike, 2019:191). Khan (2018:139) notes that everyone in a country should be able to access the internet. This allows for everyone to benefit from the services that will be offered. However, developing countries, most especially, are encountered with a situation whereby people within their borders do not have access to the internet (Khan, 2018:139), and are therefore excluded from receiving certain services.

The issue of the cost of the services or the access to the services is especially prevalent in developing countries and further exacerbates the digital divide as many in developing countries live below the poverty line (Dike, 2019:191). Lastly, the threat to privacy and security may be regarded as a prominent issue and an overall priority when implementing ICTs. Dike (2019:192) notes that due to there being personal sensitive data, establishing security access policies is a necessary albeit complex process as there are legal considerations. Khan (2018:44) argues that this is due to the sensitivity of people's information which would result in severe consequences should it ever be leaked. Therefore any unclear security standards and protocols, the development of projects which require and make use of sensitive information such as the income levels of clients, may be hindered (Dike, 2019:191), therefore affecting the overall effectiveness and efficiency of service delivery.

Analysis

The introduction of ICTs in governments and government systems have led to a great deal of improvements such as improving the communication of the government and its citizens, and the improvement in the time and costs of offering services (Mukherjee and Roy, 2016:276). There are, however, challenges with introducing the ICTs such as the costs that users of these resources incur, costs which those who live below the poverty line may not be able to cover. In turn this leads to many being excluded from accessing the online resources. Additionally, not all public systems and public servants were prepared and therefore are able to accommodate the larger influx of demands/clients within a shorter time frame. As Khan (2018:138) highlights, this brings on pressure which the public administrators might not be able to meet, which in turn will lead to public frustrations as services are not delivered in a timely manner. These challenges are those which must be gradually addressed in order to maintain the efficiency of service delivery. This may also in turn affect the public's trust in ICTs which will affect how they react towards their implementation. Especially in the case whereby their implementation is met with resistance.

Determinants of ICT readiness

According to Aja and Chukwu (2019:19) ICTs have a number of components which they cover and require in order to be successfully implemented and to function. These components include internet services, telecommunication equipment and information technology equipment (Aja and Chukwu, 2019:19). This section will examine and elaborate on the determinants of a country's ICT readiness. These determinants refer to the tools

or mechanisms that need to be put in place in a country in order for ICTs to not only be successfully implemented, but to successfully run in the country.

Governments adopt ICTs in their systems of governance to improve internal efficiencies within their countries (Aja and Chukwu, 2019:21). The authors further point to this adoption as being the reason behind the growth that was recorded in ICT usage specifically in the number of cell phone users and the number of internet users in Africa. They further noted that emailing has grown to be more common as it showcased lower costs and allowed for families and friends to remain in contact regardless of where they are in the world (Aja and Chukwu, 2019:21). However, even with these recorded growths, Aja and Chukwu (2019:21) recognise that Africa's communication infrastructure is not yet at a level that both rural and urban areas of the countries are ICT ready. Aja and Chukwu (2019:22) introduce the problem associated with some countries having underdeveloped rural areas which thus, slows down the progress towards a country being ICT ready, especially being ICT ready without leaving certain regions behind. This issue of underdeveloped rural areas is also recognised by Corrigan (2020:7) who identifies South Africa as one of the countries which is plagued.

Biswas (2023) outlines the need for internet access and connection by stating that citizens through e-governance can utilise ICTs to query, send feedback and report to the government on issues that they disapprove of from their homes. Internet connection is highly considered due to the large role it plays in citizens having the ability to access government websites. This is due to the requirement of data that is needed to access government websites which are available through online platforms or applications that cannot be accessed without a PC or smartphone and a data or Wi-Fi connection. Due to the requirement for the internet, Corrigan (2020:4) reports that Africa is not ICT ready because of its costly data rates. This is due to the problem of the pricey nature of Wi-Fi and data connectivity in some countries in the continent, which limits access to data and connectivity to a certain group of people who can afford it.

Benefits and disadvantages of ICTs/e-Governance

This section will elaborate on the benefits and disadvantages of using ICTs or/and e-Governance.

Benefits of ICTs in governance

According to Zaied, Ali & El-Ghareeb (2017:70) implementing ICTs in government activities improves their efficiency, enhances resource management and further improves the accountability of those tasked with those government activities. Furthermore, the cost that comes with the processing or administering of certain activities or services is reduced due to the activities or services being administered online for instance, the registering of people for elections (Zaied et.al., 2017:70). Moreover, Zaied et.al. (2017:71) states that services are more efficient through the implementation of ICTs in government activities. Cost is reduced due to the lowering need for staff who need to be hired to manually input or register voters because voters can register themselves online.

ICTs in governance improve infrastructures in such a way that the government can communicate with its stakeholders, such as the citizens of the country to gain feedback on service delivery so they can improve (Maremi, Thulare and Herselman, 2022:5). Moreover,

ICTs in governance allow for more accurate decision-making as data analysis is possible from online data (Maremi et.al. 2022:5). It also encourages cooperation between government and other institutions through G2C, G2G, G2B and G2E because communication channels are created to make communication easier and more affordable rather than having to travel to a different country or even a different city for work or feedback (Maremi et.al. 2022:5). However, as many strategies and policies which have advantages, there are also disadvantages. In this case the disadvantages which governments and the society encounter when ICTs are implemented in governance will be highlighted in the following subheading.

Disadvantages of ICTs in governance

Due to its reliability on internet or data connectivity Corrigan (2020:4) notes the problem of data as a limitation of ICTs. Corrigan (2020:4) stipulates that in countries where data is expensive or where certain areas do not have access to data, they cannot partake in e-governance practices such as e-voting or e-filing. Furthermore, with infrastructure being a requirement, some countries cannot afford the costs of having to build or provide these infrastructures because they are still developing which hinders the application of ICTs in the country, and more specifically, in government practices.

Principles of Governance

This section will elaborate on some of the principles that need to be satisfied in order for countries to recognise themselves as countries that exhibit good governance. These principles will be examined in this section. Additionally, the relationship between ICTs and the principles of good governance will be established. This will be achieved through an analysis of each principle and how they can include ICTs in order to make the attainment of good governance more possible. This will place the countries at a position where they not only exhibit good governance but they can be classified as exhibiting e-governance.

Participation

For participation to occur, the government must be transparent so the citizens can express their wills in the form of governance (Madhu, 2011:4). The citizens should be able to demand transparency as they are most affected by the decisions of the government and this can be achieved through participation such as when voting during government elections (Madhu, 2011:4). However, participation is only adequate if the citizens of the country are aware of the occurrences in the country so they can make well-informed decisions such as in the case of government elections (Madhu, 2011:4). It can be fostered and is fostered in countries through the releases of government gazettes on their websites that keep citizens well-informed on government decisions such as in programmes that the government will be investing in. Through transparency, participation can be fostered in such a manner that it is not only in the form of transparency and information, but also in the manner of voting or volunteering, as aforementioned. Due to citizens exercising participation through voting, e-voting can be applied to make voting practices easier for both the government and the citizens who can vote from their homes instead of having to head out and queue in long queues at physical voting stations (Longley, 2021). (Longley, 2021) states that this is because participation is vital because it can influence public policy.

Transparency

Transparency strengthens citizenry because transparency refers to the openness of allowing citizens to know of systems that they may need to use or that will inform them of information that they need to know (Madhu, 2011:5). Transparency can be exercised by the government through the use of government gazettes that inform the general public on information that may affect them. These are and can be shared on government websites to ensure citizens that the information is truthful and valid.

Responsiveness

Responsiveness refers to the ability of the government to deliver certain services to the public at a specific time (Biswas, 2023). A benefit of ICTs is their ability to improve public service delivery to ensure that service delivery is both effective and efficient (Zaied et.al., 2017:70). Through the utilisation of ICTs to collect data and analyse it, the government can make use of ICTs to deliver the services needed on time. Data analysis systems will lessen the duration it would take to analyse the data manually and with the assistance of ICTs, the government can respond to the citizens' needs efficiently.

Effectiveness and Efficiency

Effectiveness and efficiency refers to the ability for the government to meet the needs of society at the right time with the right services (Biswas, 2023). Efficiency and effectiveness can be approached and achieved through the utilisation of ICTs to collect data on the needs of people in order to deliver the right services to them at the time they need them.

Accountability

When good governance has been achieved or when a government wishes to achieve good governance in a state, one of its requirements is to be accountable to the citizens of the country and their well-being (Madhu, 2011:6). Accountability can also be ensured through transparency. This can be exercised through the sharing of government projects and programmes and their resource allocations so the public knows where the government funds are going. The provision of a breakdown budget and an update on the projects and programmes the government is undertaking along with the parties involved, for instance the departments involved, will allow the public to see who is in control of what as well as the number of resources allocated to them. This allows the programme or project manager to be accountable to the public as well as the government departments cooperating for the programme or project.

Country Case Studies Analysis

Ghana

According to the International Trade Administration (2023) Ghana's ICT industry is continuously growing as the industry contributes to the economic growth of the country. The country's investments in ICTs has led to a market value of around 400 million Dollars in digital infrastructure such as data centres (International Trade Administration, 2023). Ghana has software, cyber security and training and other services with a worth of over 200 million Dollars (International Trade Administration, 2023).

The country has further recorded a high rate of mobile users in its population which include data usage and penetration of over 70% (International Trade Administration, 2023). Ghana is reportedly one of the leading countries in Africa in terms of its implementation of Information and Communication Technologies through its high implementation of data and its continuous investments in ICTs (International Trade Administration, 2023). However, just as Aja and Chukwu (2019:22) have mentioned, developing countries including African countries have a common problem of developed urban areas and underdeveloped rural areas with regards to technology infrastructure (International Trade Administration, 2023). They further identify this problem in Ghana as they state that even as data is available in Ghana, it is at such a high cost that it is almost restrictive to consumers and is mostly used in urban areas rather than rural areas. However, according to the International Trade Administration, (2023) the government of Ghana recognises this problem and has encouraged the implementation of fibre-optic networks in order to make data accessible to all its citizens and not just those in urban areas. This aligns with their objective to utilise ICTs to improve service delivery and to improve online education in its service delivery whilst also fostering and supporting a cashless society (International Trade Administration, 2023).

According to Tchao, Keelson, Aggor, and Amankwa, (2017:625) Ghana has not just implemented ICTs, but it has an ICT policy that has been put in place and states how the government aims to utilise ICTs in each of its sectors. However, its main objective through the usage of ICTs is to improve the quality of life of its people by modernising their economy to foster social, economic and sustainable development (Tchao et.al., 2017:625). The policy also aims to foster intra and inter communication between government institutions through the use of ICTs (Tchao et.al., 2017:625). Furthermore, the government aims to improve public administration and service delivery (Tchao et.al., 2017:625). They view ICTs as a mechanism that can improve their service delivery practices through improving their proficiencies while also fostering improvement in other governance procedures and structures (Tchao et.al., 2017:625). Tchao et.al (2017:625) recognises that since the approval of its ICT policy, Ghana has indeed shown an improvement in their ICT infrastructure such as in the areas of ICT business development and training.

According to the Ghana ICT for Accelerated Development (ICT4AD) Policy (2003:8) the policy aims to improve the efficiency of productivity of the agricultural sector through the implementation of ICTs. Furthermore, it aims to improve and promote its education sector through ICTs in such a way that all levels of the education sector are improved in service delivery with ICTs facilitating the growth. The delivery of health and social services are other areas that the policy aims to develop with regards to its service delivery (Ghana ICT for Accelerated Development (ICT4AD) Policy, 2003:9). Overall, the policy aims to improve numerous sectors and areas including government and governance (Ghana ICT for Accelerated Development (ICT4AD) Policy, 2003:9).

The implications of the implementation of ICTs

The digitalisation of basic services in Ghana has led to an inclusion deficit as some parts of society struggle to access these services due to the unavailability of internet services (Kpessa-Whyte and Dzisah, 2022:n.p). The cost of data and internet devices alongside income inequalities has only heightened the economic divide in the country (Kpessa-Whyte and Dzisah, 2022:n.p). All these challenges have caused the digitisation initiatives that are funded by the World Bank to be stalled (Kpessa-Whyte and Dzisah, 2022:n.p).

However, through the implementation of ICTs in sectors such as the education sector, the government of Ghana with assistance from the World Bank, free WI-FI is offered in thirteen universities (Kpessa-Whyte and Dzisah, 2022:26). This has allowed for the possibility of e-learning, which occurs when students are taught online on virtual platforms (Kpessa-Whyte and Dzisah, 2022:26). Furthermore, since introducing a computerised system and eliminating paperwork at ports, the Ghana Revenue Authority has reported a growth in their income levels (Kpessa-Whyte and Dzisah, 2022:30). Moreover, following the introduction of the fully digitalised drivers licence processes, there was an increased demand for these services by the public which highlighted an improvement in efficiency (Kpessa-Whyte and Dzisah, 2022:30).

Rwanda

According to the Rwanda Development Board (2023) Rwanda has allocated some of its budget from its GDP to ICT development. The Rwanda Development Board (2023) states that Rwanda continues to be one of the fastest growing countries in the African continent with regards to its ICTs. According to the Republic of Rwanda Ministry of ICT and Innovation (2019:2) 2019 saw an increase in their number of internet users as over 7 million people subscribed to the internet with more than 9 million mobile-cellular subscriptions being recorded in the same year. The strategic plan of the Smart Rwanda Master Plan of 2005 has an objective for Rwanda to have a knowledge-based economy which would be achieved through the digital transformation of seven of Rwanda's sectors which include the Health Sector, the Governance sector, the Trade and Industry Sector, the Agriculture Sector and even the Finance Sector (Republic of Rwanda Ministry of ICT and Innovation, 2019:2).

According to the Ministry of ICT and Innovation (2019:2) Rwanda has seen ICT policies and strategies acting as a support structure for economic growth that then spilled into the different sectors in the country through increasing their productivity, improving their public services and further creating jobs in the economy.

According to the Republic of Rwanda Ministry of ICT and Innovation (2019:4), ICT implementation in Rwanda's finance sector improved in such a manner that their financial services delivery has improved. The Republic of Rwanda Ministry of ICT and Innovation (2019:4) reported that Rwandans could administer mobile payment subscriptions including online tax payments to the government. This improved the efficiency and effectiveness of the sector through improving transactions and further improved transparency according to the (Republic of Rwanda Ministry of ICT and Innovation, 2019:4-5) which is a characteristic of good governance.

