



Enhancing digital transformation strategies: a framework for SITA

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ARTICLE INFO

Article history:

Received 16 June 2024

Received in rev. form 27 August 2024

Accepted 18 September 2024

Keywords:

Digital Transformation Framework, Public Sector, SITA, Technology-Organization-Environment (TOE) Framework, Technology Acceptance Model (TAM), Resource-Based View (RBV), Digital Transformation Strategy

JEL Classification:

L86, M15, O33, O38

ABSTRACT

This article seeks to analyse the impact of systemic hurdles, organisational inertia, and technology limitations on the digital transformation initiatives of the State Information Technology Agency (SITA) in South Africa. The study aims to present a comprehensive framework to improve SITA's digital transformation strategy by tackling these obstacles. This article aims to identify key areas including policy restructuring, capacity building, and the adoption of modern technologies such as cloud computing, big data, and the Internet of Things (IoT). We utilised a mixed qualitative-analytical approach for data collecting and processing. Primary data were collected via semi-structured interviews with SITA personnel, while secondary data were sourced from official SITA papers, such as annual reports and strategy plans. Thematic analysis was employed to discern reoccurring patterns and themes. An analysis was conducted on a dataset of SITA's digital activities spanning from 2012 to 2021. The study's principal findings indicate that (i) systemic obstacles, including antiquated infrastructure and reluctance to change, substantially hinder digital transformation, (ii) effective security protocols and strategic alliances are crucial for surmounting these obstacles, and (iii) the establishment of a comprehensive framework encompassing capacity building and the integration of advanced technologies can significantly bolster SITA's digital transformation initiatives, thereby enhancing. Nonetheless, the study possesses drawbacks, notably its dependence on qualitative data, which may not encompass the entirety of challenges encountered by SITA. Subsequent study ought to adopt a mixed methodologies approach to facilitate a more thorough analysis. Notwithstanding these constraints, the report provides significant insights and pragmatic recommendations for policymakers and practitioners engaged in digital transformation programs at SITA.

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Introduction

Digital transformation is crucial for enhancing efficiency, transparency, and service delivery within the public sector. The State Information Technology Agency (SITA), as the principal agency for digital services in South Africa, encounters structural obstacles that impede its capacity to adopt digital technology efficiently. Challenges including antiquated infrastructure, organisational inertia, and fiscal constraints. Notwithstanding SITA's endeavours to modernise via projects such as cloud computing and artificial intelligence, advancement has been sluggish owing to internal and external impediments. This study seeks to identify these obstacles and present a complete framework to improve SITA's digital transformation strategy. Digital transformation in the public sector transcends the mere adoption of new technology; it necessitates a profound alteration in organisational procedures, culture, and stakeholder engagement (Allen, 2019; Tangi et al., 2021).

The research identifies a critical deficiency in the literature, which frequently neglects the distinct problems encountered by public sector organisations in implementing digital transformation. The study utilises the Technology-Organization-Environment (TOE) framework, the Technology Acceptance Model (TAM), and the Resource-Based View (RBV) to merge theoretical and practical insights for formulating actionable suggestions. This document delineates the research methodology, principal findings, and a suggested framework for policymakers to enhance digital services in South Africa. The framework aims to tackle essential domains including internal communication, stakeholder engagement, capacity development, and strategic alliances (Public Service Commission, 2022; Sanchez & Zuntini, 2021).

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This study examines SITA's particular requirements and limitations in its digital transformation journey through a thematic analysis of primary and secondary data. The findings elucidate optimal methods and techniques to surmount current problems and enhance the use of digital technologies for superior service delivery. This framework intends to enhance the discourse on digital transformation in the public sector and provide practical solutions for SITA to fulfil its strategic objectives (Gillwald, 2020; Odufuwa et al., 2020).

This study commences with an exhaustive literature analysis, analysing both theoretical and empirical research pertinent to digital transformation in the public sector. The research methodology is subsequently presented, outlining the qualitative approach, data gathering methods, and theme analysis utilised for data acquisition and interpretation. The results and findings are given, emphasising the systemic hurdles, security problems, and organisational dynamics that affect SITA's digital transformation initiatives. A theme discussion ensues, linking the findings to existing theoretical frameworks, including the Technology-Organization-Environment (TOE), Technology Acceptance Model (TAM), and Resource-Based View (RBV). In light of these findings, actionable advice is provided to overcome the identified obstacles and improve digital transformation initiatives. The paper subsequently presents a framework for enhancing SITA's methods, derived directly from the insights obtained in the study. The study concludes by addressing its shortcomings, proposing future research possibilities, and summarising major discoveries along with final recommendations.

Literature Review

This literature review explores the digital transformation landscape at the State Information Technology Agency (SITA) in South Africa, identifying challenges, barriers, and opportunities. It uses various theoretical frameworks and empirical studies to develop a conceptual framework for SITA's digital transformation strategies. The review uses the Technology-Organization-Environment (TOE) framework, Technology Acceptance Model (TAM), and Resource-Based View (RBV), to analyze factors affecting digital transformation. It highlights systemic inertia, outdated technology, resistance to change, strategic partnerships, robust security measures, and skills development.

The conceptual framework

Challenges in South Africa include the lack of modern digital infrastructure, resistance to change, outdated policies and regulations, and skills gaps (Odufuwa et al., 2020; Marwala, 2021; Public Service Commission, 2022). Overcoming these challenges requires a holistic approach that addresses technological factors, organisational change, capacity building, regulatory factors and stakeholder engagement (Odufuwa et al., 2020, Marwala, 2020). Integrating the TOE framework, TAM, and RBV provides a comprehensive analysis of the factors impacting SITA's digital transformation. The TOE framework offers a broad contextual understanding by examining technological, organizational, and environmental factors (Baker, 2012; Oliveira & Martins, 2011). TAM delves into user acceptance, identifying factors that drive or hinder the adoption of new technologies (Davis, 1989; Venkatesh & Davis, 2000). RBV assesses internal capabilities, highlighting the importance of leveraging internal strengths and addressing resource deficiencies to support digital transformation (Barney, 1991; Wernerfelt, 1984).

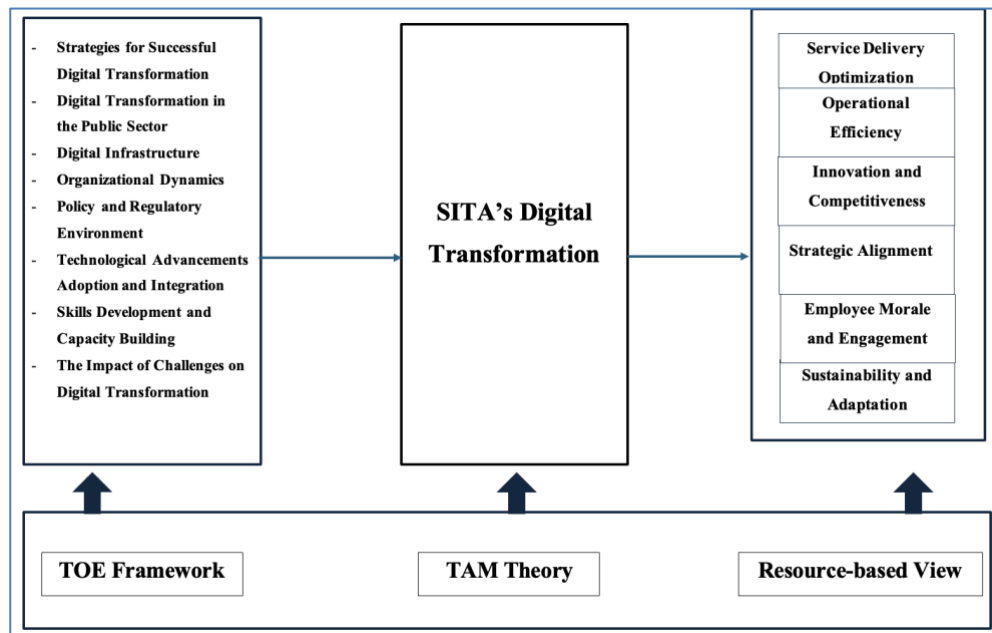


Figure 1: Conceptual framework, *Source:* Authors

Figure 1 reveals the multi-theoretical approach, which enables a nuanced exploration of the diverse and complex challenges SITA faces in its digital transformation journey. By addressing these challenges from multiple perspectives, the integrative approach provides practical solutions aligned with South Africa's strategic objectives for digital transformation in the public sector.

