

The Benefits of Digital Transformation addressing the Hindrances and Challenges of e-Government Services in South Africa: A Scoping Review

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Abstract: The objective of this paper is to provide insight into how the successful implementation of Digital Transformation (DT) can help address the challenges and hindrances in South Africa's e-Government. It is essential to aid South Africa's seamless transition to e-Government. A scoping review was conducted to identify how the benefits of digital transformation can be aligned with addressing the hindrances and challenges of e-Government services in South Africa. A study was also conducted at 12 prioritised South African government departments through expert interviews to identify hindrances in implementing e-Government services. The study found that the main hindrances to e-Government were the lack of governance between departments, the integration of legacy systems, insufficient funding for e-Government projects, and various systems and applications across government. The paper recommends that the government should consider factors hindering the implementation of e-Government from realising the benefits of DT.

Keywords: Government, e-Government, Digital Transformation.

1. Introduction and Background

A government is an organisation or function that governs; typically, it is the leading economic organisation in a nation [1]. Thus, a government plays a vital role in all relations between businesses and government, or vice versa, and between the government and citizens. As information and communication technologies (ICTs) advance, governments worldwide are increasingly offering online services to citizens [2]. The digitisation of government had continuously evolved from the early days when information technology-supported government work, to when IT-based restructuring occurred on a massive scale, and then to the full digitalisation of government functions [3]. The benefits of digital transformation (DT) are immense, but the local environment and context will determine the extent of these effects. Kuldosheva [4] contends that problems related to technical and infrastructural factors; institutional and managerial environments; legal and regulatory factors; and environmental factors pose serious challenges to governments when implementing electronic governance programs, especially in developing countries. For example, the South African electronic national administration traffic information system (eNaTIS) designed for the registering, storing, recording, managing and enforcing of the data and documentation generated by the implementation of the National Road Traffic Act and National Road Traffic regulations deployed in 2007 failed due to the integration with legacy systems [5]. In Gauteng, the online booking system was introduced in 2018 to make

things more efficient and cut down on corruption, however, it has not succeeded due to corruption and continued system failures [6, 7].

Similarly, individuals still queue up at the Home Affairs department so early in the morning that, if they are lucky, they will be attended to the same day [8]. The National Health Insurance (NHI) is being implemented in the South African healthcare sector to facilitate accessibility to high-quality healthcare for all citizens [9]. For this objective to be achieved, an Electronic Health Record (EHR) system is required to register and track patients' visits to different healthcare providers. The absence of a national EHR can be attributed to technical, social and environmental challenges, i.e., infrastructure, training, and lack of governance [9, 10]. e-Health projects must have separate budgets.

To reduce the risks and challenges associated with DT, the government should see DT as part of a broader governance reform project. Historical, socioeconomic, and cultural factors should be considered to achieve positive outcomes from DT rather than simply imitating examples from other cases [4]. The rest of the paper outlines the problem and research question, methodology, literature review, and the analysed results.

2. Problem Overview and Research Question

This paper aims to explain how the successful implementation of DT can help address the challenges and hindrances that arise with e-Government in South Africa. Successfully implementing DT can potentially help the government to solve all the issues relating to service delivery. The Government of South Africa intends to digitise their services and move from a traditional government to e-Government, however, some many challenges and hindrances need to be addressed before e-Government can become a reality. Section 4.2 presents the hindrances and challenges of e-Government. Despite progress in e-Government made by the South African government in the past few years, the e-Government sector is still lagging in creating a completely digital government. Therefore, the research question of this paper is: How can the benefits of DT address the challenges and hindrances of e-Government in South Africa?

3. Methodology

A systematic review is a form of research synthesis conducted by expert groups that identify and assemble international evidence relevant to a particular question and analyse the results and synthesise [11]. In scoping reviews, definitions used in the literature are typically examined and clarified [11]. An effective scoping review is an excellent way to evaluate and conduct research design [11]. This paper was developed according to a scoping review because the researchers intended to examine the benefits of DT in government. Using IEEE Xplore, ScienceDirect, ACM digital library, and Scopus, relevant papers on the following search terms were identified: Government, e-Government, and Digital Transformation. Only 20 of the 1015 papers retrieved dealt with Government, e-Government, and DT. Some papers focused on DT in e-Government, while others looked at a specific technology in e-Government, for instance, Application Programming Interfaces (API). This paper scoped publications published between 2010 and 2021. Articles that discussed e-Government and DT, written in English and relevant to the search, were included in the inclusion criteria. The exclusion criteria included irrelevant articles to the study, non-English articles, and duplicates. Following the screening process, 100 remaining eligible papers were identified; 80 papers were excluded, and 20 were considered eligible for the study. The scoping review was also supported by a study conducted at 12 prioritised South African government departments to determine hindrances when implementing e-Government services in 2020. This was done by conducting telephonic interviews with

experts in each of these departments. Fig. 1 illustrates the results of the scoping review using the PRISMA statement.