In the sector of governance, new technologies facilitated a reduction of administrative costs as well as citizen's access to basic needs (Republic of Rwanda Ministry of ICT and Innovation, 2019:8). The relationship between the government and the private sector improved as ICT contributed to the efficiency gains due to the strengthening of the ICT infrastructure (Republic of Rwanda Ministry of ICT and Innovation, 2019:8). Additionally, the health sector saw benefits from the utilisation of ICTs as citizens started accessing health services via their cell phones in the form of e-health (Republic of Rwanda Ministry of ICT and Innovation, 2019:13).

The implications of the implementation of ICTs

Through Rwanda's implementation of ICTs in the health sector, Rwanda has improved its service delivery in the form of e-health (Ben-Ari, 2014). e-Health has assisted in increasing the access to health for its citizens (Ben-Ari, 2014). Furthermore, the good governance principle of transparency has been made achievable through the implementation of e-government in the form of e-services such as digitalised applications for driver's licences and ID cards (Ben-Ari, 2014). Through the Anti-Corruption Unit of the Rwanda Revenue Authority (RRA), the tax and import duties are monitored to ensure that public officials are not involved in procurement processes and tenders (Ben-Ari, 2014).

Egypt

Egypt Today staff (2022)'s states that it had been announced that the Ministry of Planning & Economic Development would be investing over 2 billion Dollars in the country's ICT sector. This would align with their ICT Strategy of 2030 which states that one of the government's objectives is to invest into training programmes, digital government infrastructure and services (International Trade Administration, 2022). The strategy elaborates on the government's plans to utilise ICTs to empower and boost their economic growth (International Trade Administration, 2022). However, the economy is not the only area in which the strategy states that the government aims to implement ICTs in. The strategy also includes other areas of government for ICT implementation which include healthcare services, education and other government services (International Trade Administration, 2022).

The Ministry of Communication and Information Technology stipulates that their objective is for Egypt to have a digital future hence they aim to train over 90 000 Egyptians to develop the knowledge and skills on ICTs in areas that are demanded in the market such as data analysis and web design (International Trade Administration, 2022). To that end the ministry has a Digital Egypt Project that aims to place government entities at a level where they all have access to fibre-optic cable connections (International Trade Administration, 2022).

In the year 2020, the government of Egypt announced a plan to improve infrastructure in the country which would increase the speed of the internet (International Trade Administration, 2022). The government's plan came to fruition when the speed of the internet showed an increase of 33.1Mbps between the years 2019 and 2021 (International Trade Administration, 2022).

Hassan (2022:333) introduces a number of e-services available on the government portal in Egypt. These include an enquiry section for utility bills, train schedule services, document applications such as permit renewals and traffic violations enquiries, amongst other services (Hassan, 2022:333).

The implications of the implementation of ICTs

Hassan (2023) introduces security as a challenge in Egypt following the introduction of the ICT sector. This is followed by examination of the financial sector that identifies a large number of central banks that do not have a national cyber strategy (Hassan, 2023). However, even with these challenges, Egypt's telecommunication industry is the leading industry in

the African continent (Economy Middle East, 2023). Over 90 percent of households in the country have been equipped with fibre technology (Economy Middle East, 2023).

Kenya

Kenya has an ICT policy put in place that aims to place the development of ICT infrastructure at a dominant position (Ministry of Information, Communications and Technology, Kenya, 2019:4). Through the implementation of ICTs, the research, logistic systems and sourcing capabilities of parastatals and private companies are expected to increase (Ministry of Information, Communications and Technology, Kenya, 2019:4). Through the utilisation of ICTs, the policy stipulates that it aims to improve Kenya's market in such a manner that it provides a secure income flow in the country in order to support and improve the standard of living of the citizens of the country (Ministry of Information, Communications and Technology, Kenya, 2019:5).

The policy states that the government of Kenya aims to ensure that all their services are available online as e-services and are accessible to all its Kenyans when they need or want to use them (Ministry of Information, Communications and Technology, Kenya, 2019:8). Furthermore, the policy aims to ensure that government services are available to Kenyans over their cell phones wherever they may be and to ensure that tender practices and procurements are published electronically and are available for all Kenyans to see (Ministry of Information, Communications and Technology, Kenya, 2019:8). Moreover, the policy has an objective to ensure that all Kenyans' information is well stored and that their privacy is continuously well protected (Ministry of Information, Communications and Technology, Kenya, 2019:8). Through ICTs, the accountability and transparency of revenue collection are required by the policy (Ministry of Information, Communications and Technology, Kenya, 2019:8).

In 2023, the government of Kenya has allocated over 100 million Dollars from their 2023/2024 budget to fund the ICT sector (ITWeb reporter, 2023). This has been exercised with the intention of improving competitiveness and productivity in the country through digitalisation (ITWeb reporter, 2023). According to the International Trade Administration (2022) Kenya is the leading ICT hub in the East of Africa due to its connectivity and its ICT infrastructure, mobile banking and so forth (International Trade Administration, 2022).

The implications of the implementation of ICTs

Through the implementation of ICTs in Kenya, the service delivery and trade relations have improved (Lilako, 2022). This has allowed for an improvement in the access to information which continues to improve G2B and G2C relations in the country (Lilako, 2022). Kenya has employed strategies that allow for data to be more affordable as well as fibre through the improvement of internet services (Lilako, 2022). This has assisted in growing the e-commerce sector placing Kenya in the top rankings in Africa (Lilako, 2022). Efficiency in service delivery can be highlighted as a result of the employment of ICTs in Kenya which uplifts the country in good governance principles (Lilako, 2022).

South Africa

The government of South Africa realised the need for ICT implementation and recently, e-government as a means of improving service delivery in the country (Naidoo, 2012:62).

In order to prepare for this transformation, an investment in ICTs has been steadily growing in the country (Naidoo, 2012:62). The government introduced the Batho Pele Gateway which is a government portal that shares information on policies, legislature, and government services in all eleven of the official South African languages (Naidoo, 2012:63).

According to the International Trade Administration (2022) South Africa has one of the largest ICT markets in the continent of Africa. The year 2022 saw an investment of over 120 million Dollars towards the modernisation of ICTs in the country (SA News, 2022). Business Tech has further shown that South Africa has introduced e-governance into its departments through the implementation of ICTs. These departments include the department of home affairs which has introduced its online booking website where people can make appointments to make their IDs and Passports and can further make an appointment to collect their documents (Staff Writer, 2021). Kruger (2022) further elaborates on another e-service that was introduced in 2022, but this service lies in the Department of Roads and Transport. Its new e-service allows South Africans to book to take their learner's licences, driver's licences and to book renewals (Kruger, 2022).

What makes these e-services a form of e-governance is not just how they improve government service delivery, but also their ability to allow for communication between the public and the government. For instance, through the home affairs online booking website, the applicant (citizen) books their appointment which is communicated to the government through setting a booking in the system of the home affairs office the applicant (citizen) will be going to. When the applicant, when their documentation has been sorted after heading to the office, the applicant receives an SMS to inform them that their documents are ready for collection.

The implications of the implementation of ICTs

As South Africa introduces ICTs in government and governance, the country faces challenges with funding for ICT infrastructure (Rizvi, 2023). A solution that is suggested is an investment in a relationship with private companies in order to establish public-private partnerships that will assist in investing into the infrastructure required for the implementation of ICTs (Rizvi, 2023). Furthermore, an incorporation of online engagements in the form of remote working has assisted in improving the economy and health care systems in the country (Main, 2022).

Discussion

This research has elaborated on the common reasons for the utilisation of ICTs in government practices. The most common being that governments wish to improve the effectiveness and efficiency of their service delivery and administrative work through the implementation of ICTs. This is due to the ability of ICTs to foster communication channels between the public and its government which allows the citizens to be involved in decision-making. The research has highlighted how widely spread and utilised ICTs are in countries, so much so that governments see the need to invest into them as well.

These applications of ICTs have highlighted mechanisms that not only allow government service delivery to be implemented efficiently and effectively, but they have also highlighted how ICTs allow citizens to do things related to their basic needs on their own as well as to

participate in society easily such as in contacting SARs or enquiring on utility bills. Some communication is one sided however in those types of channels an adequate amount of information is available. Some of the circumstances whereby this can be observed is when government gazettes are utilised.

Furthermore, the research has elaborated on how ICTs can be utilised by countries to improve the livelihoods of citizens whilst also reducing costs on service delivery, amongst other government tasks. For instance, through the use of ICTs, citizens can get in contact with SARs via the cell phone to enquire on tax related issues, which leads to a reduction in costs for them as they do not have to physically go to a SARs office and can deal with their affairs in the safe confines of their homes. Furthermore, this research has highlighted how ICTs can bring governments and their stakeholders together- and this is without being in the same physical vicinity as the stakeholder which reduces the costs for both the government and its stakeholders as no one has to incur any travel costs.

However, even with all their benefits, one can deduce that ICTs are somewhat demanding in nature. This is due to their dependency on internet connectivity which is not always easily accessible or available in all countries. For instance, Harrisberg and Mensah (2022) elaborate on the costliness of data in Sub-Saharan Africa. This makes it difficult for the citizens of this region to afford much data, hence, this makes the ICT readiness of a country or region questionable because without data, these citizens cannot utilise e-services nor can they get access to government information. These citizens do not benefit from e-governance whilst others who can afford data and internet connectivity do.

Furthermore, as aforementioned, some countries are not equally developed in the sense that ICTs or internet connectivity is either too expensive or is simply not available in those areas, such as in rural areas. In such cases, there is no equality in the country as not everyone is benefiting in the same way, rather, some areas of the country are neglected. In such cases, ICT infrastructure is what is lacking and thus needs to be put in place. Countries have shown that they see the importance of ICTs and thus continue to invest into bettering them, however, these investments only lead to existing infrastructure being maintained or certain cities receiving new infrastructure as opposed to rural areas.

Through a comparative analysis on the challenges encountered by Egypt, Ghana and South Africa, it can be deduced that challenges such as security play a role in ICT implementation. This can be surveyed in Egypt where the implementation of ICTs is successful, however, security is a challenge which occurs in some cases. Ghana, however, has highlighted the persisting challenge of the digital divide whereby some areas are more digitally advanced than others. Moreover, Ghana also highlights issues of data costs as a hindrance to the smooth implementation of ICT technology which are common challenges in the adoption of technology in most cases as aforementioned in the paper. Lastly, South Africa identifies infrastructure funding as a challenge in which governments cannot afford to invest in the infrastructure required to successfully implement ICTs. However, through this challenge, a solution has also been highlighted which is a need for exterior investments through Public-Private Partnerships. This suggestion has shown that e-governance might just require public-private partnerships in order for it to be successfully implemented.

Conclusion and Recommendations

The research has elaborated on the emergence of ICTs and how they have not only grown, but how they continue to influence individuals including government institutions. The research further highlights the importance of Information and Communication Technologies for not only communication, but for convenience. Through this paper, it can be seen that government's include ICTs into their styles of government to not only keep up with the rest of the world, but to improve the livelihoods of the people of their country. ICTs exist in governance to better the lives of the people through allowing for e-services so the people of that country do not have to be affected by costs of travelling to a government office to rectify their affairs. The research has also shown that a common hindrance to ICT applications in some parts of the world such as Sub-Saharan Africa is the consistent requirement for internet connectivity in order for the ICTs to function. Lack of proper infrastructures in certain areas of a country and high costs for data do not stop the applications of ICTs in the country, but the research has highlighted that this does cause an unequal growth in a country and hinders the overall ICT application of a country.

The paper has highlighted that ICTs allow for participation by citizens through e-voting and above all else, through an involvement of stakeholders in decision-making. This leads to the recommendations of the paper to ensure that countries are not only ICT ready, but also apply ICTs well. In countries where data is expensive, governments should consider a subsidy on data for certain networks - such as their own network such as South Africa with its Telkom. Additionally, they should make government websites free to the public, another initiative taken by South Africa, which allows many South Africans to have access to government information and opportunities which might lead to the empowerment of citizens. Secondly, in order to ensure that there is no negligence of areas or people and to ensure that everyone in a country benefits from ICTs, before ICT infrastructure is updated, governments should install ICT infrastructure throughout the country, before updating the infrastructure in one section or area. Governments should continuously request feedback from the service-users to ensure that services are smoothly run such as in the case of the post office or even a clinic. Continuous feedback will keep the government informed about the performance of its institutions so that if complaints are received, governments can intervene before problems become so large that they are too costly to solve.

Furthermore, governments should invest in programmes in school and outside of school that will inform and teach citizens on how to utilise ICTs correctly and how to utilise government online programmes, applications and websites to access online government services. This is with the aim of improving the ICT readiness of citizens through ensuring that the citizens are well-educated in ICT usage. Lastly, the government should invest in cybersecurity as much as they do in ICTs to protect the information of citizens that is stored on the servers and to protect their own data from being hacked by cyber criminals. Kenya introduced the National Cybersecurity Strategy 2014 in June 2014, when they had a cybersecurity readiness score of 0.412 (Global Cybersecurity Index, 2014:n.p). However, there was an improvement to 0.57 in 2017 (Global Cybersecurity Index, 201726), and an immense improvement to a score of 81.7 in 2020 (Global Cybersecurity Index, 2020:25). These improvements could be regarded to be the result of the implementation of the strategy which made cybersecurity a priority.

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The Integration of Technology into Public Ministries

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Abstract

Multiple authors have come to view Africa as a victim of the fourth industrial revolution (4IR). It is viewed as a continent which has not been able to take part as one of the driving forces of technological advancement. This perspective came into realisation upon the dawn of the fourth industrial revolution. This is a result of the continent's state during the first, second, and third industrial revolutions where Africa's role had been of a more minimal nature. This assumption is however not true when considering how multiple countries in Africa have embraced and entrenched technology into the daily operations of their government institutions during the 4IR. To this end, the paper aims to highlight whether there is an improvement in the e-government of African countries. This would in turn mean that they are taking advantage of the 4IR. Following this, it will further indicate the ability of the African continent's readiness for this revolution. It will do so by providing an observation of the development that technology has fostered within service delivery using five African states as case studies namely South Africa, Mauritius, Nigeria, Rwanda, and Tunisia. It will analyse the transformations that have occurred from 2000 to 2022, and whether there is an increase in the overall quality of the services provided. The paper uses secondary sources as a mechanism to analyse the impact that the introduction of technology has had on government systems in the five African countries. The main focus will be on the ministries of home affairs, finance, education, transport, and health. The paper will analyse how the incorporation of technology has improved the service delivery of these departments and departments that are of similar nature in the above-mentioned countries.