Digital transformation in the public sector

Digital transformation in the public sector refers to the process by which government agencies and public institutions adopt digital technologies to enhance service delivery, improve efficiency, and foster transparency and accountability. This transformation is critical in the context of the Fourth Industrial Revolution, which emphasizes the integration of digital technologies such as artificial intelligence (AI), blockchain, and cloud computing into various aspects of organizational operations (Marwala, 2020; Tangi et al., 2021).

The adoption of digital technologies in the public sector has gained momentum globally. Countries are leveraging these technologies to streamline processes, reduce costs, and provide better services to citizens. For instance, Estonia has implemented a comprehensive e-Government system that offers a wide range of services online, significantly improving efficiency and accessibility (Tangi et al., 2021). Similarly, the UK government's Digital Service has revolutionized the way public services are delivered, focusing on user-centric design and agile development (Public Service Commission, 2022).

In Africa, the digital transformation of the public sector is varied. While countries like Rwanda and Kenya have made significant strides in adopting digital technologies for public service delivery, others are still in the nascent stages of digital transformation due to various challenges such as inadequate infrastructure, limited digital skills, and financial constraints (Gillwald, 2020). South Africa, through initiatives led by SITA, is striving to modernize its public sector, although it faces significant hurdles.

The challenges in South Africa are multifaceted. SITA's efforts to modernize and enhance service delivery through digital technologies are often hampered by organizational silos, outdated technological infrastructure, and resistance to change among employees (Shibambu, 2024). Despite these challenges, SITA has initiated several projects to integrate advanced technologies like AI, cloud computing, and cybersecurity measures to improve public sector operations (Nfuka & Rusu, 2020).

To effectively navigate the digital transformation journey, public sector organizations need to adopt strategies that address not only technological integration but also cultural change, capacity building, and stakeholder engagement. The complexity of digital transformation necessitates a holistic approach that considers the unique needs and constraints of public sector entities (Odufuwa et al., 2020).

By embracing a multifaceted strategy that includes fostering innovation, improving technological infrastructure, and enhancing internal and external communication, public sector organizations can overcome the barriers to digital transformation. This approach will enable entities like SITA to achieve their strategic objectives and improve service delivery to the citizens of South Africa (Sanchez & Zuntini, 2021).

Digital infrastructure

Globally, digital infrastructure forms the backbone of modern economies, enabling efficient service delivery and fostering innovation. Advanced nations such as South Korea and the United States have invested heavily in high-speed internet, cloud computing capabilities, and data centres, driving economic growth and societal advancements (Kim & Roldan, 2020). These countries illustrate how strategic infrastructure investment can transform public services and enhance national competitiveness (OECD, 2021). Across Africa, the development of digital infrastructure is a mixed landscape. While pioneers like Kenya and Rwanda have made significant strides in digital connectivity, many countries still grapple with inadequate investments and political instability (Gillwald, 2020). The continent's potential is immense, but challenges such as unreliable power supply and high internet costs continue to impede widespread digital transformation (World Bank, 2021).

In South Africa, digital infrastructure is relatively advanced compared to many African counterparts. However, persistent issues like rolling blackouts, high data costs, and outdated legacy systems in government departments hinder progress (Mashau & Hlatshwayo, 2021). Government initiatives aim to modernize infrastructure, but these efforts often face financial constraints and slow implementation (Makoza & Chigona, 2020). SITA, as a central player in South Africa's digital transformation, is responsible for maintaining and supporting these outdated government systems, which leads to inefficiencies and integration difficulties. The organization's insufficient investment in high-speed internet, cloud capabilities, and data centres further hampers its ability to deploy scalable digital solutions (Shibambu, 2024). Frequent service disruptions due to unreliable infrastructure undermine the reliability of digital services.

The global, African, and South African perspectives converge on the critical importance of investing in modern digital infrastructure. However, the reliance of government departments on outdated systems and SITA's insufficient investment in infrastructure reflect significant misalignments with these broader trends. Addressing these gaps is essential for SITA to fulfill its role in South Africa's digital future.

Organizational dynamics

Around the world, the success of digital transformation hinges on organizational dynamics. Cultural shifts, strong leadership, and employee engagement are vital. Companies must break down silos, foster collaboration, and support continuous learning to thrive in a digital landscape (Andriole, 2020). In Africa, organizational dynamics vary but share common hurdles: resistance to change, hierarchical structures, and limited training resources (Banga & te Velde, 2020). Leadership, in many African organizations, struggles to drive digital transformation amidst these constraints, often exacerbated by socio-economic challenges (Nfuka & Rusu, 2020).

South African organizations face similar obstacles, compounded by historical and socio-economic factors. Resistance to change, lack of digital skills, and insufficient senior management support are prevalent issues (Marwala, 2021). Efforts to improve organizational dynamics focus on enhancing leadership and fostering a culture of innovation (Sanchez & Zuntini, 2021). Within SITA, resistance to adopting new technologies stems from job security concerns, workflow changes, and a lack of understanding of digital transformation benefits (Shibambu, 2024). Organizational silos impede collaboration, while insufficient support from senior management undermines transformation initiatives.

The need for cultural shifts and strong leadership to support digital transformation is a common theme globally, in Africa, and in South Africa. SITA's specific challenges reflect these broader trends but are intensified by internal dynamics, indicating a need for significant organizational change to align with best practices.

Policy and regulatory environment

Globally, supportive policies and flexible regulations are crucial for successful digital transformation. Countries like Estonia have thrived by implementing clear, forward-thinking digital policies that foster innovation and public service efficiency (Tangi et al., 2021). In Africa, the policy and regulatory environment is diverse. Some countries have made commendable progress in developing digital policies, while others lag due to outdated regulations and stringent compliance requirements (Agbozo et al., 2021). These regulatory challenges often stifle innovation and delay digital initiatives.

South Africa grapples with outdated policies misaligned with current technological advancements. Strict regulations and compliance requirements further limit the flexibility needed for digital transformation (Public Service Commission, 2022). Key regulations impacting digital transformation include the Protection of Personal Information Act (POPIA) which mandates stringent data protection measures, the Electronic Communications and Transactions Act (ECTA) that governs online transactions and digital signatures, and the Cybercrimes Act which addresses cyber threats and establishes protocols for managing cybersecurity incidents. While these regulations are crucial for protecting data and ensuring security, they can also impose significant compliance burdens that hinder the swift adoption of new technologies. The absence of clear and comprehensive digital policies creates uncertainty and hinders the progress of digital initiatives. SITA is particularly affected by outdated policies and stringent regulatory requirements that hinder the adoption of new digital solutions (Shibambu, 2024). The lack of clear digital policies creates uncertainty, impeding the development and implementation of innovative digital initiatives.

There is a clear alignment between the global, African, and South African views on the necessity of supportive policies and regulatory flexibility for digital transformation. However, SITA's struggles with outdated policies and stringent regulations reflect a misalignment that needs urgent attention to foster a conducive environment for digital innovation.