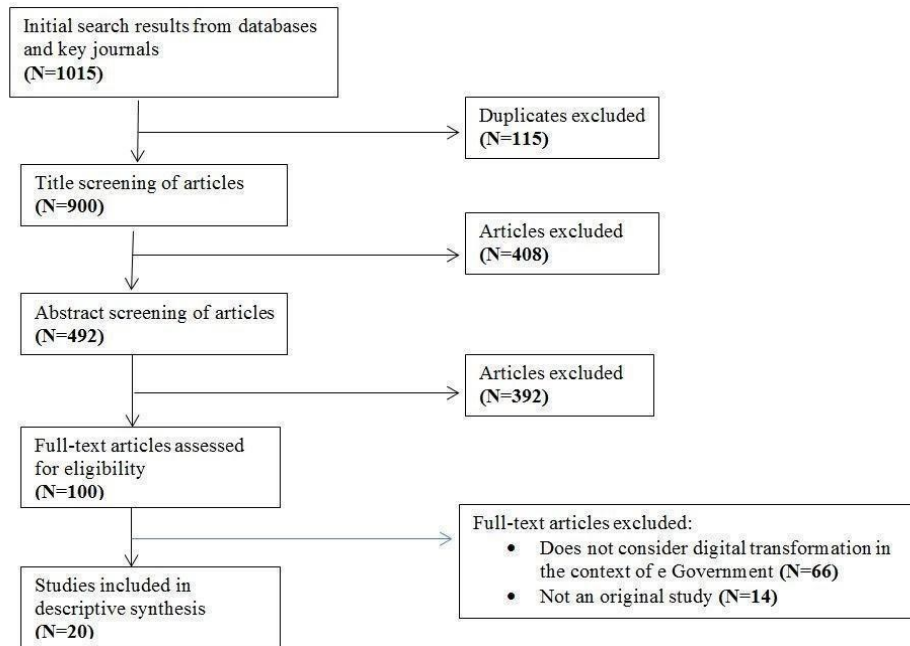


Figure 1: Record selection process adapted from (Moher et al., 2010)

4. Literature Review

4.1 The journey of South Africa's Government to e-Government, focusing on digital transformation

In the 1990s and early 2000s, ICT research focused on bridging the digital divide by addressing access and connectivity barriers for most Africans [12]. The focus in South Africa was on eradicating poverty and addressing the injustices of apartheid, creating jobs and equal opportunities, and spurring economic growth by expanding ICT infrastructure and broadband services [13]. Since then, ICT policies such as the New Growth Plan (2010), the National Development Plan (2013) and the government's Nine-Point Plan inevitably changed, and ICT policies needed to adjust to these changes. The National Development Plan (NDP) 2030 identified the fragmented ICT infrastructure and communication and high access costs as critical challenges to be addressed to solve problems leading to the socioeconomic as well as geographic digital divide [14]. In response to the identified challenges, the Department of Communications (DoC) and Digital Technologies (DCDT) implemented the National Integrated Information Communications Technology (ICT) Policy White Paper in 2016 to address the digital divide and the identified challenges from the NDP 2030 [15]. However, despite considerable progress in socioeconomic development, South Africa still lags economically in transforming digitally.

ICT has revolutionised how governments provide services to citizens, facilitating improved service delivery, enhancing government efficiency, and improving transparency [16, 17]. Governments are improving their services worldwide by making them available online - commonly known as e-Government [18]. e-Government refers to using ICTs and their governments' applications to deliver information and services to citizens and businesses [19]. Many countries adopt e-Government systems because they are effective and suited to many public service contexts. As a result, citizens now have easier access to information, transparency, and improved government services [20]. At a mature level of e-Government, e-Government platforms facilitate most of the two-way communication between users and government, enabling citizens to participate in democratic decision-

making in interacting with public officials [4]. Furthermore, by utilising digital technologies, e-Government can discover what is happening in people's social networks to deliver a better, more effective, efficient service [21]. The driving force behind this is the expectation that citizens and businesses have of the government to deliver high-quality digital services in real-time [22]. However, some challenges negatively impact e-Government progress. Digital transformation of government is thus important for effective e-Government. The following section describes some of the hindrances the government could run into when implementing e-Government.