Introduction

Governments worldwide share a common objective which is to foster better ways to govern their states. To this end, there has been an adoption of numerous methods including the implementation of digital technologies. These growing implementations within African states has led to the current growth in the implementation of the Digital Transformation

method (Alenezi, 2022:1). This strategic method aims to improve service delivery and customer experience through the implementation of e-government in government systems (Alenezi, 2022:1). Mechanisms such as Information and Communication Technologies (ICTs) have also been implemented in order to foster communication between the government of a country and its people. This is because governments aim to create and foster relations with their stakeholders, which involves the general public (Alenezi, 2022:1). Through the information collected from ICTs, e-government can be further applied to inform government decisions with regard to facilities that are utilised by the Republic (Alenezi, 2022:2). Therefore, this paper aims to analyse the effectiveness of Africa's ministries regarding its implementation and integration of e-government mechanisms. This will be achieved by firstly providing a methodology section to introduce the research methods that will be utilised for the paper. Secondly, it will provide a conceptual framework that will elaborate on the concepts and their relevance to the paper. This will be followed by a brief outline of Africa's digital experience in the first three revolutions. Thereafter, a literature review will be provided to elaborate on literature that has been explored with regard to the topic in the past. Furthermore, a case study analysis will provide an analysis of five African countries that represent the five regions of the continent. The case study analysis will examine the effectiveness of the ministries in the five countries regarding their e-government integration mechanisms. A conclusion will summarise the key aspects of the paper along with the provision of recommendations that will suggest ways to better the implementation and integration of e-government in African ministries.

Methodology

The study makes use of the qualitative research method that Lim (2010:19) defines as a method that observes and compares case studies in order to arrive at a certain conclusion. Haradhan (2018:20) notes that an advantage of qualitative research is its ability to establish research frameworks with the use of available data, however, he further notes that its disadvantage is that it does not utilise statistical data sets. The use of journals, books, and document analysis from ResearchGate, Google Scholar and other academic databases will be utilised as a means of reference and of gathering data for the study. Additionally, the use of case study analysis will be adopted as the paper will track the transformation of public ministries as they have continued to integrate ICTs into their institutions from 2000 to 2022. The paper focuses on this period because from the year 2000-2010, e-Governance initiatives were launched in African countries (Rarhoui, 2024:6). The paper continues into 2022 to accommodate the current digital evolutions in the African continent. The case study countries that will be analysed will be South Africa, Mauritius, Nigeria, Rwanda, and Tunisia. These countries in particular were chosen based on a sense of providing regional representation of what e-governments look like across the continent in the respective regions.

Currently, there seems to be a debate about Africa's readiness in its totality for the 4IR which it finds itself being a participant of. Most literature, currently, highlights the lack of proper infrastructure that is needed in order to successfully integrate technology into the continent by scholars such as Kuzub (2023), Kayembe and Nel (2019:79), and African Development Bank (2019:7). The lack of necessary infrastructure is viewed as the hindrance to the successful adaptation of technology by African countries.

The ministries that will be utilised in this paper they commonly shared growth within the African continent (Vota, 2024). Countries such as Benin have adopted e-government in their Education and Transport industries where they applied e-Services such as electronic driver's licence exams and the publication of their national exam results. Kenya, on the other hand, also explores e-Services such as the online registration of birth and marriage certificates and the online application for driver's licences (Vota, 2024). Rwanda has introduced a payment engine known as IremboGov as well as e-Services that allow for the application of birth certificates and driver's licences online (Vota, 2024). Lastly, there is South Africa, which has implemented immigration control, passport registration, pension payment and bank verification that is linked to home affairs (Vota, 2024). These countries all share an improvement in similar ministries such as the health, finance, and home affairs ministries thus, these are the ministries that will be analysed in the paper.

Conceptual and Theoretical Framework

The paper perceives and adopts the definition of what governments are that is provided by Heywood (2019:110), which states that the government refers to the institutions that make legally binding decisions in a society (Heywood, 2019:110). Furthermore, it defines governments as institutions which have the authority to govern within a country (Fasenfest, 2010:771). This idea of what a government is can be regarded as the traditional type of government. e-government, however, refers to the integration of the Information and Communication Technologies into government systems as a means of enhancing service delivery (Kolachalam, 2012:2). This new definition is also referred to as digital government. The study also notes Terrance's (2023:190) argument that even though e-government and e-governance are used interchangeably, they have different decisions. Grönlund and Horan (2005:713) indicate that this interchangeability is due to the two belonging to what is known as the e-Gov field.

E-Government

E-government, however, observes how government information from the national and local spheres is delivered to the overall society, businesses, and other government organisations using technological means (Nokele and Mukonza, 2021:102). It is expected to increase government's efficiency in the aspects of service delivery, improvements in citizen participation, and an increase in government trust from the society (Ntulo and Otike, 2013:1). Furthermore, e-government allows for the government to communicate information to citizens, businesses, and other government agencies through the internet (Rarhoui, 2024:3). ICTs are applied in government operations in order to reduce financial costs whilst improving workflows and processes between government agencies (Rarhoui, 2024:3).

e-Governance

e-Governance is defined as the technology induced services by the government in order to establish and facilitate the transformational relation between themselves and society (Bannister and Connolly, 2012:10). Terrance (2023:191) simplifies e-Governance as being concerned with the way in which ICTs are used in order to design policies and during the decision-making process. Nokele and Mukonza (2021:102) highlights that e-Governance focuses on the allocation, the administration, and the management of resources in an institution.

E-Government and E-Governance

According to Hafkin (2009:2), "e-governance is the outcome of e-government done well". The adequate establishment and implementation processes of e-government and e-governance is expected to bring about more efficiency in the public domain as noted by Nokele and Mukonza (2021:103). E-governance can be utilised to assist governments in the process of reinventing themselves and building a closer relationship with their citizens (Hafkin, 2009:2). Without e-Governance, e-government would take the form of a common business (Hafkin, 2009:2).

E-Government applications

There are three government applications namely, government to government (G2G), government to citizen (G2C), and government to business (G2B). Government to government refers to the relationship between two government agencies (Hamza, Sehl, Egide and Diane, 2011:285). A successfully implemented G2G has the required resources for collaboration ready with the intention of providing the required services for the citizens of a country (Hamza et al. 2011:285). Government to citizen refers to the shift from an administrative approach to a user-centric one that emphasises a service-oriented state (Pappa and Stergioulas, 2006:1). Additionally, government to business (G2B) involves e-Services which aim to ensure that all services required by the private sector such as tax payments, the registration of business information, and licence renewals are conveniently available when required (Stančić, Ivanjko, & Garic, 2007:3).

Information and Communication Technology (ICTs)

Information and Communication Technologies (ICTs) refer to the utilisation of telecommunication technologies such as computers and cell phones for the provision of information (Ratheeswari, 2018:45). E-government utilises ICTs as a means of increasing the distribution of information to society through the use of the internet (Alenezi 2022:3). Additionally, the implementation of ICTs assist in making government systems and operations more efficient thus, not only improving the quality of service delivery, but also the societal experience (Alenezi 2022:3).

Theoretical Framework

For the purpose of this study, the paper will make use of the Digital Divide Theory. The term digital divide was introduced in the middle of the 1990s and was used to define the gap between those with access to the new variations of technology and those who do not (Srinuan and Bohlin, 2011:1). The Digital Divide Theory will be used to challenge the argument that African states are not ready for the 4IR. The theory of digital divide is not only restricted to access to technical infrastructure, but also to social infrastructure which supports ICTs (Srinuan and Bohlin, 2011:8). Van Dijk (2017:1) highlights that when examining the digital divide the common factors that are identified and discussed are computers, the internet and sometimes, smartphones. The theory identifies three levels of factors which influence the digital divide (Srinuan and Bohlin, 2011:8). The first level is the technology access approach which is followed by the multidimensional approach that argues that it is not only the access to technology that matters, but also socio-economic status, skills, geography, and education (Srinuan and Bohlin, 2011:8-9). Lastly, the digital divide must be studied in multiple ways which observe different factors such as age, gender, and race (Srinuan and Bohlin, 2011:9). Additionally, the digital divide may be investigated

from the individual to the spatial/multinational level (Pick and Sarkar, 2016:3888). For this research, the digital divide will be analysed from the first level. It will look at the internet penetration and the number of smartphones within a country to determine the spread of e-government within the case study countries.

Literature Review

The literature review will elaborate on what the industrial revolutions entail with a close reference to the fourth industrial revolution. A provision on Africa's involvement in the industrial revolutions in the past will be provided to provide context and to show the change since then.

The Fourth Industrial Revolution (4IR)

The First Industrial Revolution (1IR) discovered the steam engine which mechanised labour (Mamphiswana and Bekele, 2020:1). The Second Industrial Revolution (2IR) introduced electricity, which led to the invention of electric motors that led to the creation of new industries (Mamphiswana and Bekele, 2020:1). Furthermore, the 2IR improved the manufacturing facilities in such a way that capacity increased (Mamphiswana and Bekele, 2020:1). The Third Industrial Revolution (3IR) introduced semiconductors such as computers which led to an increase of efficiency and speed in production (Mamphiswana and Bekele, 2020:1). The Fourth Industrial Revolution, however, is unique to its predecessors as it introduced and adopted cyber, biological, and physical technologies (Mamphiswana and Bekele, 2020:3). The technologies allow for the internet to be utilised in the process of distributing products at a cost affordable price (Mamphiswana and Bekele, 2020:3).

4IR includes aspects such as Artificial Intelligence and the Internet of Things (IoT) (Mamphiswana and Bekele, 2020:1). However, this paper will be focusing on an aspect of IoT and these are the ICTs (Abdul-Qawy, Pramod, Magesh, and Srinivasulu, 2015:71). This is because IoT technologies such as computers have an influence on ICTs (Abdul-Qawy et al. 2015:71). Moreover, IoT technologies affect different devices and expand the internet to allow for accessibility (Abdul-Qawy et al. 2015:71). Through the utilisation of IoT technology, communication and real-time message delivery is possible through cell phones and computers (Abdul-Qawy et al. 2015:76).

Governments could benefit from IoT technologies due to their ability to create innovative services or to enhance the current existing ones (Papadopoulou, Kolomvatsos and Hadjiefthymiades, 2020:99). Through the utilisation of ICTs, a number of domains in government can greatly improve (Papadopoulouet al. 2020:99). These include the health, transportation, communication, security, and defence, and even the energy related domains (Papadopoulou et al. 2020:99). Through the implementation of IoT technology, governments can benefit from improved efficiency, effectiveness, reduction in costs and improved health and safety measures, amongst others (Papadopoulou et al. 2020:100). Data privacy issues, uncoordinated data policies, uncoordinated data governance, costs, integration issues, and IT infrastructure limitations can lead to impediments on IoT application for e-government initiatives (Papadopoulou et al. 2020:101).

e-Government

There is an array of debates on whether the 4IR and e-government will bring about a more prosperous globe and even continent. Generally, the correct implementation of e-government is expected to bring about a more effective government with more effective communication (Ntulo and Otike, 2013:1). Some of the advantages of the adoption of e-government are firstly that it is expected to be a more affordable way of executing service delivery (Ntulo and Otike 2013:16). This notion is further supported by Ndou (2004:8), Joseph (2015:20) and Alshehri and Drew (2010:81) with the latter indicating that the effective implementation of e-government will lead to a reduction in time, efforts, and costs incurred by customers and organisations when accessing government information and services. This is because effective and efficient service delivery leads to a decrease in overall costs (Joseph, 2015:20). Secondly, Ntulo and Otike (2013:16) indicate that it makes certain processes quicker for example, certain information can be accessed through official government websites which is quicker and more affordable than the traditional process of needing to go through multiple agents. Al Salmi and Hasan (2015:214), however, argue that the implementation of the new processes and systems are expensive. A point which Joseph (2015:31) also highlights as they argue that the necessary infrastructure is costly.

Furthermore, Ndou (2004:9) and Kamatula (2010:152) highlight that e-government brings about better government-to-citizen and government-to-business relations and less corruption. Alshehri and Drew (2010:81) explain that this is due to the increase in government transparency that will be brought on through the implementation of e-government. Al Salmi and Hasan (2015:214), however, disagrees with this notion and argues that face to face communication fosters a greater environment for transparency and accountability. Joseph (2015:29) emphasises that e-government breeds the false belief that there is accountability and transparency in government processes. Furthermore, the authors highlight that e-government leads to hyper-surveillance which explores the idea that e-government affects the security of government data such as the personal information of citizens (Al Salmi and Hasan, 2015:214). Furthermore, Joseph (2015:29) argues that the risk of cyberbullying and cybercrimes also increases as more valuable information is known to be accessible online.

In contrast, Kamatula (2010:152) provides a more optimistic view of e-government and argues that it allows for life-long learning through the use of e-Learning. Adequate implementation of e-government mechanisms is also expected to contribute to economic development as it will allow for a closer relationship between businesses and citizens, while also providing businesses with broader access to the larger international market through the use of government online tools (Kamatula 2010:152). E-government is also expected to lead to a creation of new jobs and businesses (Alshehri and Drew 2010:81). Joseph (2015:29), however, indicates that even with this there will be organisations and citizens that will be excluded due to the digital divide. Joseph (2015:29) further stipulates that this can be tracked down to the lack of access to technology. Terrence (2023:196) further elaborates that this will cause disparities because the majority of the citizens who do not have access to e-government which in turn marginalises them.

Africa in the First, Second and Third Industrial Revolution

Shava (2022:127) provides brief definitions of the first, second, and third industrial revolutions. Firstly, he defines the first industrial revolution (1IR) as the revolution which established the use of water and steam in order to foster mechanised production. The

second industrial revolution (2IR) was then introduced as the industrialisation which ushered in mass production and manufacturing with the use of electricity, oil, and petroleum (Shava, 2022:127). Aircrafts and vehicles were some of the interventions that came out of this revolution. The third industrial revolution (3IR) introduced the use of information technology and electronics, hence it was known as the digital revolution. It led to the establishment of the use of nuclear power, telecommunications, and computers amongst other forms of electronics as a way of improving methods of production (Shava, 2022:127–128).

Noting the above, it is essential to highlight that Africa's role during the first, second, and third revolution was minimal. Generally, the revolutions fostered more trouble for the continent rather than benefits as the continent endured periods of strife more than peace. Emmanuel (2022:91) cites these periods as being one of African slavery for the 1st industrial revolution, one of colonialism for the 2nd, and the period of neo-colonialism for the 3rd industrial revolution. More specifically during the 1IR, African slaves were transported through the Atlantic ocean as Europe experienced high levels of production brought on by steam engines (Benyera, 2021:14). Furthermore, Benyera (2021:14) highlights that it was during this revolution which led to the loss of human capital in Africa as Africans were traded away as slaves to other countries. In the 2IR Africa was ushered into the colonial era, whereby it lost most of its sovereignty and natural resources. During the 3IR Africa experienced a loss of political sovereignty due to the perpetuation of colonist data (Benyera, 2021:16) since the colonists enforced their ideologies into the African countries that they had colonised thus, replacing the ideologies and knowledge of the Africans with those of their colonial powers. These issues widened the disparities between Africa and the globe therefore, leaving Africa more marginalised as cited by Emmanuel (2022:91).