Technological advancements, adoption and integration

Technological advancements are at the heart of digital transformation worldwide. Organizations must continuously update and adapt their systems to keep pace with rapid technological changes, which can be resource-intensive (Asamoah et al., 2020). Cybersecurity is a paramount concern, requiring measures to protect data and digital platforms. In Africa, the adoption of new technologies is gradual due to resource limitations and technical expertise gaps. However, countries like Nigeria and Kenya are making notable progress in integrating new technologies despite these challenges (Odufuwa et al., 2020).

South Africa is slowly but steadily adopting new technologies, though the pace is hampered by compatibility issues with existing systems in government departments and a shortage of skilled personnel (MyBroadband, 2021). Reluctance to adopt new technologies further exacerbates these challenges, often driven by concerns about job security and the complexities of transitioning from established workflows to new systems. Cybersecurity remains a significant concern, necessitating protective measures. SITA faces considerable challenges in continuously updating and adapting these systems, a process that is both resource-intensive and complex (Shibambu, 2024). The increased use of digital platforms and data exposes SITA to greater cybersecurity risks, necessitating security measures. Integrating new technologies with existing systems remains difficult due to compatibility issues and the need for specialized skills.

The need to keep pace with technological advancements, ensure successful adoption, and address cybersecurity risks is a common thread globally, in Africa, and in South Africa. SITA's challenges align with these broader trends but are more pronounced due to specific resource and skill constraints, highlighting a misalignment that requires strategic intervention.

Skills development and capacity building

Skills development and capacity building are essential for successful digital transformation worldwide. Organizations invest in training programs and partnerships with educational institutions to bridge the skills gap (Rachinger et al., 2019). Retaining skilled employees is crucial in a competitive job market. In Africa, the digital skills gap is significant. Many countries struggle with inadequate training programs and a lack of skilled personnel to manage digital transformation projects (Agbozo et al., 2021). Partnerships with international organizations and educational institutions are vital to address these gaps.

South Africa faces a similar challenge, with many employees lacking the skills to effectively utilize new digital technologies (Mashau & Hlatshwayo, 2020). The shortage of skilled personnel often leads to a reliance on external expertise. Efforts to improve digital literacy and provide training are ongoing but need to be scaled up. At SITA, the lack of necessary skills and knowledge among employees necessitates training and capacity-building programs (Shibambu, 2024). The organization frequently relies on external expertise due to a shortage of skilled personnel capable of managing digital transformation projects. Retaining skilled employees is challenging in a competitive job market.

The global, African, and South African perspectives on the need for skills development and capacity building align closely. SITA's challenges reflect these broader trends but are particularly acute, indicating a significant misalignment in the availability and development of necessary skills within the organization. Addressing this gap is critical for SITA's success in digital transformation.

The impact of challenges on digital transformation

Operational efficiency: Organizational inertia, characterized by resistance to change and adherence to outdated processes, significantly hinders SITA's ability to implement new technologies efficiently. This results in slower operational processes and reduced agility in responding to technological advancements (Wessel et al., 2021). Additionally, outdated technological infrastructure limits SITA's capacity to integrate advanced digital solutions, thereby impeding improvements in operational efficiency and effectiveness (Vial, 2019).

Service delivery: Resource limitations, such as financial constraints and a lack of skilled personnel, impact SITA's ability to deliver high-quality digital services. Insufficient funding restricts investment in new technologies and training programs, which are essential for enhancing service delivery (Fitzgerald et al., 2014). Furthermore, inadequate implementation of robust security measures can lead to data breaches and privacy issues, undermining the trust of stakeholders and affecting the reliability of digital services provided by SITA (Westerman et al., 2011).

Innovation and Competitiveness: Systemic barriers, including bureaucratic processes and long-tenured staff resistant to innovation, stifle SITA's ability to remain competitive and innovative. These systemic barriers prevent the adoption of new digital practices and technologies that could drive organizational growth (DiMaggio & Powell, 1983). Additionally, multifaceted resistance to digital transformation from various levels within the organization creates a challenging environment for fostering innovation. This resistance can slow down the pace of transformation and limit the organization's ability to compete with more agile and technologically advanced entities (Kane et al., 2015).

Employee Morale and Engagement: Ineffective change management strategies contribute to employee resistance and low morale. When employees are not adequately supported or informed about the benefits of digital transformation, they are less likely to engage with new initiatives, leading to a disengaged workforce (Hess et al., 2016). The lack of continuous professional development and upskilling opportunities demotivates employees and inhibits their ability to adapt to new technologies. This not only affects individual performance but also the overall digital maturity of the organization (Westerman et al., 2011).

Strategic Alignment: Without a comprehensive and integrated digital transformation strategy, SITA struggles to align its technological initiatives with its overall strategic objectives. This misalignment can result in fragmented efforts that do not fully leverage the potential of digital transformation to drive organizational success (Besson & Rowe, 2012). Additionally, the absence of strategic partnerships limits SITA's access to cutting-edge technologies and expertise. Collaborations with technology providers and other stakeholders are essential for overcoming resource constraints and enhancing the effectiveness of digital transformation initiatives (Shibambu, 2024).

These challenges facing SITA in its digital transformation efforts have far-reaching impacts on operational efficiency, service delivery, innovation, employee engagement, and strategic alignment. Addressing these challenges through targeted strategies and a comprehensive framework is crucial for SITA to fully realize the benefits of digital transformation and improve its service delivery to government departments and citizens across South Africa.

Strategies for improving digital transformation

Improving digital transformation at SITA requires a comprehensive and multifaceted approach that addresses both technical and organizational challenges. Policy and organizational restructuring are critical first steps. Modernizing policies and regulations to keep pace with technological advancements and reduce bureaucratic inefficiencies can streamline processes and enable a culture of innovation (Vial, 2020; Wessel et al., 2021). Implementing organizational changes, such as flattening hierarchies and fostering cross-

functional collaboration, will further reduce inertia and encourage agile decision-making (Caron & van Knippenberg, 2022). These shifts are essential for digital transformation in dynamic environments like SITA.

Skill development is another pillar of success. Continuous upskilling and reskilling programs are crucial for employees to keep pace with rapidly evolving technologies (Aguado et al., 2021). For example, digital competency frameworks should be adopted to systematically assess and enhance employees' technical capabilities (Sun et al., 2022). These programs can be coupled with employee engagement initiatives that actively involve staff in the digital transformation process, thereby reducing resistance to change and fostering an environment where employees feel empowered (Skog et al., 2021).

To support these changes, robust change management practices are essential. A transparent and coherent communication strategy that clearly outlines the benefits of digital transformation is critical for securing buy-in at all levels (Cameron & Green, 2021). Furthermore, leadership engagement remains key—leaders should not only advocate for digital change but also model digital behaviours, inspiring teams and fostering accountability (Hess et al., 2021).

Resource allocation plays a fundamental role in enabling transformation. Securing sustainable funding from government and other sources is necessary to ensure that digital initiatives can be pursued effectively (Baird & Raghu, 2022). The importance of investing in scalable, flexible technology solutions cannot be overstated. New technologies such as cloud computing, artificial intelligence (AI), big data analytics, and the Internet of Things (IoT) must be adopted to improve operational efficiency and enhance service delivery (Shahbaz et al., 2021).

The role of strategic partnerships is pivotal. Partnering with leading technology providers, academic institutions, and innovation hubs can help SITA access the latest technologies and industry expertise, driving forward innovation (Shibambu, 2024). Public-private partnerships (PPPs) can be explored to leverage private sector resources, efficiency, and creativity, which can support large-scale digital projects (Nambisan et al., 2022).

Achieving a cultural shift towards digital readiness is also a critical enabler of transformation. Creating a workplace culture that is open to innovation and experimentation with new technologies is vital for long-term success (Tangi et al., 2021). Recognizing and rewarding digital initiatives can incentivize employees to embrace new ways of working, promoting continuous learning and adoption (Laumer et al., 2022). In parallel, addressing resistance to change through inclusive involvement in the design and implementation of digital projects will ensure smoother transitions (Pappas et al., 2021).