4.2 *Hindrances of e-Government*

The following challenges were identified as hindering the advancement of e-Government in South Africa in the National Integrated ICT Policy White Paper and the Information Society and Development (ISAD) Plan of 2007 [23]:

- The lack of coordination between government departments when it comes to DT.
- Inefficiency, redundant processes, incompatible databases, and large-scale incompatibilities are the main barriers to e-Government adoption.
- A lack of accountability and responsibility has resulted from the fragmentation of e-Government programs, caused by the overlap of responsibilities between all types of government departments.
- South Africa does not have a separate budget for e-Government implementation.
- At present, some government departments utilise a variety of applications, platforms, software, and databases. Further, most existing ICT systems were not built to enable cross-departmental sharing of information. To realise the true potential of e-Government, cross-departmental information sharing is imperative, and, therefore, the government must standardise the requirements for data exchange and management.
- In South Africa, e-Government has not been directed and managed collectively, which has held the programme back. In addition, the institution responsible for coordinating and implementing e-government remains unclear.

Coupled with these challenges reported in 2017, the CSIR also conducted a study in 2020 to determine hindrances to consider before DT can become a reality. This study involved interviews with 12 prioritised government departments in determining their implementation of e-Government services since the National e-Government Strategy and Roadmap was gazetted in 2017. In this report [24], the following hindrances were documented based on the feedback from the identified government departments:

- It is inherently risky, complex, non-linear and extremely technical to execute e-Government projects in South African government departments.
- A continuing digital divide problem is also being cited where certain subsets of society lack access to ICTs. In addition, the ICT budget is insufficient and operational costs are high.
- There is a lack of partnerships and collaboration across government, business, and nonprofit sectors.
- Implementing e-Government initiatives is impossible without an adequate level of e-readiness.
- External and mostly Western agencies drive e-Government initiatives
- There is a complex and turbulent global political environment coupled with change management issues.
- In addition to the lack of integration and effective management and a lack of qualified IT staff and project managers in the public sector, there is considerable resistance from public sector employees.
- Lack of interoperability of e-Government systems.

- Lack of management commitment to implement e-Government services

As the population of South Africa grows, the government is faced with challenges in delivering government services and reducing the administrative burden. To effectively implement e-Government and eventually digitally transform government services, the government must consider these hindrances. Therefore, it is essential to understand the benefits of DT to gain better insight into e-Government.

4.3 Movement of e-Government to Digital Transformation

Challenges and hindrances of e-Government are evident in section 4.2. DT can potentially help address these hindrances and challenges. There is no doubt that DT is important for an economy and affects all its sectors [25]. Tobgye [26] describes DT as changes associated with applications in Noall aspects of modern society. According to Matt, Hess [27], these changes involve adopting disruptive technologies to increase productivity, value creation, and social welfare. For example, the introduction of the World Wide Web in 2000 altered the era of digitisation, resulting in an increased demand for the transformation of society. Today we can manage our daily lives and gain access to information instantly due to digital communication. Furthermore, with the Covid-19 outbreak, many companies experienced a significant increase in online transactions, boosting their competitive strategies and improving customer service [28].

4.4 Benefits of Digital Transformation

The following are the benefits of DT [4, 21]:

- **High annual growth and fast penetration:** Through automating tasks and enhancing information flows within an organisation.
- **Public trust:** Responding more quickly to public needs and forming stronger relationships.
- **Modern infrastructures and smart cities:** Through digital technologies, the government can interact directly with community and city infrastructures and monitor what is happening within the city as well as how it is developing.
- **Increased scalability and Flexibility:** Governments can move away from restrictive legacy systems to implement modern, scalable alternatives.
- **Enhanced reliability and reduced risk:** Modernising the tools will create a larger pool of candidates with the right experience to support them adequately, reducing failures and cybercriminals.
- **Improves decision-making:** By deepening data analysis, the ability to digitally streamline processes will provide data-driven decision-making that will provide more accurate and faster results.
- **Competitive advantage:** Sustaining a business requires it to be competitive. Therefore, even though the government is not competing with any business or organisation in the country, it must provide quality services to its citizens.
- **Eliminates tasks that unnecessarily waste staff time:** Software can replace staff time spent doing tasks manually.
- **Encourages collaborations across departments:** Creating a communication channel between departments makes information more accessible.
- **Increase agility and innovation:** The government will be able to continuously improve and develop quickly, which will enable it to anticipate any disruption.
- **Improves productivity performance:** Automation and integration of data throughout the organisation empower employees to be more productive.