Africa's Readiness For The 4IR

Doorsamy, Paul, and Marwala (2021:91) adopt an optimistic stance and argue that Africa may not be as far off from technological advances of the 4IR because these technologies are already traced to have observed and to have an impactful and contributing role to the African continent, since the continent has already begun to take part in the global economy (Doorsamy et al. 2021:91). This view is, however, challenged by authors such as Ukobizaba, Nsabayezu, and Uworwabayeho (2022:2); Benyara (2021:129); and City Press (2016), with the latter arguing that Africa will least benefit from the 4IR.

Ukobizaba et al. (2022:2) notes that poor leadership, mismanagement, corruption and political instability form part of policy structure, cultural, and institutional obstacles faced by the continent therefore, this further makes it more disadvantageous during the 4IR. These issues are experienced on different levels by the African states, which renders them of different levels of unreadiness. Kuzub (2023) supports this by highlighting that currently, African states and cities are at a different level of readiness. Underdeveloped states are, however, noted to witness more of a struggle to adapt to the 4IR due to their ongoing struggle to adapt their systems to the 3IR (Ukobizaba et al. 2022:1–2). Countries such as Niger, Lesotho, Ethiopia, and Ghana are considered as countries that fall within this category (Ukobizaba et al. 2022:2). Study Press (2016) argues that in its current state, most of the continent has a low level of readiness with regard to meeting the required level of future production. City Press (2016), likewise with Kuzub (2023), argue that the continent has poor infrastructure and therefore needs to foster solutions to this issue before it will harness the 4IR at its best. The former further argues that there is a lack of adequately

skilled people and that the continent will not benefit from the 4IR, whereas the latter argues that the continent has the potential to drive global innovation.

Benyara (2021:129) embodies a more radical view and argues that the result of the 4IR in Africa will be a repeat of the 1st, 2nd, and 3rd revolution, except this revolution will result in the technological slavery of the African continent. Additionally, the author argues that the 4IR will lead to the recolonisation of Africa. This same ideology is fancied and elaborated upon by Mude, Maeresera, and Maramura (2022:3) who argue that the 4IR may pose a risk of historical repetition for the continent. These viewpoints highlight how certain scholars view Africa's position in the 4IR, a position which seems to deem Africa as not being ready or capable of harnessing the technologies of the 4IR without falling victim to it, since it has fallen victim to the revolution preceding this one.

ICT application in government institutions can bring a great benefit as highlighted (Papadopoulou et al. 2020:100; Ntulo and Otike 2013:16). These benefits can range from more affordable service delivery application and communication (Ntulo and Otike, 2013:1; Ntulo and Otike, 2013:16) to reduction costs for government institutions (Papadopoulou et al. 2020:100). However, as Papadopoulou et al. (2020:101) had stipulated that issues such as uncoordinated governance and data policies can impede on the application of ICTs in government. Africa, according to Ukobizaba et al. (2022:2), is in a state where corruption, political instability and poor leadership will make 4IR disadvantageous to the continent. This will then make ICTs disadvantageous and will impede on their successful applications (Ukobizaba et al. 2022:2).

Case Study Countries

This section aims to highlight the developments that countries have undertaken to further enhance the execution of services using ICTs. It aims to highlight some of the development which states have installed and are executing as part of e-government.

South Africa

South Africa introduced the National E-Government Strategy and Road Map in 2017 to encourage the digitalisation of government services and to establish a digital environment that will be inclusive for the whole society (Government Gazette, 2017:5). The government further aimed to place focus on infrastructure development as a way of rolling out e-government through online e-government platforms and through the government departments (Government Gazette, 2017:11). Akande and Van Belle (2019:n.p) observe a noticeable progress in South Africa with regard to its shift into the electronic era. The E-Government Development Index highlights that South Africa has moved 0.4902 out of 1 in 2004 and ranks 55 out of 193 countries to 0.7357 out of 1 with the rank of 65 in 2022 (E-Government Development Index 2004 and 2022). ICT tools such as the internet have been implemented into numerous businesses and institutions such as government departments, financial services, and hospitals (Akande and Van Belle, 2019:n.p). Therefore, making the provision of service delivery more effective and making internet access easier for most citizens. Blom and Uwizeyimana (2020:n.p) further indicate that in South Africa, the introduction of e-services has assisted in bringing more efficiency in public service delivery.

E-Learning refers to the process of educating oneself through the utilisation of digital media and related electronic tools such as cell phones and online courses (Basak, Wotto, and Bélanger, 2018:194). Through the e-Learning process, assets have been made available to allow people to educate themselves or their children when they are unable to attend school (Blom and Uwizeyimana, 2020:n.p). During the Coronavirus pandemic, both higher institutions of learning utilised online platforms in order to conduct virtual classes with students. The Department of Basic Education launched an e-learning programme in 2004, which has been transforming over the years (Blom and Uwizeyimana, 2020:n.p). Furthermore, the Department of Basic Education has made it possible for newly graduated matriculants to access and receive their final year academic results through the Department of Basic Education's website.

Government information regarding COVID-19 was shared online with the use of SMS (Blom and Uwizeyimana, 2020:n.p). The department of health introduced the e-Health service in 2012 to assist with the diagnostic and treatment of HIV clients (Blom and Uwizeyimana, 2020:n.p). E-health has led to a reduction in the number of people that are required to physically go to hospitals since they now have access to their doctors using online platforms, which allows them to receive telemedicine and telehealth and provided patients the ability to contact and consult with their doctors and nurses online (Blom and Uwizeyimana, 2020:n.p).

South Africa established the e-Natis, a system that allows for licence bookings to be conducted online as well as an e-justice system, which assists in providing citizens with access to judicial services (Blom and Uwizeyimana, 2020:n.p). Moreover, the South African Revenue Services has implemented innovative digital services that increase user experience and helps SARS to collect revenue (Ramoriting 2022). Citizens can now conduct their filing online using the e-filing platform, thus reducing the actual physical waiting time that occurs when one goes to the branch in order to file for tax returns. The elimination of paper has sped up the process of tax collection and has increased risk control (Ramoriting 2022). The effective collection of tax helps the government to be more effective in delivering services that require funds from SARS.

The ministry of home affairs has not only embarked on the digitisation of public records but has also allowed for a more digital approach for executing certain home affairs functions. For one, the department of home affairs has established a booking system known as the DHA Branch Appointment Booking System, which allows for citizens and residents to make bookings if they wish to visit home affairs branches whether it is for capturing of their biometrics, for making an application, or for booking before collecting a passport or ID amongst other things (Department of Home Affairs, 2023). Additionally, the department allows for the option for one to be an e-Citizen which allows them to use e-HomeAffairs, a website that allows members of the society to complete and submit online applications for their IDs and passports amongst other things, as well as to make payments and attach necessary documents for their applications (Department of Home Affairs, 2023b).

According to South Africa's Government Gazette (2012:48), the future policy direction is dependent on the telecommunications industry. This is due to the influence that policies have had in shaping the telecommunications industry to advance key objectives such as infrastructure development and universal access (Government Gazette, 2012:48). Through the regulatory framework, alternative service providers such as Dark Fibre Africa (DFA), Fribreco, and 8ta have been launched (Government Gazette, 2012:48). South Africa aimed

to develop its infrastructure in rural and previously disadvantaged areas in order to make services affordable in those areas (Government Gazette, 2012:49). However, the Government Gazette (2012:49) stipulates that the development in telecommunication industries across the country has led to a positive impact on the market. This is highlighted through the investments, employment opportunities, and improvement in some service delivery areas (Government Gazette, 2012:50).

A Green Paper was launched in 2000 as a framework for development of e-government in South Africa (Government Gazette, 2012:64). The objectives and framework stipulated in the Green Paper informed the Electronic Communications and Transactions Act of 2002 (Government Gazette, 2012:65). DPSA (Department of Public Service and Administration) has become the driver of e-government services in the country (Government Gazette, 2012:65).

Mauritius

The E-Government Development Index reflected a 0.5055 out of a score of 1, and a ranked position of 51 out of 193 to a score of 0.7201 with a ranking of 75 out of 196 in 2022 (E-Government Development Index 2004 and 2022). The Digital Mauritius 2030 Strategic Plan (2018:2) stipulates that the Information and Communication Technologies Authority released its report stating that Mauritius was one of the top performing countries in the League of Nations with regard to its internet penetration that stood at over 75% in the year 2017. International rankings further emphasised the above-mentioned rankings through a report stating that Mauritius was recognised as one of the dominant players in ICT application as it has surfaced as a leader in the continent (Digital Mauritius 2030 Strategic Plan, 2018:2).

The Ministry of Technology, Communication, and Innovation introduced the Strategic Plan as a blueprint that would continue to grow its digital economy and provide employment for the youth (Digital Mauritius 2030 Strategic Plan, 2018:2). The strategy highlighted a digital government and observed ICT infrastructure, Cyber Security Talent Management, and innovation (Digital Mauritius 2030 Strategic Plan, 2018:2). Digital government was viewed as a mechanism that would further allow Mauritius to embrace the fourth industrial revolution in a way that it could be used in e-government for reengineering of administrative processes and fragmented services to better address the needs of its people and the businesses within the country- in its economy (Digital Mauritius 2030 Strategic Plan, 2018:2).

Through the utilisation of big data, smart mobile apps, data sharing, open data, and so forth, the Strategic Plan aimed to foster transparency, openness, better decision making, and an integration of services for both the businesses and the citizens (Digital Mauritius 2030 Strategic Plan, 2018:2). Thus, the government introduced the Mauritius Artificial Intelligence Council which would serve the purpose of realising the government's objective on leading Mauritius into a country of technology that would benefit both the citizens and the businesses (Digital Mauritius 2030 Strategic Plan, 2018:2).

According to the Ministry of Information Technology, Communication, and Innovation (2023), the Mauritian ICT sector is now a pillar of the economy in the country, standing as the third pillar. Mauritius has implemented a number of strategies with the aim of ensuring that their people are digitally ready and that their infrastructure is well-suited for the transition and thus, for a digital economy (Ministry of Information Technology,

Communication, and Innovation, 2023). Measures which allow the citizens of Mauritius the ability to access government services online, lower their telecommunication costs and place Mauritius at a position where they can capitalise from their good governance, infrastructure, and their knowledgeable youth, amongst other measures, were introduced.

There is an Internet Management Committee which was appointed through the Information and Communication Technologies Act of 2001 (Information and Communication Technologies Act 2001:n.p). Furthermore, the act states that the committee is tasked with "providing a forum for stakeholders to discuss issues relating to the administration of internet". This notes that its objectives are "democratise access to information taking into account the quality, diversity, and plurality in the choice of services available through the use of information communication technologies" (Information and Communication Technologies Act 2001: n.p). The act also states that its authority is to implement the policies of the government that relate to the ICT industry (Information and Communication Technologies Act 2001:n.p), policies such as the National ICT, which aims to establish an environment that encourages knowledge sharing and aims to close the digital divide (Mauritius National ICT Policy, 2007:14). This is in support of Mauritius's goal to become an ICT hub in its region and to have the ICT industry as its fifth pillar (National ICT Policy 2007:14). Its goal is seemingly achievable when observing its status as one of the top-ranking technology advanced countries on the continent.

An example of information sharing is in the Mauritius' e-Health system which provides data for hospitals and clinics to use as it manages the movement and storage of information through the Electronic Medical Record (EMR), and the Health Information System (HIS). These systems are similar to those of South Africa (SIL, 2023). Furthermore, the system allows for an interaction between clients, clinics, and hospitals from anywhere. This in turn leads to an improvement in the productivity of hospitals as departments, patients, and staff are all better managed since there is better management on the number of beds available, access to medical records, online prescriptions can be done, and patient registration amongst other things can be conducted online (SIL, 2023).

Furthermore, similarly to its African counterparts, Mauritius has an online e-filing system which allows for its citizens to file for their tax returns online and to execute the actual payment online (Mauritius Revenue Authority, 2023). Additionally, the website allows for online application of the Tax Residence Certificates, financial assistance such as child allowances, and allows for the online booking of appointments. Moreover, the Ministry of Education, Tertiary Education, Science and Technology of Mauritius established an online website for the Mauritius Examinations Syndicate. This website allows for people to complete online applications for being supervisors, assistant supervisors, invigilators and allows for examination candidates to apply for the online statement of their examination marks (Mauritius Examinations Syndicate, 2023).

The Mauritius Police Force headed by the Department of Home Affairs also incorporates e-government mechanisms. For example, the police force has the responsibility of issuing out driving licences which can be applied for through the online application (Mauritius Police Force, 2023). Furthermore, through the website, members of the society may submit online applications for driving lessons and also make payment for the lessons using the online service.

Nigeria

Adeyemo (2011:11) highlights that Nigeria is one of the most fast developing ICTs countries in the African continent. It established the Nigerian e-Government Interoperability Framework (Ne-GIF), which has the purpose of ensuring that two or more Ministries, Departments, and Agencies (MDAs) processes that are undertaken are delivered with the use of ICTs (NITDA, 2019:3). Following this implementation, the E-Government Development Index, highlighted an increasing score from 0.3807 out of 1 in 2018 to 0.4406 in 2020 (E-Government Development Index, 2020). This is exceptionally a larger increase from 0.2485 out of 1 and ranking 141 out of 193 that it received in 2004 (E-Government Development Index, 2004). Following the 2020 increase, there was a further increase to 0.4525 and ranking 140 out of 193 countries in 2022 (E-Government Development Index, 2022). Nigeria has a similar structure as that of Rwanda, Tunisia, South Africa, and Mauritius as it also allows for the online application of visas and passports with the former also having the option that allow for one to receive their visa upon arrival (Ministry of Interior, 2023). Furthermore, the ministry allows for one to create citizenship online application, as well as to establish an online registration of a place of worship. This system which is known as the Nigeria Immigration Service (NIS) is regarded as one of Nigeria's most developed and operationalised systems (Okunola. Rowley and Johnson, 2017:3).