Finally, structural reorganization can further support digital integration. Reconfiguring the organization to facilitate cross-departmental collaboration and creating dedicated digital transformation teams will help ensure consistent and coordinated efforts across the organization (Sia et al., 2021). These teams can oversee the implementation of digital initiatives, ensuring that all projects align with the organization's broader strategic goals and are executed efficiently.

Theoretical framework for the study

This study employs a multi-theoretical approach to comprehensively analyze the digital transformation challenges faced by the State Information Technology Agency (SITA) and to propose a framework for improvement. The theoretical frameworks utilized in this study include the Technology-Organization-Environment (TOE) Framework, the Technology Acceptance Model (TAM), and the Resource-Based View (RBV).

TOE framework

The TOE framework is instrumental in analysing the technological, organizational, and environmental contexts that affect SITA's digital transformation. This framework allows for a holistic examination of how internal and external technologies, organizational characteristics, and environmental factors influence the adoption and implementation of digital transformation initiatives (Tornatzky & Fleischer, 1990; Oliveira & Martins, 2011). By applying the TOE framework, this study can identify key technological advancements, organizational dynamics, and external pressures that impact SITA's ability to modernize its operations and improve service delivery (Baker, 2012).

Technology acceptance model (TAM)

The Technology Acceptance Model (TAM) is employed to investigate the perceived usefulness and ease of use of new digital technologies among SITA employees. TAM provides insights into the factors that drive or hinder the acceptance and use of new technologies within the organization (Davis, 1989; Venkatesh & Davis, 2000). Understanding these factors is crucial for addressing resistance to change and enhancing employee engagement with digital tools.

Resource-based view (RBV)

The Resource-Based View (RBV) focuses on assessing the internal resources of SITA and their impact on digital transformation. RBV posits that an organization's resources, including technological infrastructure, human capital, and organizational capabilities, are critical determinants of its ability to achieve and sustain competitive advantage (Barney, 1991; Wernerfelt, 1984). By applying RBV, this study evaluates SITA's existing resources and identifies gaps that need to be filled to support digital transformation.

Integrating the theories

By integrating these theoretical frameworks, the study provides a comprehensive analysis of SITA’s digital transformation challenges. The TOE framework offers a broad contextual understanding, TAM delves into employee perceptions and acceptance, and RBV assesses internal capabilities. Together, these frameworks enable a multifaceted exploration of the factors affecting SITA’s digital transformation and support the development of an actionable framework for improving digital strategies and service delivery.

This integrative approach ensures that the proposed framework addresses the diverse and complex challenges SITA faces, providing practical solutions aligned with South Africa’s strategic objectives for digital transformation in the public sector.

Linking the theories to the research objectives

Table 1 provides an overview of how various theoretical frameworks are applied to address the research objectives of this study. The study aims to identify the challenges and barriers facing the State Information Technology Agency (SITA) in implementing digital technologies and to propose a framework for enhancing SITA’s digital transformation strategies. Each theoretical framework—Technology-Organization-Environment (TOE) Framework, Technology Acceptance Model (TAM), and Resource-Based View (RBV)—offers unique insights and approaches to understanding and addressing these objectives.

Table 1: Linking the theories to the research objectives

Research Objectives	Theoretical Frameworks	Link to Theory
To identify the challenges and barriers facing SITA in implementing digital technologies	TOE Framework	The TOE framework helps identify technological, organizational, and environmental factors that hinder SITA’s adoption and implementation of digital technologies.
	TAM	TAM investigates the perceived usefulness and ease of use of new technologies among SITA employees, highlighting barriers related to user acceptance.
	Resource-Based View (RBV)	RBV assesses SITA’s internal resources and capabilities, identifying gaps and barriers in technological infrastructure and human capital.
To propose a framework for enhancing SITA’s digital transformation strategies	TOE Framework	The TOE framework provides a structured approach to understanding how to enhance technological adoption by addressing identified barriers.
	TAM	TAM guides the development of strategies to improve user acceptance and engagement with new digital technologies.
	Resource-Based View (RBV)	RBV supports the development of a framework that leverages SITA’s internal strengths and addresses resource deficiencies to enhance digital transformation.

Source: Authors

Problem statement

The public sector in South Africa, including the State Information Technology Agency (SITA), faces significant challenges in delivering efficient services, often resulting in long queues of citizens at government buildings (Shubambu, 2024). This issue highlights the difficulty in providing services ubiquitously and equitably. As Mngomezulu and Govender (2021) highlight, the challenges in digital transformation are not only operational or technological but also deeply cultural, requiring organizations to adapt their mindsets and approaches to harness the full value of digitalization. SITA, which is responsible for the maintenance and support of government systems, appears under-resourced in its digital transformation efforts, affecting its preparedness to offer efficient digital government services.

The public sector’s digital transformation requires IT infrastructure and skilled personnel. Insufficient resources exacerbate service delivery issues for economically disadvantaged citizens. The State Information Technology Agency (SITA) is responsible for supporting government services but faces significant challenges due to South Africa’s overall shortage in digital transformation resources. While tech-savvy civil servants and SITA staff have the potential to provide effective digital government services, both groups struggle to enhance service efficiency amidst the complex digital transition.

To address these problems, it is essential to foster innovation, adaptability, improve technological infrastructure, ensure cybersecurity measures, and enhance communication strategies. This framework targets the digital transformation challenges faced by SITA and the broader public sector, aiming to meet South Africa’s strategic goals and improve service delivery.

The aim of this study is to develop a framework for management to enhance the strategies of the State Information Technology Agency (SITA) in South Africa, facilitating its digital transformation efforts. The specific objectives are:

- i. To identify the challenges and barriers facing SITA in implementing digital technologies.
- ii. To propose a framework for enhancing SITA's digital transformation strategies.

Research and methodology

Research design

This study used a qualitative research design, with data collected through semi-structured interviews and secondary sources, such as SITA's strategic documents. A purposive sampling method was employed to select participants from various roles, including management, IT specialists, and operational staff, ensuring a comprehensive view of SITA's digital transformation challenges.

The research design adopted for this study is a qualitative approach, specifically utilising semi-structured interviews and thematic analysis. According to Creswell and Creswell(2018), qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. This design ensures that the findings are deeply grounded in the experiences and realities of the participants, thereby enhancing the study's credibility and relevance.

Target population

The target population is defined as the complete set of cases or group members that is the actual focus of the research inquiry from which a sample may be drawn (Saunders et al., 2019). For this study, the target population comprised approximately 3,000 SITA employees. The study included individuals with varied roles, experience levels, and perspectives to ensure an understanding of the impact of digital transformation on the organisation.

Sampling strategy

Interview guides were sent to over 20 employees at different levels and 10 employees responded. Thus, the sample included 10 participants, chosen to represent different levels within SITA to capture diverse perspectives on the agency's digital initiatives. Data were analysed using thematic analysis to identify key barriers and propose strategies for improvement.

A purposive sampling technique was best for the study's goal. This technique allowed the study to select participants based on research question-relevant features or criteria to offer a framework that connects digital transformation with agency public policy goals. This targeted selection strategy is suitable for in-depth qualitative research like this, which seeks to comprehend complicated phenomena in a specific setting (Palinkas et al., 2015).

Data collection method

The pilot study was conducted under similar conditions as the data collection to ensure the effectiveness of the interview guide. Two participants were interviewed but not included in the main study. The decision not to include pilot participants in the main study helped maintain data integrity, while the insights gained from the pilot study, such as the need to increase interview length, significantly enhanced the quality and depth of data collected in the main study.