With the benefits of DT, e-Government can potentially solve some of their problems and successfully digitise their services. However, from all the benefits of DT, it was found that the ones listed in table 1 address the current e-Government hindrances and challenges the most. Section 5 presents the results of the hindrances or challenges of e-Government against the benefits of DT.

5 Results: Hindrances of e-Government against the benefits of DT

Based on the literature review, it was evident that DT can address some of the issues surrounding e-Government, as shown in the following table:

Table 1: Hindrances of e-Gov against benefits of DT

Hindrances of e-Gov	Benefits of DT	Authors
The lack of coordination between government departments when it comes to DT.	Encourages collaborations across departments.	[29], [23], [4], [21]
Inefficiency, redundant processes, incompatible databases, and large-scale incompatibilities are the main barriers to e-Government adoption (eNatis, Home Affairs Systems & the absence of EHR).	Increased scalability and Flexibility. Eliminates tasks that unnecessarily waste staff time. Improves productivity and performance.	[25], [30], [26], [28], [27], [17], [8]
South Africa does not have a separate budget for e-Government implementation, as a result, several initiatives still operate under separate budgets.	DT is forecasted to have high annual growth and fast penetration	[31], [30], [32], [33]
At present, some government departments utilise a variety of applications, platforms, software, and databases.	Manage and maintain the digital communication infrastructure, ensuring accessibility, quality and affordability. Governments can develop programs that detect threats and prevent attacks through digital technology.	[24], [34], [20], [22], [35], [17], [5]

Even though DT has many benefits for e-Government, several factors affect its successful implementation. Treadaway, Haumann [35] mention that Africa lagging on the path towards digitisation is because of the lack of experienced network engineers, while Camarate [34] observes there is a lack of digital champions in the industries who can harness these technologies in South Africa. In addition, the following factors slows down DT [32, 33]:

- An insufficient or overly heterogeneous organisational structure or culture
- DT strategies and return on investment (ROI) visibility are lacking
- There is a perception that existing businesses are being cannibalised
- Insufficient recognition of DT's value to society
- An insufficient number of skilled and qualified workers
- Insufficient or non-existent infrastructure
- Regulations and consumer protection are lacking or inadequate
- Small and medium-sized businesses have limited access to funding
- Anxiety about acceptance or transparency
- Conflict of interest
- Loss of employment is a concern
- No clear vision or strategy
- Resistance to change

As per the discussion above, it is worth realising the potential of DT for e-Government and the main reasons why the implementation of DT fails. e-Government can become a reality in government when the hindrances and challenges are addressed. DT offers the solution to address these hindrances. However, the South African Government must

overcome the reasons above to successfully implement DT to make e-Government services a reality.

6 Conclusions

The results section and literature review both provide a broader perspective. There is no doubt DT is important, it is everywhere and in everything, it is important for the government and any organisation. It can be clearly observed that DT offers many solutions to e-Government services as it addresses most of the challenges in e-Government. It is evident from section 4.1 that the Government of South Africa has put policies in place to support DT and this has evolved over many years. There may be difficulties with the implementation of DT, but hopefully, the highlighted benefits of DT against the hindrances and challenges of e-government detailed in this paper will assist. With advances in digital technology, the South African government might successfully address its challenges to realise its global digital strategy successfully.

Lessons learned from the findings show that South Africa is still lagging behind with digital transformation in realising their goal for e-Government. It was observed that the current financial plan for e-Government initiatives is not sufficient hence most of these initiatives fail. Therefore, there should be a separate budget for e-Government initiatives. Furthermore, the hinderances identified stem from political influences, and departments working in silos. The Government and stakeholders need to work as one unit to achieve e-Government through digital transformation.

Future research directions: in the future, research will focus on how digital transformation can improve the lives of resource-constrained citizens in South Africa? Furthermore, there could be an evaluation of e-Government initiatives for DT to determine how well they achieve their intended objectives.

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