The federal minister of transportation/marine and blue economy has also established a system that allows for the online registration, the computerised vehicle inspection, and the registration of a licence (Federal Ministry of Transportation/ Marine and Blue Economy, 2023). The Digital Government Service (2023) provides both citizens that reside within the borders of Nigeria and those that do not with the services of executing payments to their government, of booking and being placed in the waiting line for government services, on browsing through government posted jobs, for validating whether government issued certificates and documents are from the government and for the payment of custom duties, as well as registering businesses and paying taxes. It can be considered as a one government stop that combines certain government departments for example, the ministry of the interior (visa and ID registration), the ministry of transportation (licence registration and vehicle registration), and the ministry of finance (checking tax statuses).

During the Covid-19 pandemic, the Nigerian Federal Ministry of Education partnered up with uLesson as an effort of disseminating education online across the country (International Trade Administration, 2023). Furthermore, the website has additional benefits such as assisting with preparing students for their exams in both primary and secondary schools.

According to the National ICT Policy (2012:8), Nigeria aims to fully integrate communication technologies and information into their socio-economic development. This is with the intention of transforming the country into a knowledge-based economy (National ICT Policy, 2012:8). In 2012, a new ministry was created in Nigeria and it became the Ministry of Communication Technology (National ICT Policy, 2012:8).

The telecommunications industry in Nigeria grew from 2001 and placed the country at a level where it became the fastest growing mobile market in the African continent (National ICT Policy, 2012:14). Numerous Acts including the Nigerian Communications Act 2003 and the Wireless Telegraphy Act, 1990 exist to regulate the supply of telecommunications services in the country (National ICT Policy, 2012:14). Through the National ICT Policy (2021), Nigeria aims to facilitate the development of a legal framework that will ensure the facilitation of an effective implementation of ICT related policies (National ICT Policy,

2012:24). The National ICT Policy further aims to promote digital, cyber, ICT infrastructure, and national security (National ICT Policy, 2012:24).

Rwanda

Rwanda is one of the countries in Africa that holds e-government and ICTs in high regard (Twizeyimana, Larsson, and Grönlund, 2018:21). It has been defined as being the best low-income country in terms of online service delivery (Murenzi and Olivier, 2017:145). Its growth can be identified through the use of the E-Government Development Index, which shows an increase in the country's e-government development and the integration of technology in government systems. The index highlights an increased score from 0.2511 out of 1, and a ranking of 140 out of 193 in 2004 to 0.5489 and ranking 119 in 2022 (E-Government Development Index 2004 and 2022). Twizeyimana et al. (2018:21) further notes that in its aim to accomplish technological integration into government systems, the government has placed a notable amount of effort into implementing their strategy of merging ICTs into government institutions. This was an attempt by the government to accomplish their Vision 2020 goal (Nawrat, 2020). A vision aimed to transform Rwanda to a middle-income Rwanda as compared to its current low-income status (Twizeyimana, Larsson and Grönlund, 2018:21). The IREMBO project also known as the "one-stop government" in Rwanda is an initiative that was established by both the private sector and the public sector in order to create a space whereby various departments would be able to share information and to execute public service delivery in a single place (Bakunzibake, Klein and Islam 2019:5). Mainly, the initiative aimed to digitalise services such as driving licences, road traffic, and motor vehicle inspection amongst 100 other services (Twizeyimana et al. 2018:22).

The Rwanda Directorate General of Immigration and Emigration (2023) indicates that due to the integration of technology in government institutions, the ministry of the interior of Rwanda has advanced to such an extent that it is capable of issuing e-passports to citizens. The IREMBO encompasses most of the country's services including registering for an ID, a foreigner ID, Visa applications, and executing a Deferred Payment Arrangement (DPA)- a service that is offered by their Ministry of Interior (Twinoburyo, Munu, Vlaminck, and Dushime, 2022:45). Additionally, the Ministry of Infrastructure in Rwanda is responsible for the development of multiple aspects of government operations including the development of transport and certain human settlement factors amongst other developments (MININFA, 2023). For the sake of this article, developments regarded to transport will be provided with more observation. The ministry of infrastructure facilitates and established the Vehicle Registration System in Rwanda (MININFA, 2023b). However, the IREMBO provides citizens with the options of applying for the licence tests and licence renewals (Rwanda National Police, 2023). The Ministry of Finance and Economic Planning which facilitates the Rwanda Revenue Authority (RRA) has also allowed for the establishment of the online registration of vehicles and also manages and allows for administration of the collection of taxes and customs in the country (RRA, 2023). Electronic filing for taxes such as the submitting of payments have been encouraged in Rwanda ever since 2015 through the use of e-tax and M-declaration (Megersa, Santoro, Carreras, Mukamana, Hakizimana, and Nsengiyumva, 2023:n.p).

Twinoburyo et al. (2022:30) notes that during 2013-2019, over 24 000 patients were able to receive support using the RapidSMS, which is an online platform that establishes open clinics and medical records and has gathered a membership of 48 hospitals. Furthermore, Rwanda has established a universal primary healthcare system through establishing a partnership

with Babylon Health, which will be paid through the use of the insurance scheme known as Mutuelle de Santé and reaches over 90% of the population (Nawrat, 2020). This makes Rwanda one of the few developing countries which has managed to establish such a facility. This system assists in bringing doctors and nurses closer to citizens and citizens will be able to conduct consultations with their doctors online using the system. Moreover, the government in partnership with Partners in Health has managed to establish an electronic health record system which initially assisted in the record keeping of the HIV citizens in the country, and it currently covers the record keeping of all types of clinical records (Nawrat, 2020). This service is expected to reduce the plaguing threat of people self-diagnosing and misdiagnosing themselves as they will have access to doctors and nurses within minutes as compared to the usual longer waiting time and necessary travel. Since there will be less cases of citizens misdiagnosing themselves, there will be less complications for citizens and the government in the long-run and more effective service delivery in the country will be achieved (Nawrat, 2020).

Tunisia

The Tunisian government introduced the initiative of e-government in 2002 (Nasri 2019:31). The unit was established under the presidency with the aim of monitoring the implementation and recommendations of projects that are related to e-government (Nasri 2019:31). Following the establishment of the unit, multiple other ministries began establishing their own networks whereby they provided easier access to services. Additionally, the Ministry of ICT launched the Tunisia National Digital Strategy 2021-2025, which aims to lead to the establishment of infrastructure and lead to a state that will be data driven (GSMA, 2023). The E-Government Development Index further showcases the e-government improvement in Tunisia, especially when observing the score that it received in 2004 as compared to its 2022 score and ranking. The index highlights an increase from the score of 0.3227 out of 1 received in 2004, and the ranking of 120 to the score of 0.6530 in 2022 and the increased ranking of 88 out of 193 countries. In 2017, the government of Tunisia announced that in the near future the country would have an e-Visa application which allows for a quicker and therefore, more time efficient online application (Tunisia e-Visa, 2023). Furthermore, the Ministry of Health also announced the establishment of the Digital Health Development Initiative which was established with the purpose of managing the flow of patients that will in turn improve the overall care that patients receive as there will be better transferability (IST Africa, 2023). Additionally, doctors will have the option of remote patient monitoring and will have the ability to provide their patients with telemedicine with the use of telemedicine tools.

In 2007, the government of Tunisia's goal was to connect all primary schools to the internet and to provide 20% of the courses through e-Learning (Hamdy, 2007:6). Furthermore, in 2020, the government advocated for the usage of e-Learning using the Moodle Distance Learning Platform (MDLP) that belongs to the Virtual University of Tunis (VUT) in their country (Sghari and Bouaziz, 2022:1).

Currently, the most used and popular e-government service is the online tax filing, which allows not only for the filing of tax returns but also calculates the tax returns that individuals and companies are to either receive or that they are required to pay (Mellouli, Bentahar, and Bidan, 2016:197-198). The ministry of finance introduced the online tax collection system, which allows for the actual payments of taxes and other duties (Ecofin Agency, 2019). The

use of bank cards in order to conduct electronic payments of taxes and fines is expected to be exercised through the use of the new system known as the Rafik (Ecofin Agency, 2019).

Discussion

There are still hindrances to the adequate facilitation and implementation of ICTs in government departments. The lack of infrastructure to support e-government practices is a common reason behind the ineffectiveness of the hindrance of the excellent execution of e-government (Blom and Uwizeyimana, 2020:n.p). Even though there is a lack of infrastructure, African countries have been presenting an increase in the use of technology. When observing the E-Government Development Index, it can be deduced that there is progression in African states, regardless of the initial disadvantage they have due to their colonial history. In all the five case study countries, transformation and growth is observable as the scores of all countries have showed growth and indicating that there is e-governmental development in the countries. In addition, it is notable to add that Rwanda and Tunisia have not only highlighted an increase in their scores but have also increased in their rankings from 140 in 2004 to 119 in 2022, and from 120 in 2004 to 88 in 2022 (E-Government Development Index, 2004 and 2022), respectively. This highlights the ability of African states to not only adapt but to also adopt the use of technology in government institutions, which in turn fosters effective, efficient, and high-quality service delivery.

All the countries that have been utilised for the study have showcased an improvement in their penetration rate, with South Africa having an internet penetration rate of 68.2% in 2022 (Kemp, 2022a), a significant increase from 5.3% in 2000 (Uys and Pather, 2017:27) being one of the leading countries out of the five in terms of internet penetration. Although this may be viewed as a digital divide by the digital divide theory, there has been a significant improvement as more people are connected and may therefore, utilise online government services. Additionally, South Africa reached an impressive mobile cellular subscription at 167.4% in 2022, an increase from 17.81% in 2000 (Statista 2024f), as well as a smartphone penetration of 92.1% in 2022, a commendable improvement from the 3.3% in 2001 (South African Government News Agency 2023). Mauritius also revealed a prominent internet penetration rate of 64.9% in 2022 (Kemp, 2022b), an increase from 7.28% (Index Mundi, 2024a). They show an impressive cell phone penetration of 166.25% in 2022 (Observatory Mobile 2022). There are weaknesses with these figures as most are estimates and with the cell phone penetration data, one may consider that at times, members of society have more than one mobile device and this device is also counted in the data.

Tunisia also showcased a significant internet penetration of 66.7% (Kemp, 2022d), an improvement from 2.75% in 2000 (Index Mundi 2024c). Along with the internet penetration, Tunisia had a high mobile cellular subscription per 100 inhabitants of 129.3% in 2022, a large increase from 1.2% in 2000 (Statista 2024c). Nigeria and Rwanda also still with large disparities have also highlighted an improvement from an internet penetration rate of 0.06% in 2000 (Statista 2024a), to a rate of 38.73% in 2022 (Statista 2024b). They, however, have one of the largest mobile cellular subscriptions per 100 inhabitants at 222% in 2022, a significant increase from 0.03% in 2000 (Statista 2024d). Rwanda, similarly, although considered one of the most technologically advanced countries on the continent with a healthy E-Government Development Index had an internet penetration rate of 26.3% in 2022, a +3.7 increase from 2021 (Kemp, 2022c). This is lower than half the population

however, it is commendable considering that it represents an over 100% improvement from 2000 when it had an internet penetration of 0.06% in 2000 (Index Mundi, 2024b). Additionally, they have indicated an improvement from 0.48% in 2000 of mobile cellular subscriptions per 100 inhabitants in Rwanda to 79.9% in 2022 (Statista 2024e).

It is however essential to note that there are rooms for improvement in all the countries. The digital divide remains and is still larger for some countries than others. This in turn disadvantages and excludes some people in the countries from accessing certain services that are provided through e-government such as making an online booking and payment for one' visa, ID, or passport. Additionally, in the case of Rwanda, there is an issue on the e-Health service which has been indicated as being a service that is only accessible to high income earners who have access to smartphones (Twinoburyo et al. 2022:30). Furthermore, the authors note that there is a lack of trust in e-services thus making members of society more hesitant to use services that are provided online. Lack of knowledge on how to utilise the services is also brought on by e-government (Murenzi and Olivier, 2017:149), which in turn causes hesitation in society when they are expected to use the provided services. Uwizeyimana (2022:6) argues that during the Covid-19 pandemic, Rwanda's government failed to efficiently and effectively deliver services because children in some public schools were left behind in terms of education as they had no online facilities to utilise during the lockdown. In Nigeria, it is argued that it is mostly private institutions of higher learning that are able to improve the e-Learning adaption and the use of technology however, this is due to their self-financing nature as well their smaller range of students (Eze, Chinedu-Eze and Bello, 2018:6). Public schools do not also fare due to the lack of infrastructure inducing substantial technology, as well as the limited funding that they receive while catering for a larger student base.

South Africa is noted as having a notable digital divide in the country, with those on lower income levels being more disadvantaged than those in the middle- and high-income level (Murenzi and Olivier, 2017:146). Bridging the gap between the lower income, middle income, and higher income segments in African countries is essential in ensuring that adequate service delivery is delivered to the overall society. This divide is notable in all of the case studies however, even with its presence, it can be argued that Africa is not at risk of being a victim of the 4IR. This is specifically true when considering that the E-Government Development Index reflects growing scores for e-government development in the African countries that are observed in this paper. The scores are considerably higher than those of other Asian and even European countries such as India, which ranked 105 in 2022, Kyrgyzstan which ranked 81 in 2022, Iraq ranked 146, and the Republic of Moldova which ranked at 71 in 2022, a longer ranking than that of South Africa and 4 rankings higher than Mauritius (E-Government Development Index, 2022).

Conclusion and Recommendations

This paper set out to illustrate the growing potential of digitalisation and e-government in African states and managed to illustrate this through analysing the E-Government Development Index, which highlighted improvements in the studied countries. Through this, it aimed to highlight Africa's capabilities to take advantage of the 4IR as compared to falling victim to it as it had to the 1IR, 2IR and 3IR. Firstly, the paper explained that it utilises the qualitative research method as it makes use mainly of academic sources in order to enforce its argument. Furthermore, it highlighted the definitions of e-government, e-Governance,

and ICTs before explaining the difference between e-government and e-governance which are commonly used interchangeably. It elaborated on the difference between the two by elaborating on e-government and how it refers to government information being disseminated to businesses, societies, and other government using technology (Nokele and Mukonza, 2021:102). Whereas e-Governance is noted as being the use of ICTs in order to design policies and to allow stakeholders to partake in decision-making processes (Terrence, 2023:191). The paper acknowledges and notes Africa's weakness in terms of the lack of infrastructure, which is necessary in order to promote the full integration of technology into government departments that will in turn bring out more efficient and effective service delivery. However, it argues that Africa is ready for the 4IR as opposed to contrary beliefs that it is not. The paper noted the technological advancements that ministries have adopted in the five case study countries for example, the case studies mostly highlight a more technological approach to health, which has witnessed the establishment of e-Health systems such as online medical records and consultations between patients and doctors. Additionally, most of the case studies established systems which allow for the online application of driving licences, vehicle registrations, e-filing for tax returns, online applications for e-Visas, and online applications for passports for citizens. The paper also noted some of the strategies that have been undertaken by the countries in order to foster an environment which will encourage better e-government systems in the countries.