Saunders et al. (2019) research onion model guided the study's method and design selection. Semi-structured interviews were used for exploratory study on complex phenomena like digital transformation. Primary data were collected through semi-structured interviews with key informants involved in SITA's digital transformation projects. Purposive sampling was used to select interviewees, and 10 interviews, were conducted and offered. Secondary data sources included official SITA documents, such as annual reports, strategic plans, and project documentation, providing a contextual backdrop to the primary data. This combination of primary and secondary data sources enriched the study's findings, offering a full view of SITA's digital transformation efforts.

Data analysis

In this qualitative study, thematic analysis was employed to analyse the data obtained from the research interviews. This method facilitated the identification and categorisation of themes and subthemes. Thematic analysis is a commonly used research method when the researcher aims to understand the perspectives, opinions, knowledge, experiences, or values of participants based on qualitative data obtained from interview transcripts (Saunders et al., 2019). Thematic analysis can be conducted using different approaches, but the most prevalent method is as follows: The evaluation of the role of digital transformation in the public sector involved a systematic six-step process. This process included familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up the findings. Thus, thematic analysis was employed to conduct this evaluation.

Trustworthiness

The trustworthiness of the qualitative analysis in this digital transformation study is assessed using criteria such as credibility, dependability, conformability, transferability, and authenticity (Creswell & Creswell, 2018). Credibility was established through in-depth interviews with the identified employees at SITA and their feedback, ensuring the findings reflect the actual experiences and

perspectives of those involved in SITA's digital transformation efforts. Transferability involved providing sufficient contextual data to determine the study's applicability to other contexts, while dependability ensured the stability and trackability of data over time and conditions. Confirmability ensured the study results were shaped by participants' experiences and not researcher bias, using triangulation and participant feedback to ensure accurate interpretations.

Results and discussion

The results revealed several key barriers to digital transformation, including systemic inertia, financial constraints, and security concerns. For example, SITA's outdated legacy systems, which require substantial upgrades, have delayed the implementation of cloud solutions and IoT technologies. A case study from Kenya's public sector, where similar challenges were overcome through public-private partnerships, demonstrates the potential of strategic collaborations to accelerate digital transformation. Such partnerships could enable SITA to leverage cutting-edge technologies and reduce reliance on government funding.

Table of results

Table 2 organizes the main themes that emerged from the research in relation to the study's specific objectives.

Table 2: Thematic presentation of results

Objective	Question	Main theme
To identify the challenges and barriers facing SITA in implementing digital technologies.	What are the main barriers SITA faces in the adoption and implementation of digital technologies, including organisational, technological, environmental (external) and financial challenges?	Theme 1: Systemic barriers to digital transformation.
	How does SITA manage the risks associated with digital transformation, such as data security, privacy concerns and other related risks?	Theme 2: Implementation of robust security measures and policies.
	In your experience, what are the most significant resistance points within SITA or its stakeholder community against digital transformation initiatives?	Theme 3: Multifaceted resistance to digital transformation.
To propose a framework for enhancing SITA's digital transformation strategies.	Based on the challenges identified, what strategic recommendations would you suggest to enhance SITA's approach to digital transformation?	Theme 4: Comprehensive and integrated strategy for digital transformation enhancement.
	Are there any specific technologies or trends that SITA should focus on to future-proof its digital transformation efforts?	Theme 5: Adoption of advanced technologies e.g. Cloud, Big data, IoT.
		Theme 6: Organizational adaptation and empowerment for digital transformation.
	What changes in organisational culture or structure do you think are necessary to support and sustain digital transformation in SITA?	Theme 7: Strategic partnerships.

Source: Authors

Table 3 summarizes the frequency and percentage of responses for each identified theme. The study identified seven key themes related to the challenges and strategies for digital transformation at SITA, based on responses from ten participants.

Table 3: Responses rate percentage on findings/themes

Respondents	Theme	Frequency	Percentage (%)
10	Theme 1: Systemic barriers to digital transformation.	6	60%
10	Theme 2: Implementation of robust security measures and policies.	5	50%
10	Theme 3: Multifaceted resistance to digital transformation.	5	50%
10	Theme 4: Comprehensive and integrated strategy for digital transformation enhancement.	7	70%
10	Theme 5: Adoption of advanced technologies e.g. Cloud, Big data, IoT.	5	50%
10	Theme 6: Organizational adaptation and empowerment for digital transformation.	4	40%
10	Theme 7: Strategic partnerships.	5	50%

Source: Authors

The analysis of respondents' feedback highlights several critical areas for SITA's digital transformation. Sixty percent (60%) of respondents identified systemic barriers, such as organizational inertia, outdated technology, and financial constraints, as significant challenges. Fifty percent emphasized the importance of robust security measures and policies to ensure data protection and mitigate risks. Multifaceted resistance to digital transformation, noted by 50% of respondents, underscores the need for effective change management and leadership engagement. A comprehensive and integrated strategy, highlighted by 70%, is essential for addressing these challenges holistically. Adoption of advanced technologies like cloud computing, big data, and IoT, supported by 50%, is crucial for modernizing operations. Additionally, 40% stressed the need for organizational adaptation and empowerment, including leadership renewal and structural reorganization. Finally, 50% recognized strategic partnerships as vital for accessing new technologies and resources. These insights collectively underscore the necessity of a multifaceted approach to enhance SITA's digital transformation efforts.

Discussion

Objective 1: To identify the challenges facing the SITA when implementing digital technologies

Sixty percent (60%) of respondents at SITA identified systemic barriers as significant challenges to digital transformation, including organizational inertia, resistance to change, outdated technological infrastructure, and financial constraints. Organizational inertia stems from bureaucratic processes and long tenure, while resistance to change stems from familiarity with old technologies. The political environment complicates change adoption due to lengthy approval processes. Financial constraints exacerbate these challenges, as SITA relies on limited government funding for new technological initiatives. This theme includes key sub-themes: technology, resources, and organizational barriers.

Technology: Technological barriers are among the most prominent obstacles to digital transformation. These include outdated technological infrastructure and a resistance to adopting new technologies.

Participant 1 pointed out: *"Technology, SITA people are comfortable with old technology, are afraid of change."*

This sentiment underscores the need for SITA to modernize its technological landscape and foster a culture that embraces innovation. Outdated systems can hinder progress and reduce the efficiency of new digital initiatives, making it crucial to invest in modern, scalable, and flexible technology solutions.

Resources: Resource constraints, particularly financial limitations, significantly impede SITA's ability to implement digital transformation.

Participant 3 noted: *"SITA does not get fiscal allocations from National Treasury."*

This highlights the financial challenges faced by the organization, which rely heavily on limited government funding. Additionally, human resource challenges, such as a lack of skilled personnel and resistance to upskilling, exacerbate these issues.

Participant 9 remarked: *"Within SITA, the aging workforce turns to resist being reskilled,"*

This emphasizes the need for strategic investment in both financial and human resources to support digital transformation efforts.

Organizational: Organizational barriers include bureaucratic processes, long tenure of staff, and a silo mentality that hinders cross-functional collaboration.

Participant 1 mentioned: *"SITA bureaucracy - the same people have been in positions for too long, they are not interested in new innovation. Old policies and procedures. Lengthy approval process."*

This illustrates how entrenched organizational practices can slow down the adoption of new technologies and innovations. Additionally, indicating the need for structural changes to promote better integration and cooperation among different departments;

Participant 6 pointed out: *"Silo mentality, not a dedicated team that focuses on digital transformation,"*

This indicates the need for structural changes to promote better integration and cooperation among different departments.

Rwanda's Irembo platform faced similar challenges to SITA, such as resource constraints and lack of digital skills, but overcame these systemic barriers through strong leadership and strategic alignment. The government worked closely with the private sector to build an innovative, cost-effective digital platform that provides citizens with access to public services online (Irembo, 2020). By streamlining bureaucratic processes and investing in cloud infrastructure, Rwanda was able to deliver services more efficiently despite financial limitations. SITA can adopt a similar approach by leveraging strategic partnerships and modernizing its technological infrastructure to overcome internal bottlenecks.