With the above being mentioned, the paper argues that Africa is adapting to the 4IR and points to the E-Government Development Index highlighting the growth in scores of South Africa, Mauritius, Nigeria, Rwanda, and Tunisia, with Tunisia and Rwanda further showing an increase in their overall ranks out of the 193 global countries that are considered by the index. It highlights that these Africans are at higher odds than certain European and Asian countries, which in turns indicates that these countries have better adaptability and are highlighting a better development of e-government adoption than countries that belong to the more developed continents in the globe. In order to improve its adaption to the 4IR, the paper considers the following recommendations.

As argued by Murenzi and Olivier (2017:168), governments in Africa should work on promoting ICT literacy, as this will in turn lead to citizens not only being able to use the e-services that are provided by their governments but will also increase the level of trust that they have in their governments and the services that they provide using online platforms.

Moreover, countries should all work on increasing the internet penetration in their countries (Uwizeyimana, 2022:9). This will ensure that the digital divide does not increase as more people will have access to e-services such as e-Learning. This in turn will ensure that less people are left behind in trying times such as those of Covid-19. Governments should work on implementing ICTs in schools and through exposing students in the primary, secondary and tertiary levels. This will improve knowledge sharing at homes as these students share their knowledge with those around them, including the elderly. In addition, the governments should engage with more developed governments in order to enable knowledge-sharing. This will assist them with closing the gap in their knowledge on further implementing e-government techniques.

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The Usability of e-Government as a Mechanism to Enhance Public Service Delivery in the South African Government

Lessons from Practices

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Abstract

The Government of South Africa faces unique difficulties in providing public services to society. These difficulties in providing services are of paramount significance for the government of South Africa as the problem extends from national to local governments. This is due to the fact that these difficulties often cause countless issues, including protests against the supply of public services, which usually result in property losses. The introduction of electronic government is expected to be the start of an instrument to promote efficient and effective service provision. Currently, there is insufficient knowledge of the effectiveness of electronic government as an instrument to improve public service delivery at all levels of the government in South Africa. With the aid of qualitative methodology and relying on secondary data, the study was able to determine the effectiveness of electronic government as an instrument to enhance public service delivery in the government of South Africa. The findings of the study highlighted the benefits of electronic government, including streamlined administrative processes, reduced wait times, improved transparency, accountability, and citizen involvement. Successful practices such as online service portals, digital identity verification, and mobile applications demonstrated the capacity of e-government to transform public service delivery. On the other hand, difficulties such as digital literacy gaps, uneven internet access, data privacy concerns, and lack of monitoring and evaluation of e-government initiatives hinder the full realization of electronic government's potential in South Africa. The study noted that e-government has proven to be successful in enhancing the supply of public services in the South African government, and also noted that electronic government can be utilized as a supplement to traditional paper documentation government as some services require the residents to visit public offices for further assistance. The study concludes with recommendations for the South African government to launch government programs aimed at improving the literacy of society as well as government employees. Moreover, more investment in ICT and more ICT personnel are needed to ensure the accessibility and effectiveness of the usage of electronic government in South Africa. The study successfully proposes techniques that the Government of South Africa can utilize to address challenges related to electronic government initiatives, especially in rural and remote areas, to further enrich the knowledge base.

Keywords: E-government, Public Service Delivery, Governance, Information Communication Technology

Introduction and background

Bojang (2019) noted that several governments around the world have described electronic government as a way forward to attain efficiency and a better supply of public services for citizens and enterprises. This has made electronic government not only an option but also a demand for nations seeking better governance. South Africa accepted the necessity of electronic government as a public service platform to implement this initiative. Like many other governments, the South African government enters digital government to aid in improving public service delivery (Galushi & Malatji, 2022). This is because currently, the South African government encounters serval challenges in providing public services such as education, healthcare, public safety, housing, social security, water, food, and property. However, based on the Constitution of the Republic of South Africa, Chapter 2 contains the Bill of Rights, and the abovementioned services are rights that the residents are entitled to.

Therefore, this clearly indicates that the residents of South Africa should receive these public services from the government. Failure to provide those services would then imply that the residents are denied their rights as stated in the Bill of Rights. The Government of South Africa recognized the significance of the electronic government and began implementation in recent years. Yet, it is difficult to fully implement electronic government. Although the execution of electronic government is underway, some serious gaps remain in South African public administration that must be closed. In terms of public service delivery, South Africa faces many conundrums, including inequality, corruption, poverty, illiteracy, unrest, and shortfalls of skills (Galushi & Malatji, 2022). Murenzi and Olivier (2017) point out that in the digital age, the electronic government has emerged as a transformative mechanism for making good changes to service delivery, promoting transparency, accountability, and citizen participation.

This implies that the objective of introducing electronic government is to improve service quality standards, increase government overall efficiency, and foster transparency, accountability, and citizen participation. Therefore, the implementation of electronic government serves as a catalyst to address these difficulties by taking advantage of digital technologies. However, the fruitfulness of the usage of electronic government as an alternative method of providing public services is not known. The 2011 National Development Plan (NDP) Vision 2030 recognizes the role of electronic government in building an appropriate state that responds to the demands of its people. This research aims to determine the effectiveness of electronic government in the South African government by assessing the current state of electronic government in South Africa and exploring the difficulties, limitations, failures, and successes of electronic government initiatives in the South African government. By doing so, the research can be able to propose alternative solutions that can be employed by the government of South Africa to address difficulties concerning the implementation of digital government. Although there is existing literature on digital government, this paper adds to the body of existing knowledge because it is based on current knowledge and the development of electronic government in the South African Government.

Conceptual framework

Electronic government

Apleni and Smuts (2020) define electronic government as the procedure that governments employ to attain efficiency as well as effectiveness in government, enabling society access to public services while fostering accountability as well as transparency in government. E-government focuses on the methods and processes used to deliver government services electronically. It includes online portals, mobile applications, self-service kiosks, and other digital channels through which citizens can access services such as permits, licenses, tax filing, and social services. For instance, during COVID-19, SASSA was successful in offering e-services where applications for social relief grants were done online and the majority of society successfully managed to apply for and receive their grants. However, e-government is faced with difficulties such as digital literacy gaps, limited access to technology, and resistance to innovation and transformation. In short, electronic government is therefore seen as a tool used to enhance public service delivery in this study.

Public Service Delivery

Campbell (2014) asserts that public service delivery involves the efficient and equitable provision of services to the general public. Moreover, these services include education, healthcare, public safety, infrastructure, housing, food, and social security. The focus is on meeting the diverse demands of residents while ensuring accessibility, responsiveness, and accountability in the delivery process. For the purposes of this paper, public service delivery focuses on the potential of electronic government to streamline service delivery processes, enabling citizens to access government services online in a more efficient and user-friendly manner.

Governance

Zaitul, Ilona, and Novianti (2023) define governance as the structures, processes, and mechanisms through which public policies and programs are formulated, implemented, and evaluated. In other words, governance is considered as the organizational capacity of public establishments to prepare public goods, as well as other goods, to meet the demands of countries' societies in a fruitful, fair, transparent, and responsible manner. This study presents a conceptual framework for governance that emphasizes the role of technology in transforming public administration and public service delivery. This indicates that it examines how e-government initiatives can facilitate greater transparency, efficiency, and accountability in government processes.

Information communication technology

Information Communication Technology (ICT) in modern government is the application of modern ICT platforms such as the Internet, mobile devices, and digital platforms, to ameliorate the efficiency of government operations and the provision of services (World Bank, 2018). The conceptual framework in this study is based on ICT as a tool for transforming public service delivery through digital channels. In this paper, it examines how electronic government initiatives can improve efficiency, transparency, accountability, and accessibility in government operations and services. These include the user experience of government websites and online portals, the level of citizen engagement with these

services, and the overall effectiveness of e-government in delivering timely, accurate, and user-friendly services.

Literature Review

Electronic Government in South Africa

In 1996, the former late President, Nelson Mandela, established a Presidential Review Committee (PRC) to examine the structure and functions of public services, specifically to examine alternative means to optimize the supply of services in post-apartheid countries. Alternative modes of service delivery have been pointed out in the field of information technology, enabling potential electronic government tactics to enhance public service delivery. With the arrival of the Fourth Industrial Revolution (4IR), technological progress offers great possibilities for governments to address public service delivery challenges. Therefore, alternative ways of providing services to society such as electronic government are of paramount importance today. The government of South Africa adopted the electronic government in the year 2000 as an attempt to transform its main activities to make procedures more effective, efficient as well as society oriented (Roblek, 2020). Since the government of South Africa adopted digital government, it has made significant progress in the provision of e-services. However, despite the significant progress made, the execution of electronic government remains an important problem for several municipalities because some municipalities are located in rural areas. Instead of providing e-government as a means to remove barriers and divisions between rural and urban ways of accessing information quickly and easily via smartphones, the electronic government problem continues (Uwizeyimana, 2015). Electronic government has emerged as a transformative mechanism for enhancing service delivery, promoting transparency, and citizen participation. It is hoped that the presence of electronic government will better the supply of public services and eradicate problems in the government of South Africa.

The Demand for Electronic Government in the Government of South Africa

Currently, the government of South Africa is faced with several problems that impede the ability of the government to render public services to the residents. The work of Thusi and Selepe (2023) has indicated that there is massive corruption, financial irregularities, and maladministration in the government of South Africa which has been criticized for poor provision of services. Even after 28 years of freedom, Thusi, Mahlatse, and Matyana (2023) believe that all levels of government in South Africa are still experiencing issues with regard to providing public services to the residents. This has created a situation where residents demonstrate anger with the government by engaging in public service protests. Moreover, it must be noted that with the excessive levels of unemployment in the country most of society depends heavily on the government to supply public services. Yet, the government of South Africa continues to fail dismally to provide these services. The poor supply of services in the South African government is also shown by government departments, entities, and municipalities continuously yielding poor audit outcomes. These poor audit outcomes indicate poor governance which results in poor public service delivery. It must be noted that where there is proper governance, the funds of the government are spent responsibly, as a result, this translates to the successful delivery of public services (Motubatse, Ngwakwe & Sebola, 2017).

Bvuma and Joseph (2019) indicated that the digitalization of the government has the potential to empower several members of society and eradicate public service delivery protests, as well as the likes of corruption. Friedman (2020) asserts that the South African government is characterized by bureaucratic red tapes and that is likely to cause corrupt activities in government. As an illustration, in most government departments there are procedures to be followed for services to be rendered, concerning traffic departments especially those located in deep rural areas, the procedure to obtain a learner's license can be a long and time-consuming process. The residents in response to these long procedures may offer bribes to officials employed in these departments to speed up the procedure in an attempt to receive services faster. Electronic government can provide these services in a timely manner and lessen the likelihood of bribes in the public service. Galushi and Malatji (2022) concluded that society portrays a belief that the digitalization of the government can eradicate the possibility of corrupt activities in public office. Subsequently, digital government serves as an alternative instrument to provide and ensure the provision of services to society through digital government. However, it must be noted that there will still be a demand for traditional paper documentation government as there may be instances that may still require an individual to visit a government establishment to acquire certain services. This then implies that electronic government becomes a supplement to the traditional paper documentation government.

The Significance of Electronic Government in South Africa

The digitalization of the government promises many benefits to citizens and government organizations (Shambare, 2020). Moreover, previous studies have shown that electronic government has continuously improved the quality of life, lessened the cost and time of delivery of services, and ameliorated governance (Lee-Geiller & Lee, 2019; Gasova & Stofkova, 2017). This includes ensuring that public services are delivered to society promptly, for instance, the Department of Home Affairs went digital and collaborated with banks to deliver services such as Identity card services promptly. This provides a clear indication that the use of digital government has a great promise of increasing community engagement by enabling society to get a hold of public services and information. It also has the potential to enhance the nexus between government and society. Thus, by providing public services and information through digital channels, the government can be able to supply public services when citizens need them (Aikans & Krane, 2010).

For instance, the South African government provides information such as the budget speech and its outcomes of government entities, departments, and municipalities on the government websites. That fosters transparency and establishes trust between society and the government.

Moreover, the government further builds trust with society by providing public services in accordance with the principles of Batho Pele will lead to increased confidence in the Government (Jackoet-Salie, 2020). In other words, the government will be building trust between itself as well as society; the society will develop faith in the government when they receive services that are in accordance with the Batho Pele principles. Moreover, when the digital government gives society an opportunity to access government information online it promotes transparency and accountability. As a result, this also improves the relationship between the government and society, and society will trust the government because accessing government information allows them to hold the government accountable. Therefore, it

can be concluded that digital government is important as it fosters transparency, trust, citizen engagement, and accountability and enhances the supply of public services.

The Nexus between Batho Pele Principles and Electronic Government

The Department of Public Service and Administration (DPSA) instigated the Batho-Pele principles (People First) and considered and respected the electronic government initiative placing more emphasis on enhancing the supply of public services, as well as the transformation from a system of traditional paper documentation to a technological system (Mohale, 2024). Nevertheless, the Presidential Review Committee (PRC) recommended the usage of technology in the distribution of public services as an instrument to improve the standards of public service delivery. In view of this situation, the Presidential Review Committee has further recommended the inauguration of a National Information Technology Agency in South Africa, rationalizing IT procurement to provide IT-related training as well as ensuring functional use of IT in establishments of the government (Mohale, 2024). However, Malomane (2021) believes that due to inadequate supervision, the agency failed to attain its obligations. As a result, there are various policies as well as structures currently in operation to support and guide the execution of electronic government initiatives in South Africa. It is noted that the Batho Pele Principles (BPP) are related to digital government and are aimed at implementing a proactive, transparent, and service-oriented approach.