Theme 2: Implementation of Strong Security Measures and Policies

Fifty percent (50%) of the respondents identified the implementation of strong security measures and policies as a significant challenge. These measures are crucial for managing the risks associated with digital transformation, protecting data, and ensuring privacy. The complexity of establishing data security frameworks and the need for continuous training on data protection regulations such as POPIA and PAIA represent a substantial challenge for SITA. Additionally, developing a government cloud ecosystem and implementing security operations centres are critical steps, but they require significant resources and coordination.

Participant 1 explained: *"Data security - SITA has data security policies and procedures, including firewalls, proxies, encryptions, and passwords. You apply to be granted access to the systems, and any system should apply to access data or other systems. Privacy concerns and other related risks are managed using usernames, encrypted expiry passwords, and one-time pins implemented in systems, in line with the POPI Act."*

Participant 9 highlighted the implementation of a Security Operations Center: *"Embedded in SITA's Cybersecurity Strategy is the implementation of a Security Operations Centre, which will monitor and ensure compliance with data security and privacy requirements, ensuring related risks are properly managed. SITA has also defined a reference architecture that enables secure access to other public environments while maintaining compliance with data sovereignty and residency requirements."*

The literature echoes the importance of security measures. Cheng et al. (2024) emphasize that cybersecurity and data privacy are fundamental to maintaining public trust and ensuring the successful implementation of digital initiatives. The GovTech agency in Singapore placed a strong emphasis on cybersecurity as a core pillar of its digital transformation. The agency established a robust cybersecurity framework and regularly updated its security protocols to protect sensitive government data, aligning these efforts with international best practices. Singapore's approach also involved building partnerships with leading technology providers to strengthen its defences (GovTech, 2020). For SITA, implementing similar comprehensive security measures—along with a focus on compliance with regulations like POPIA—will be critical for gaining the trust of stakeholders and protecting sensitive data during its digital transformation.

Theme 3: Multifaceted Resistance to Digital Transformation

Fifty percent (50%) of the respondents identified multifaceted resistance to digital transformation as a significant challenge. This resistance includes fear of job loss, reluctance to adopt new technologies, and a lack of trust in SITA's capabilities. Staff fear that new technologies might render their skills obsolete, leading to job insecurity. Additionally, there is a perception that previous technological innovations have failed, leading to scepticism about current digital transformation efforts. This lack of trust is compounded by the siloed nature of the organization and competition between business units, which hampers collaborative efforts towards digital transformation.

Participant 1 observed: *"SITA - People are afraid of losing their jobs and starting something new. Stakeholder Community - They do not trust SITA can innovate anything as most previous innovations have failed with costs. They say SITA fails to maintain the current old technologies."*

Participant 3 highlighted data-sharing issues: *"Data sharing amongst government departments or entities to enable quick decision making and improve service delivery. The signing of MOUs (Memorandum of Understanding) mitigates this, but the process is very lengthy as each department and entity involves their legal teams for approval."*

Participant 10 emphasized internal competition and budget constraints: *"Silo mentality in SITA and 'competition' between business units. Budget constraints from clients and clients' lack of trust in SITA's abilities."*

The literature supports the significance of resistance to change as a barrier to digital transformation. Cheng et al. (2024) discuss the need for effective change management and stakeholder engagement to overcome these challenges. In Kenya, the Huduma Kenya program initially faced significant resistance from public servants and citizens alike. To overcome this, the government employed change management strategies such as awareness campaigns and capacity-building programs to encourage adoption. Additionally, they implemented an incentive program to reward departments that successfully transitioned to digital service delivery (Huduma

Kenya, 2019). SITA could follow Kenya's example by creating targeted training and awareness programs to mitigate resistance to change, helping employees understand the benefits of digital transformation and ensuring a smoother transition.

Objective 2: To propose a framework for enhancing SITA's digital transformation strategies.

Theme 4: Comprehensive and Integrated Strategy for Digital Transformation Enhancement

In the context of SITA's digital transformation efforts, a comprehensive and integrated strategy is crucial for effectively navigating the complexities and barriers that arise. This theme encompasses several sub-themes: policy and organizational restructuring, skill development and personnel management, and change management and leadership engagement.

Policy and Organizational Restructuring: A critical aspect of enhancing digital transformation at SITA is the restructuring of policies and organizational frameworks to foster a more agile and innovation-friendly environment. Participants highlighted the need for updated policies that can streamline processes and reduce bureaucratic hurdles. For instance,

Participant 1 pointed out: *"SITA bureaucracy - the same people have been in positions for too long, they are not interested in new innovation. Old policies and procedures. Lengthy approval process."*

This underscores the necessity for organizational change that promotes efficiency and responsiveness, enabling SITA to better adapt to technological advancements and evolving service delivery requirements.

Skill Development and Personnel Management: The development of relevant skills and effective personnel management is another vital sub-theme. As digital transformation demands new competencies, SITA must invest in continuous training and professional development to equip its workforce with the necessary skills.

Participant 2 emphasized: *"Inadequate understanding of the latest technology by both Customer Advocates and CRMs as the first touch point between SITA and clients, selling these technologies and services is therefore a challenge."*

This indicates a significant gap in the current skill set, necessitating targeted training programs and initiatives to enhance the technological proficiency of SITA's staff. Moreover, addressing resistance to change, particularly among the ageing workforce, is crucial.

Participant 9 noted: *"Within SITA, the ageing workforce turns to resist being reskilled,"*

highlighting the need for strategies to encourage lifelong learning and adaptability among all employees.

Change Management and Leadership Engagement: Effective change management and strong leadership engagement are essential for driving digital transformation. The resistance to change within the organization, whether due to fear of the unknown or a reluctance to abandon legacy systems, can significantly impede progress.

Participant 4 mentioned: *"Culture resistance and leadership challenges to implementing digital technologies are significant barriers."*

This highlights the importance of fostering a culture that embraces change and innovation, which requires proactive leadership and clear communication of the benefits of digital transformation.

The literature underscores that policy and organizational restructuring are essential for fostering an agile, innovation-friendly environment, helping to mitigate bureaucratic inertia and streamline approval processes (Vial, 2020; Caron & van Knippenberg, 2022). Skill development remains critical in ensuring that the workforce is equipped with the competencies necessary to embrace new technologies, while effective personnel management addresses resistance to change and promotes continuous learning (Sun et al., 2022; Mngomezulu & Govender, 2021). Estonia's e-Estonia initiative exemplifies how a comprehensive and integrated approach can drive successful digital transformation. Estonia integrated services across government departments, focusing on interoperability, cloud computing, and secure data exchange. The initiative streamlined processes, ensuring that public services could be delivered quickly and efficiently through digital platforms (e-Estonia, 2020). SITA can draw from Estonia's approach by developing a cohesive strategy that integrates technological innovation, organizational change, and stakeholder engagement to overcome fragmentation and improve service delivery across the South African public sector.

Theme 5: Adoption of Advanced Technologies

Fifty percent (50%) of the respondents identified the adoption of advanced technologies such as Cloud computing, Big Data, and the Internet of Things (IoT) as critical for modernizing and enhancing SITA's services. These technologies are seen as essential for future-proofing digital transformation efforts and improving service delivery. The respondents stressed the importance of partnering with leading technology providers to leverage cutting-edge solutions and ensure SITA remains competitive and relevant.