Table1: The eight principles of BPP

Bathopele Principles	Elucidations
Consultation	The society must be consulted on the quality of the service standards they receive. Concerning digital government and service provision, society must be consulted online and be asked to respond to new programs and policies. Society can express their views and opinions at any time and at their convenience.
Service standards	The community must be aware of the level and quality of the services it receives and know what it is expecting. Service standards can be provided online, and society can access them anywhere and at any time. The digital government ameliorates access because when services are provided by using the digital government, access will be easier and better.
Access	All members of the society must have equal access to services. Society can record errors or suggestions for enhancement with their mobile phones in order to supply access to services equally. Through the provision of electronic means of government information and services to the public, the government can supply services to residents when they demand them.
Courtesy	The society must be treated with courtesy and consideration. Society can register complaints online, and municipal representatives can respond politely to gain community confidence. Customer satisfaction surveys can be distributed on these online platforms.
Information	The society must receive comprehensive and accurate information on the public services to which they have access. Using digital government initiatives, communities can update information at any time and get a hold of this information as they wish.
Openness and transparency	Society must be aware of how local authorities operate and the information they have access to. The digital government can be utilized to provide security, accountability, and transparency in the government's decision-making procedures on allocation as well as resource distribution. As a result, in the presence of digital government, the society will get a hold of full access to the information on their devices.
Redress	If society does not receive the services promised, they should have the right to full elucidations and swift remedies. The use of digital government will aid in quickly identifying which services are not being executed and then implementing tactics to correct them on time.
Value for money	Services must be provided economically, to ensure that society enjoys the best value for money. Furthermore, digital government programs can strengthen their value as an engine of efficiency as well as fruitfulness while supporting continuous service delivery through corrective measures as well as allocation of funds where necessary.

Source: (Jakoet-Salie, 2020)

Research Methodology

This study followed the qualitative methodology and depended heavily on secondary data. Bouchrika (2022) asserts that secondary research is a method of study that uses data gathered before. The existing data have been recapitulated and compiled to enhance the inclusive efficacy of the research. The study has reviewed publications published between the years 2019 and 2024 on the usage of the digital government as a mechanism to enhance the supply of public services in the South African government. The purpose of reviewing publications from the years 2019 to 2024 was to generate research outcomes that are based on the latest developments in electronic government. These publications were derived from scientific databases such as Google Scholar, Science Direct, published reports, Web of Science, EBSCOHost, and JSTOR. The search tactic followed the PICO format (population, intervention, control or comparator, and outcome), and made use of relevant keywords such as 'e-government in South Africa', 'e-government successes and challenges in South Africa', and the 'Current status of e-government in South Africa'. The motive was to determine the effectiveness of electronic government in the South African government by assessing the current state of electronic government in South Africa by investigating in terms of barriers, successes, failures, and areas for enhancement in the execution of digital government in South Africa. Therefore, the study followed selection criteria to select the literature that is deemed appropriate and relevant for this study. Figure 1 portrays the inclusion and selection criteria.

Findings and Discussion

Electronic Government as a Tool to Enhance the Supply of Public Services in the South African Government

The ongoing narratives and discussions concerning the poor supply of services in South Africa reflect how poor governance has exposed inequality, corruption, and increased poverty. As a result, the lack of governance and the poor supply of public services is a major challenge in South Africa (Masuku, 2021). The reason behind the establishment of digital government was to address some of the challenges mentioned above to ensure a successful supply of public services to residents. Masinde and Mkhonto (2019) believe that the digital government is utilized as a weapon to combat the likelihood of corrupt activities. On the contrary, several challenges such as corrupt activities persist to thrive even in the digital government. Comparing the traditional paper documentation government with digital government, the traditional paper documentation enabled corrupt activities to thrive. This is because of bureaucratic red tapes in government encouraging government processes to be time-consuming and opening a way for corrupt activities to thrive (Hinson, Madichie, Adeola, Nyigmah, Bawole, Adisa, & Asamoah, 2022).

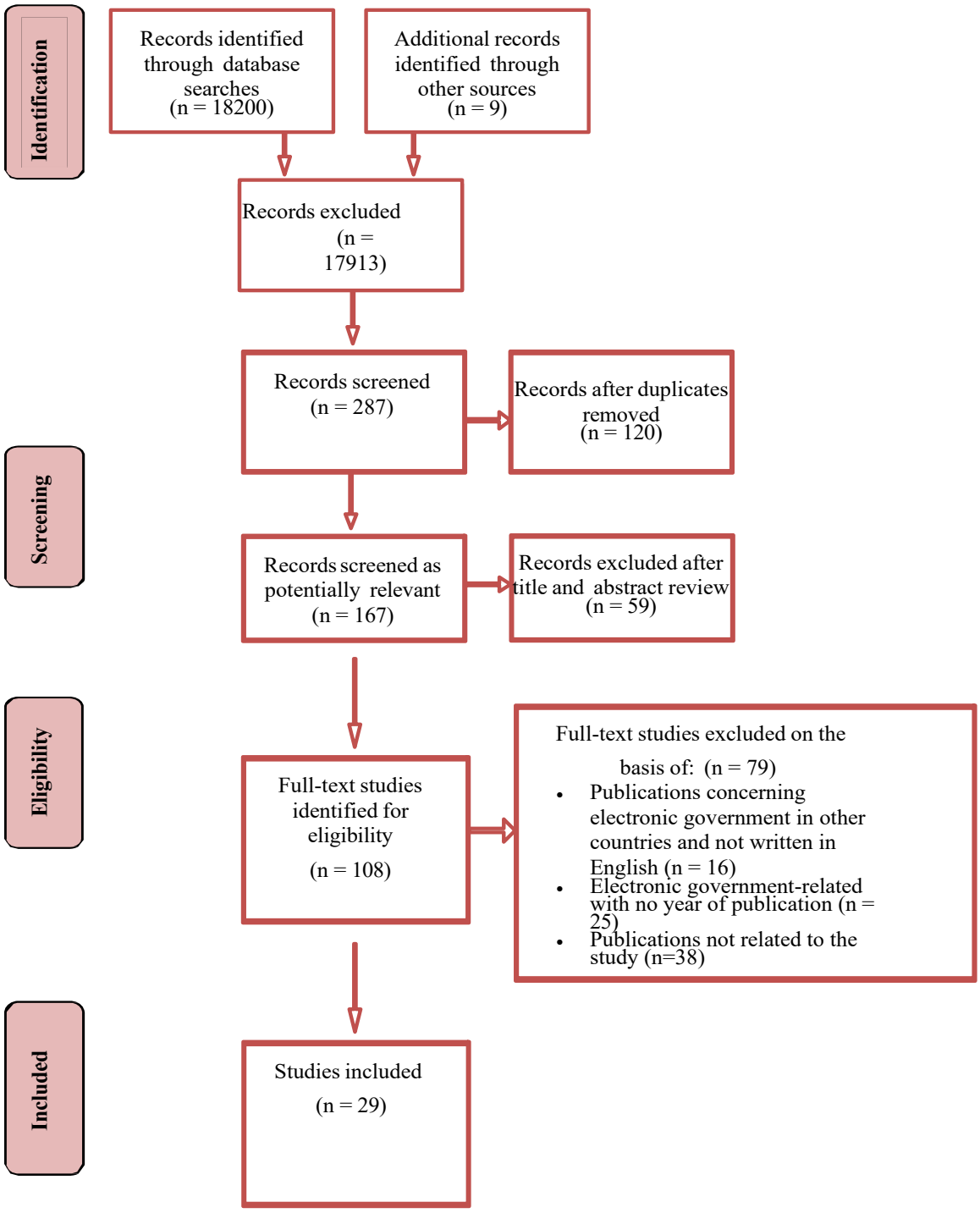

Figure 1: PRISMA flow diagram demonstrating the flow of included and excluded studies

Figure 2 shows the difference between the traditional paper documentation government and the electronic government.

The Traditional Paper Documentation Government

Electronic Government

Figure 2: The functioning of traditional paper documentation and electronic government. **Source:** (Shambare, 2020)

Therefore, the table above, demonstrates how the electronic government operates as compared to the traditional paper documentation government. In the traditional paper documentation government, the society had to fill out papers, attach necessary documentation, and allow public officials to process them which could be a time-consuming process. Shambare (2020) believes that this process has led to rampant corruption in the South African public office. In a sense that in most cases, some members of the society desire to get a hold of public services faster and they end up paying bribes to public officials to ensure a faster process of their applications to receive public services. To illustrate this, citizens who would like to apply for passports through the Department of Home Affairs can apply for them and pay bribes to public officials so that they can receive their passports immediately. It must be noted that the likes of corruption in the South African public sector harm good governance and service delivery. Where there is corruption, the delivery of public service is usually poor. On the other hand, with the electronic government, the society uses the digital government to access services. Moreover, with the electronic government, society makes use of ICT to access public services and public officials process their applications. However, it must be noted that not all public services can be accessed online some require society to visit a government entity for further assistance.

For instance, concerning renewing a driver's license at the traffic department, one can book a slot online and visit the traffic department for further assistance, such as eye testing assistance. Therefore, this may be a long process that may lead to corrupt activities such as bribes for faster service rendering. This gives a clear indication that corruption may still thrive even in the presence of digital government. This remains a challenge associated with e-government in South Africa and harms the provision of services. On the brighter side, several measures are implemented that serve as preventive actions against possible problems that might occur in the digitization of the government (Adams & Paul, 2023). These include measures that the South African government employed to prevent corrupt activities from taking place in the digitalization of public services. As an illustration, the Department of e-Government established a policy imposing zero tolerance for fraud, corruption, theft, mismanagement, or any other similar fraud. Therefore, it can be concluded that corrupt activities remain inevitable in the government of South Africa even in the presence of digital government, it persists to thrive. However, there are policies in place as preventative and corrective actions.

The Current Status of Electronic Government in South Africa

Progress and Attainments

South Africa has made significant strides in implementing e-government initiatives (Terrance, 2023). This is seen by the work of Maluleka (2023) affirming that the Independent Electoral Commission (IEC) has attained the establishment of an electronic procurement system that enables open and transparent procurement of government tenders to eradicate corruption. Another attainment of the digital government project is the SARS electronic submission system, which provides a way to carry out transactions concerning tax returns on the Internet between governments and businesses (Mohlala, 2023). Moreover, the National Traffic Information System (eNaTIS) is an electronic government initiative for obtaining driving licenses, registering, and granting car licenses, notifying of changes in ownership/sale of cars, and obtaining learner licenses. Jakoet-Salie (2023) also identified the attainment of the digital initiatives of The National Department of Health, the Medical Research Council (MRC), and the National Health Information Systems Committee on South Africa (NHIS/SA). The Presidential Hotline platform is also regarded as the attainment of a digital government initiative that deals with complaints about unresolved issues concerning the distribution of public services.

Looking at the government departments, most of them have successfully implemented e-government initiatives such as the Department of Home Affairs, which provides digital services for visa and permit applications and simplifying processes for foreign nationals intending to visit or reside in South Africa. This includes the Home Affairs National Information System (HANIS) project which the society can utilize to access death as well as birth registration forms online. Furthermore, the initiative of the Department of Home Affairs to collaborate with South African banks to render public services such as ID cards. Then again, the Gauteng Department of e-Government is another success of the electronic government in South Africa as it aims to modernize the public service to make certain that there is a supply of public services fruitfully to residents in Gauteng, employees, and businesses through digital platforms. The work of Madyibi (2020) identifies the attainments of digital government such as the Department of Transport providing electronic services (e-transport) and the Department of Education through the e-Sams. Furthermore, the Department of Communication and Information Systems established a one-stop website for all the information concerning the government.

With regard to local government, most metropolitan municipalities have made significant progress in electronic governmental initiatives. As an illustration, the City of Tshwane has made progress in e-government having successfully established "e-Tshwane" as a digital platform for offering services. On the other hand, the city of e-Thekwini has made progress towards the achievement of digital government initiatives, but the effectiveness of digital government in this municipality is limited by internet connections (Kariuki, Ofusori, & Goyayi, 2019; Reddy & Govender, 2019). Concerning the City of Johannesburg (CJ), it has implemented various e-services such as e-statements, e-recruitment, and e-payments. The residents of CJ can view statements online, apply for jobs listed on the municipality's website, and pay their municipal accounts 24hrs. This indicates the success of the initiatives of the e-government as services can be provided digitally. The same can be said for the City of Cape Town (CCT). The CCT has also adopted digital services, this is seen through the municipality having e-recruitment, and e-billing. It is therefore clear that South Africa managed to make significant progress in executing electronic government initiatives.

Barriers, Difficulties, Failures, and Lessons from Practices

The execution of e-government in South Africa, similarly with many other countries, faces several difficulties (Nokele & Mukonza, 2021). This includes unequal access to technology which remains one of the difficulties in the execution of digital government in South Africa, especially in deeply rural areas. This remains a huge difficulty that hampers the successful execution of electronic government because most of the societies in rural areas are not able to access technology due to various reasons such as internet connectivity and inability to operate computers. This then creates a situation where people residing in rural areas perceive electronic government negatively while people residing in urban areas perceive electronic government positively and believe it is useful and yields fruitful outcomes. This is because the lack of access to electronic government can also contribute to excessive levels of unemployment and a poor quality of life in rural areas (Aruleba, 2022). Additionally, rural areas often lack adequate internet infrastructure, leading to limited or no access to high-speed internet and this hinders citizens' ability to engage with e-government platforms.

It must be noted that one of the electronic government initiatives is e-recruitment where jobs are listed online, the society applies for jobs online rather than traditional paper applications. For instance, some of the provincial departments such as Kwazulu-Natal, Eastern Cape, Western Cape, and Gauteng have launched e-recruitment where people apply for jobs online. Therefore, some of the members of the society in rural areas may struggle to engage with e-recruitment due to limited or poor internet connectivity. Consequently, unemployment levels in South Africa will continue to grow. This highlights a demand for the government to invest more funds in ICT to ensure that South Africa has enough personnel to tackle the challenges experienced in rural areas such as poor internet connectivity. However, Jacket-Salie (2020) noted that the shortfalls of talented ICT graduates were identified as one of the key difficulties in South Africa. On the other hand, Thusi and Chauke (2023) noted that the Government of South Africa is currently dealing with high-volume turnover issues, especially in the scarcely qualified sectors of ICT. Subsequently, this shows that the South African government must acquire and keep ICT personnel in the nation because the success of electronic government depends on the ICT personnel to aid in removing barriers in rural areas and safeguard the confidential information of the residents.

According to Terrance (2023), electronic government initiatives are limited by the ability of society to utilize computers and mobile smartphones. However, this includes government employees because the success of electronic government depends on their knowledge of technology and their ability to utilize computers, laptops, and mobile smartphones. This is because employees of the government also play a role in processing the digital applications of the residents through technological means such as computers, laptops, and cell phones. Furthermore, the limited ability to read and understand English also limits the usage of digital government services by many people in rural areas. There is a difference in household internet access between low-served and urban areas, and rural areas have lower connectivity levels (Afzal, Khan, Daud, Ahmad & Butt, 2023). These disparities restrict the opportunities for society to participate in electronic government platforms. Mello and Shai (2019) in support of the above-mentioned statement attest that the execution of electronic government is a futile exercise if most rural poor people cannot access such e-services. Although most government entities, departments, and metropolitan municipalities are thriving in offering e-services, local municipalities encounter several challenges in implementing e-government. For example, Galushi and Malatji (2022) carried out a study at Musina Local Municipality in the Limpopo province, the study proved that implementing

electronic government in the municipality will be difficult. This is because the interviewees demonstrated no knowledge and faith in digital government.