Participant 1 stated: *"They are the future. We use AI-based technology daily. Without them, SITA will lose its relevance and value to the government."*

Participant 2 mentioned: *“Cloud, Cyber Security, Big Data Analytics and Business Intelligence, Artificial Intelligence, Blockchain, Robotic Process Automation.”*

Participant 3 emphasized: *“SITA must ensure that they partner with the OEMs/SMMEs who are leading in digital transformation solutions.”*

Participant 8 noted: *“Big Data and Artificial Intelligence.”*

Participant 10 added: *“APIs, Big Data, and AI. SA uptake on AI and IoT is very slow compared to other countries.”*

The literature underscores the importance of adopting advanced technologies to drive digital transformation. UNCTAD (2021) highlights that cloud computing, big data analytics, and IoT are pivotal for enhancing operational efficiency and enabling data-driven decision-making. The UK’s Government Digital Service (GDS) is a prime example of the adoption of advanced technologies like cloud computing, big data analytics, and artificial intelligence (AI) to improve service delivery. GDS centralized digital services under one agency and used agile methodologies to continuously improve these services. By adopting cloud platforms and leveraging big data, the UK government improved the efficiency of service delivery and responsiveness to citizens’ needs (Government Digital Service, 2020). For SITA, prioritizing advanced technologies like cloud computing and AI will help modernize its operations, streamline processes, and enhance the citizen experience.

Theme 6: Strategic Partnerships

Strategic partnerships with technology providers, government entities, and other stakeholders are essential for successful digital transformation. These partnerships provide access to cutting-edge technologies, skills, and resources.

Participant 1 highlighted: *“They have restructured; for example, Applications Development has new departments for IoT, AI, Big Data Analytics, and Mobile Development. It has destabilised the departments as people were moved around from their usual reporting lines; some were moved to newly created departments to assume new roles.”*

Participant 3 mentioned: *“Encourage the SMMEs to utilise the Innovation Hubs built already but also build new ones across the country to enable more access to that.”*

Participant 7 stated: *“Embed the transformation strategy internally and ensure that there are resources dedicated to drive this strategy within SITA.”*

Participant 9 emphasised: *“I would strongly propose a dialogue between all the relevant stakeholders, i.e., GITOC, National Treasury, the Shareholder department led by SITA, to assess the funding model for ICT projects across government to consider centralised transversal funding.”*

India’s Digital India initiative involved extensive collaboration between the public and private sectors, with companies like Google and Microsoft providing technological solutions and infrastructure support. These partnerships allowed India to overcome its resource limitations and achieve large-scale digital transformation. SITA can adopt a similar approach by fostering public-private partnerships with leading technology companies to access cutting-edge solutions and expertise (Ministry of Electronics and Information Technology, 2021). Through partnerships, SITA can implement scalable, cost-effective digital tools, particularly in areas like cloud services and cybersecurity.

Theme 7: Organizational Adaptation and Empowerment for Digital Transformation

Fifty percent (50%) of the respondents identified organizational adaptation and empowerment as critical for achieving digital transformation goals. This involves reviewing and updating policies, fostering a culture of innovation, and ensuring continuous training and reskilling of employees. Organizational adaptation requires a shift in mindset, where employees are encouraged to embrace change and innovation. Empowerment involves providing employees with the tools, resources, and support to implement digital initiatives successfully. This theme includes key sub-themes: leadership and workforce renewal, cultural shift towards digital readiness, and structural reorganization for better integration.

Leadership and Workforce Renewal: Leadership renewal and workforce rejuvenation are fundamental to driving digital transformation. Strong and visionary leadership can set the tone for change and inspire the workforce to embrace new technologies and methodologies.

Participant 4 emphasized, *“Culture resistance and leadership challenges to implementing digital technologies are significant barriers.”*

This highlights the necessity for new leadership approaches that prioritize innovation and foster an environment where employees are encouraged and supported in adopting new digital tools and practices.

Cultural Shift Towards Digital Readiness: Creating a culture that is ready for digital transformation involves shifting mindsets and attitudes within the organization. This requires a proactive approach to change management and communication strategies that clearly convey the benefits and importance of digital adoption.

Participant 1 noted, *"People are afraid of losing their jobs,"*

This indicates a need for initiatives that address these fears and promote a culture of continuous learning and adaptation. By cultivating a digital-first mindset, SITA can ensure that its workforce is prepared to leverage new technologies effectively.

Structural Reorganization for Better Integration: To support digital transformation, organizational structures must be realigned to facilitate better integration and collaboration across different departments and units. This involves breaking down silos and creating a more flexible and dynamic organizational framework.

Participant 6 mentioned, *"Silo mentality, not a dedicated team that focuses on digital transformation,"*

South Africa's Department of Home Affairs successfully launched the eHomeAffairs platform, which transformed how citizens apply for IDs and passports by moving these services online. This transformation required significant organizational adaptation, including staff training and the implementation of change management strategies to overcome resistance. The initiative also restructured internal processes to support a more agile and technology-driven approach. SITA can learn from this experience by promoting organizational adaptation through leadership engagement, workforce training, and restructuring processes to support its digital transformation objectives (South African Department of Home Affairs, 2020).

Implications

This study identifies the significant obstacles to digital transformation at SITA and presents a thorough strategy to tackle these issues. The results highlight the necessity of policy reform, capacity enhancement, and strategic alliances to address organisational stagnation and financial limitations. Implementing this framework will boost SITA's digital capabilities and improve service delivery throughout South Africa's public sector. Subsequent research ought to concentrate on measuring the effects of digital transformation activities and examining the scalability of the suggested framework across additional government organisations.

Institutional Obstacles: A key conclusion is the substantial influence of systemic hurdles, including organisational inertia, obsolete technology infrastructure, and financial limitations, on SITA's digital transformation efforts. These obstacles impede the effective deployment of new technology and diminish operational agility. Resolving these structural difficulties necessitates extensive policy and organisational reform to foster a more adaptable and innovative atmosphere.

The study underscores the imperative for comprehensive security measures and policies to mitigate risks linked to digital transformation, including data breaches and privacy issues. Establishing a secure digital environment, encompassing the creation of a government cloud and security operations centres, is vital for protecting sensitive information and fostering stakeholder confidence.

Opposition to Transformation: Complex resistance to digital transformation, encompassing apprehension around job displacement and doubt about the effectiveness of new technology, surfaced as a substantial obstacle. Robust change management practices and active leadership involvement are essential to mitigate opposition and cultivate a culture that values innovation and ongoing learning.

Holistic and Cohesive Approach: An all-encompassing and cohesive approach to digital transformation is essential. This encompasses policy reformation, competency enhancement, efficient change administration, and strategic alliances. By focussing on these areas, SITA can improve its digital competencies and provide a unified strategy for the implementation of new technologies.

Embracing Advanced Technologies: The integration of advanced technologies, including cloud computing, big data analytics, and the Internet of Things (IoT), is essential for modernising SITA's operations and enhancing service delivery. Forming strategic alliances with prominent technology companies can enable access to advanced technologies and maintain SITA's competitiveness.

Organisational Adaptation and Empowerment Facilitating organisational empowerment through leadership revitalisation, cultural adaptation for digital preparedness, and structural reconfiguration is crucial for fostering and maintaining digital change. By cultivating an innovative culture and guaranteeing ongoing training and reskilling of staff, SITA can more effectively respond to technology changes and improve its service delivery.

Strategic Partnerships: Forming strategic alliances with technology providers, governmental bodies, and other stakeholders is essential for acquiring new technologies, expertise, and resources. These collaborations can promote knowledge exchange and coordination, hence improving the overall efficacy of digital transformation efforts.

Theoretical contributions

This study's theoretical contribution is its thorough integration of many theoretical frameworks to examine and tackle the digital transformation difficulties encountered by the State Information Technology Agency (SITA). This study utilises the Technology-Organization-Environment (TOE) framework, the Technology Acceptance Model (TAM), and the Resource-Based View (RBV) to provide a comprehensive analysis of the various aspects influencing digital transformation. This multi-theoretical framework enables a comprehensive analysis of technical, organisational, and environmental contexts, including employee attitudes, regulatory pressures, and internal resource capabilities (Vial, 2020; Dwivedi et al., 2021). The amalgamation of these theories offers a comprehensive analytical framework to examine the intricacies of digital transformation in the public sector, enhancing the comprehension of how such transformation can be adeptly managed inside public institutions (Nambisan et al., 2022). This study

enhances the expanding literature on digital transformation frameworks by tackling these difficulties through a multi-theoretical perspective (Dwivedi et al., 2021; Barney, 2021).

Practical contributions

This report offers practical insights and strategic recommendations for public sector organisations, especially SITA, to improve their digital transformation efforts. The recognition of systemic obstacles, including antiquated technology infrastructure, financial limitations, and organisational resistance, together with the suggested methodology for addressing these issues, provides a guide for public sector organisations to manage their digital transformation processes. The focus on policy reform, ongoing skill enhancement, efficient change management, and strategic alliances offers a definitive and pragmatic framework for managers and policymakers to execute and maintain digital transformation initiatives. These recommendations are pertinent to SITA's context and can substantially enhance its service delivery, efficiency, and stakeholder involvement (Public Service Commission, 2022; Nfuka & Rusu, 2020).

Policy Contributions

The report recommends that SITA amend its current policies to facilitate digital transformation by eliminating obsolete regulations and implementing flexible, adaptable rules. It should promote adaptable regulatory frameworks that can respond to the evolving landscape of digital transformation, partnering with governmental entities to create and execute these frameworks. SITA must adopt a proactive stance in formulating policies that facilitate digital transformation, engaging with legislators, industry leaders, and stakeholders to establish a conducive environment for the execution of digital initiatives.

Recommendations

To mitigate financial limitations, SITA should investigate public-private collaborations, facilitating access to advanced technologies and shared infrastructure without exclusively depending on government support. Furthermore, obtaining funding from foreign entities such as the World Bank or African Development Bank might offer supplementary financial assistance for essential efforts. Cost-efficiency strategies, including the adoption of cloud-based services and open-source software, can diminish operational costs, thereby reallocating resources for additional technical investments.

Bridging the skills gap is crucial for digital transformation. SITA ought to prioritise specialised upskilling initiatives, particularly emphasising technology such as artificial intelligence, cybersecurity, and cloud computing. Collaborating with academic institutions to provide specialised certification programs can cultivate a proficient workforce. Furthermore, internships and learnerships can introduce new talent equipped with contemporary technological capabilities, so ensuring the longevity of digital transformation initiatives.

SITA must enhance its change management procedures. Implementing agile approaches will improve organisational adaptability, optimise decision-making, and expedite project completion. Leadership training programs centred on digital transformation can enable management to promote innovation and cultivate a culture of adaptation.

Enhancing cybersecurity and data privacy is essential. Consistent, obligatory cybersecurity training for staff will mitigate data breaches and guarantee adherence to rules such as POPIA and PAIA. Investing in Security Operations Centres (SOCs), data encryption, and secure cloud platforms will enhance resilience against cyber threats, protecting sensitive information.

Finally, SITA should establish a robust monitoring and evaluation mechanism to assess the success of its digital transformation efforts. Establishing key performance indicators (KPIs) pertaining to service delivery efficiency and technological adoption will facilitate progress monitoring. Consistent feedback mechanisms with stakeholders will provide ongoing enhancement and adjustment of initiatives.

The structure illustrated in Figure 2 can be customised for various public sector entities by adjusting digital transformation strategies to align with each organization's distinct situation. Inter-agency collaboration facilitates the sharing of resources and best practices among public institutions, hence minimising redundancy in efforts. Moreover, emulating successful frameworks such as Estonia's e-Government and Rwanda's Irembo platform can assist other organisations in their transformation endeavours.

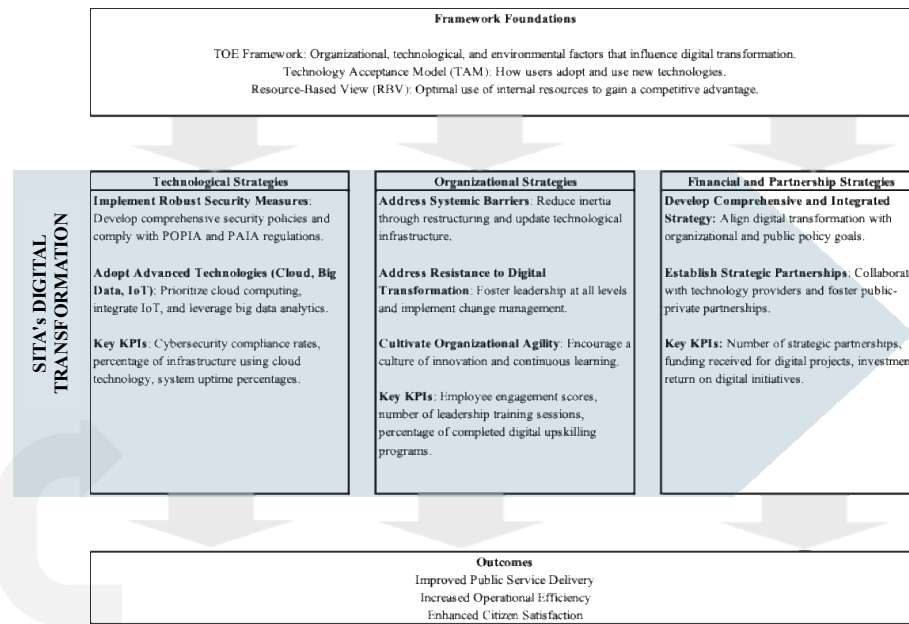


Figure 2: A proposed framework for enhancing SITA's digital transformation strategies; **Source:** Authors

SITA's digital transformation approach will be directed by three frameworks: the Technology-Organization-Environment (TOE) framework, the Technology Acceptance Model (TAM), and the Resource-Based View (RBV). The TOE framework will examine technological, organisational, and environmental aspects affecting digital transformation. The TAM will guarantee user acceptability and facilitate the usability of new technology. The Resource-Based View (RBV) will direct the strategic utilisation of internal resources to achieve competitive advantage. This cohesive strategy will enhance service delivery, operational efficiency, and organisational performance.

Conclusions

The study's findings provide significant insights, however they are constrained by some constraints that create avenues for future research. Although the sample size offers a concentrated perspective of SITA personnel, augmenting it in subsequent studies could yield a more comprehensive knowledge and guarantee the inclusion of varied viewpoints. The utilisation of semi-structured interviews facilitated comprehensive qualitative insights; nevertheless, the integration of quantitative methodologies in subsequent research could enhance these findings by yielding measurable, data-driven results.

The findings are specifically suited to SITA and the South African public sector, rendering them very pertinent for policymakers and practitioners in analogous contexts. Future research should investigate comparative studies across diverse industries or nations to analyse how regulatory, cultural, and technological factors influence digital transformation in distinct circumstances.

Future research should use a longitudinal approach to track progress over time, examine advanced technologies in greater depth, assess employee perspectives on resistance to change, and analyse the effects of regulatory developments on digital transformation initiatives. These recommendations may enhance comprehension and reinforce the practical implications of the research.

Acknowledgement

We would like to express our sincere gratitude to the SITA employees who participated in this study, providing valuable insights that contributed to the depth of the research. A special thanks to the SITA management for granting permission and facilitating the data collection process. Their cooperation and support were instrumental in the success of this study, and we truly appreciate their commitment to advancing digital transformation within the public sector.

Author Contributions: Conceptualization, L.K. and S.M.; methodology, L.K. validation, L.K. and S.M.; formal analysis, L.K. and S.M.; investigation, L.K.; resources, L.K.; writing—original draft preparation, L.K.; writing, L.K.; review and editing, L.K. and S.M.

Institutional Review Board Statement: Ethical review and approval were obtained for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The authors declare no conflict of interest.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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