Therefore, this implies that there is insufficient knowledge and grasp of electronic government in local municipalities especially those municipalities located in rural areas. To ensure a smooth transition to electronic government, the municipalities are expected to educate their communities about electronic government. The local government lacks sufficient ICT infrastructure to provide municipal services, which is exacerbated by the lack of basic digital literacy affecting society's members. For this reason, skills and training in ICT are crucial in rural areas. This has been aggravated by the expansion of electronic divisions, which have constantly increased the distance between cities and rural areas. It must be noted that society might have poor faith in digital government because of a fear of their confidential information being revealed to third parties. Previous studies highlighted the need for the government to ensure robust data security measures to safeguard society's sensitive information because occurrences such as breaches of data can erode public trust in e-government systems (Xia, Semirumi & Rezaei, 2023; Zakrzewska & Miciuła, 2021; Yang, Elisa & Eliot, 2019; Sutherland, 2021).

This implies that society needs assurance that their data is being used responsibly and ethically because a lack of transparency regarding data use can lead to distrust and hesitance to engage with e-government services. Within government institutions, there may be resistance to changing traditional ways of operating, leading to challenges in adopting new technologies. However, it must be noted that this can also be caused by insufficient knowledge about electronic government benefits. This then highlights the demand for training because inadequate training has the potential to lead to resistance among government employees and citizens. Electronic government has not attained the anticipated outcomes and this is shown by projects such as the Golaganang project, which is a project that failed to supply basic digital literacy for employees of the government and promote the usage of ICT in the working environment (Mohale, 2024). It must be noted that digital literacy hinders the fruitful supply of electronic government services to all members of society.

On the other hand, Mzekandaba (2023) indicated that at the end of the year 2017, an automated biometric identification system, part of the Home Affairs Department's move to a digital identification system to replace the e-Hanis system, was made known, the first phase of which was expected to be operational in 12 months. Yet, this project has not started and is affected by technical issues that have detained the system. The significance of monitoring and evaluation is highlighted in the aforementioned statement. All projects of the government must be closely monitored and evaluated to ensure that they attain the set objectives. The work of Niyansiro (2021) supports the above idea by highlighting that one of the main roots of the difficulties of electronic government in developing nations such as South Africa is a lack of monitoring and evaluation (Niyansiro, 2021). Furthermore, monitoring and evaluation are essential in preparing business cases for the justification of electronic government projects, distributing necessary funds for electronic government, and assessing the progress of projects towards the specified goals (Fan & Pan, 2023). Subsequently, there is a demand to continuously monitor and evaluate the initiatives of the electronic government to detect failures and implement corrective actions to ensure that the projects of the government attain their goals as anticipated.

Electronic Government as a Tool to Foster Citizen Involvement through Electronic Participation.

Tejedo-Romero, Araujo, Tejada & Ramírez (2022) believe that electronic government serves as a powerful tool to foster citizen engagement through e-participation, creating opportunities for the general public to take part in the decision-making procedures of governance. One of the main advantages of digital government is that it fosters the involvement of citizens through electronic participation and provides opportunities for the society to take part in decision-making processes. This approach strengthens democracy by making government more transparent, accountable, and responsive to the needs and concerns of citizens. In the case of the Coronavirus, social media platforms were available and used for distributing information. On the other hand, the internet allowed society to access government e-services such as SASSA Social Relief Grants. Therefore, this highlights the significance of social media platforms in communicating with society to share updates and seek input on various issues. As an illustration, the South African Parliament makes use of live streaming of parliamentary sessions, and this enables society to follow debates as well as proceedings in real-time and stay informed about government actions. This includes the budget speech which is broadcasted on social media platforms and on television as well to afford the society a chance to hear the financial plans of the government. Therefore, it is evident that the use of online platforms in the government of South Africa provides the society with information on budget proposals and allocations enhancing transparency and accountability. With that being said, it can be concluded that electronic government can be utilized as an instrument to foster e-participation.

Adnan (2022) concluded that, among other things, the satisfaction of the general public with electronic participation as well as the government's responsiveness was excessive and to some extent reached excessive levels of the degree of participation. Therefore, this implies that the increasing evidence points to the fast growth of electronic participation as a tool for engagement and strengthened partnerships between governments as well as society. The main goal of electronic participation is to ensure access to information and to foster engagement in policymaking, both for the empowerment of individual residents and the benefit of society. Subsequently, electronic government as an instrument to foster electronic participation is perceived to have been very effective. Furthermore, making use of ICT tools will continue to promote citizen involvement and democracy through electronic government initiatives such as online voting, electronic passports, electronic registration, electronic banking, electronic procurement, electronic passports (passport applications), electronic ID/smart identity cards, and card reservations (Molobela, 2023). However, South Africa recently declined the demand for electronic voting. In general, electronic participation tools foster democracy by creating a way for crucial engagement of citizens, promoting transparency and accountability, and ultimately leading to more responsive and inclusive governance.

Conclusion and Recommendations

Despite the success of the electronic government system, not all residents can digitally obtain and access services. The findings of the study indicate that electronic government serves as a supplement to the traditional paper documentation government. It is evident that the use of electronic government can foster democracy, accountability, governance transparency, and enhance service delivery. Although the initiatives of electronic government proved

to be effective in enhancing public service delivery problems such as ICT staff shortages, limited digital literacy, and infrastructure limitations continue to exist.

The study provides the following recommendations:

Digital Literacy

South Africa must launch government programs aimed at improving the literacy of society. This will be done to ensure that society and public sector employees can read and write as well as operate mobile devices, laptops, or computers. Training public sector employees can assist in avoiding resistance to technological innovations which is mostly caused by a lack of understanding or familiarity with new technologies. These programs must be done in both urban and rural areas, however, more focus must be on rural areas where there is a lack of internet connectivity.

Information Communication Technology Infrastructure

The literature indicated that most of the society that resides in rural areas often face difficulties with internet connectivity. Therefore, this hinders their ability to take advantage of the benefits of e-government. The government of South Africa is therefore recommended to invest funds more in ICT technology infrastructure to ensure that all members of the society can have equal access to e-services.

ICT Staff Shortages

For South Africa to address personnel shortfalls in ICT, it is recommended that South Africa invest more in basic and higher education in an attempt to prepare students and equip them with the relevant basic ICT skills that can possibly result in students pursuing careers in ICT. For instance, the South African government can provide students with bursaries to pursue studies in ICT with contractual requirements that after graduation, the student will work for the government for a certain number of years in an attempt to address shortfalls in ICT. Furthermore, concerning the excessive levels of turnover of ICT personnel in South Africa, the government can revise its retention strategies to maintain ICT personnel, this can include offering fair and competitive remuneration packages.

Monitoring and Evaluation

In light of a few initiatives of electronic government not attaining their anticipated outcomes, the study makes a recommendation to the Government of South Africa to continuously monitor and evaluate all of the digital government projects implemented to ensure they attain the desired outcomes.

Limitations and Areas for Further Research

Although a thorough assessment of existing literature as well as other published sources is necessary, the author found some significant shortcomings in this study. The authors relied on published publications. In South Africa, there is little research into the fruitfulness of electronic government in ameliorating the distribution of public services, transparency, accountability, and democracy. Future researchers can focus on exploring the following:

- The effectiveness of digital government in enhancing accountability, transparency, and service delivery: Challenges, Failures and Attainments in the local government of South Africa.
- Factors Hindering the Accessibility of the Initiatives of Electronic Government in the South African Local Government.
- Challenges Experienced by the South African Local Municipalities in Implementing Electronic Government.
- Electronic Government as an Alternative Mode of the Supply of Public Services in the South African Local Government: Lessons from Practices.

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The Great Decoupling: China, America and the Struggle for Technological Supremacy

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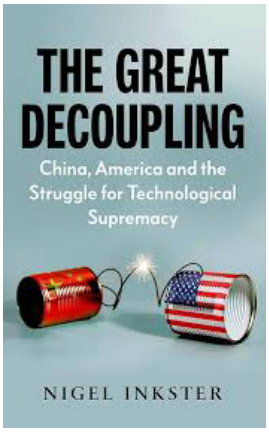

Title: *The Great Decoupling: China, America and the Struggle for Technological Supremacy*
Author: Nigel Inkster
Publisher: Hurst
ISBN: 1787383830
2020. 275 + xi pages. $21.95.

In 12 substantive chapters, the author provides a comprehensive diagnosis of the state of play of the relationship between China and the US, up to the Trump–Xi period. The book's thesis is that the two countries, the largest in the world across a number of measures (most importantly economic and military) are headed for an inevitable divergence, fuelled by misunderstanding, misalignment, and competing ambitions. This, of course, is nothing new and has been the subject of many academic and journalistic commentaries. But where Inkster stands out is in his focus on technology, an artefact important to every civilisation, and one which becomes a motivation and a weapon for integration or divergence. The book's title gives a clue as to which camp Inkster falls within. This is no mere new cold war, he argues (though much of his argument fits squarely with much of that burgeoning and increasingly attention-worthy literature). That analogy misses a lot that is different in the US–PRC formation compared to its US–USSR example. It is more akin to the UK–German pre-WWI and US–Japan pre-Pearl Harbour situations; add to that the fuel of the narrative of the century of humiliation, authoritarian rule, and ingenuity and you have a highly motivated government and society in China.

The book's first four chapters are historical. They present, respectively, China's millennia-long tradition of scientific inquiry and innovation; the beginnings of its interaction with the West; China's entry into the digital arena; and the rise of Xi Jinping to become president (along with being head of the Communist Party of China [CPC] and the Central Military Commission). It is in that triple capacity that Xi has forged or shaped the work of two highly productive leadership small groups (LSGs) with implications for China's digital ambitions. The first is the National Security Council, which brought out the 2014 National Security Law, and the second is the LSG on Cyber Security and Information. The last was in response to the previously fragmented and piecemeal approach towards the Internet in China. In 2014, Xi reportedly observed that national security depended on cyber security (Inkster, 2020: 80). China has indeed been vulnerable: it ranked 27th in the ITU's cybersecurity

index (behind the likes of Croatia and Turkey). This chapter also presents a useful who's who in the Chinese technology elite circle: ideologues, visionaries, and policymakers. Inkster also provides a brief but useful comparison of the EU's GDPR and the Chinese law. He observes that they are largely similar, especially in the management of data flows but differ in one key respect: the Chinese state reserves itself the right to access personal data that affects "national security, the national economy, and the people's livelihood." A major weakness for China is its dependency on foreign (particularly US) technologies; even among government departments, there continues to be use of Microsoft Windows, despite the country trying, to no avail, to switch to a domestic operating system, resulting in Beijing making a plea to Microsoft to extend support for Windows XP in 2013. (The fact that many had pirated it meant that they could not benefit from the security upgrades).

Chapter five turns to the Chinese techno-security state, particularly the social credit system, and chapter six looks at the intelligence services, noting the breadth of the domestic and global reach enjoyed by the government. The chapter highlights the obfuscated role of the intelligence community in decision- and policy-making (Inkster, 2020: 125. Chapter seven turns to the international arena, which China supposedly wants to shape through institutions and initiatives such as the Shanghai Security Cooperation (SCO), military modernisation, assertiveness on territorial disputes, the Belt and Road Initiative (BRI), the Asia Infrastructure Investment Bank (AIIB). Increasingly, the chapter shows, glimpses of what a China-dominated order looks like are starting to appear; and they look like a world in which the country cannot be criticised even by foreigners, as evidenced by the NBA players in 2019 when they tweeted in favour of the Hong Kong protesters. Chapter eight looks at China's attempts at using digital technologies to project its power. China has sought to shape the agenda of the ITU and its WCIT. In 2019 Huawei presented the idea of a New Internet Protocol - a feat it could attempt because its voice has grown louder, and was leaning in on global institutions at a time when the US was effectively 'defunding' them and retreating. Importantly, also, the Chinese tech giant appeared to be on the frontier due to its discovery of 5G.

Chapter nine looks at the People's Liberation Army's (PLA's) modernisation efforts, particularly through artificial intelligence (AI), with the US Department of Defense (DoD) doing the same. This will sustain the US-China rivalry, to global implications (Inkster, 2020: 191). Chapter ten looks at the idea of China as a hi-tech superpower. The chapter runs through a number of ideas already presented in the previous three chapters and pulls a bit further on the military applications of AI and how they are conceptualised in Chinese strategy documents.

Chapter eleven focuses on US-China relations. The relationship has a number of compilating factors; different cultures, political systems, unconformable histories, and different visions of the future. Matters came to a head during the Trump presidency. Despite or because of its anti-China rhetoric, different departments pursued a disjointed strategy because they were under the impression that it was "open season on China" (Inkster, 2020: 232). Yet despite this, US FDI in China grew by 1.5% as American companies diverted their operations to China in order to produce for the Chinese market and avoid the retaliatory tariffs. COVID-19 presented a point of no return; it produced anti-China sentiment in the US, while government blame within China gave the CCP motive to deflect attention outward. As a consequence, "the USA and China now seem to be on an irreversible track towards divergence and decoupling" (Inkster, 2020: 239).

Chapter twelve (what may be considered the book's main chapter) essentially asserts the thesis that we are in the early stages of a second cold war: "China's emergence as a powerful modern state with a different ideology and values and a long-term strategy pursued through a centralised, state-driven all-of-nation approach has raised serious questions about how fit for purpose the Western liberal democratic order is in the twenty-first century" (Inkster, 2020: 245).

The book has a number of excellent qualities. Yet its lack of a scientific methodology means that its claims are untestable. In this way, then, it can be said that the book lives up to its subtitle ('China, America and the Struggle for Technological Supremacy') more than the main title ('The Great Decoupling'). As the author writes "It is hard to predict exactly how a technology decoupling might play out, not least because the relevant technologies do not evolve in a predictably linear fashion" (Inkster, 2020: 251). The book is comprehensive; it is very well-researched and accessibly written. It is when attempting to predict the future that it naturally stands on shaky ground. To its great credit, it provides much context for any future predictive work.

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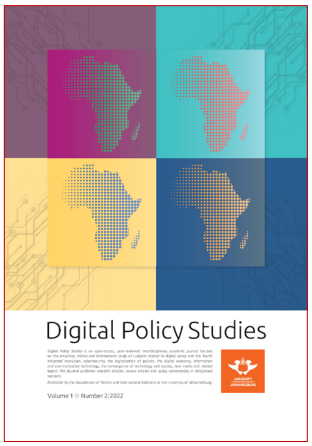

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