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INVESTIGATING THE CHALLENGES TO DIGITAL TRANSFORMATION IN THE PUBLIC SECTOR, A CASE STUDY OF THE STATE INFORMATION TECHNOLOGY AGENCY (SITA), SOUTH AFRICA

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Abstract

This study investigates the challenges to digital transformation within the State Information Technology Agency (SITA) in South Africa. The purpose is to identify key barriers, explore their impact on operations and service delivery, and provide strategic recommendations. The research addresses the following questions: What are the main barriers SITA faces in adopting digital technologies? How do these challenges affect SITA's operations and service delivery? What strategies can enhance SITA's digital transformation efforts? Utilizing a qualitative research design, the study employs semi-structured interviews with SITA employees and reviews relevant documents. The analysis is guided by the Technology Acceptance Model (TAM) and Kotter's 8-Step Change Model. Key findings indicate that high costs, coordination difficulties, and data security concerns are significant barriers. These challenges lead to inefficiencies and hinder service delivery. The study recommends enhancing cybersecurity measures, implementing structured change management frameworks, investing in scalable infrastructure, and fostering a culture of innovation. These strategies aim to improve SITA's digital transformation process, ensuring better service delivery and operational efficiency in the public sector.

Keywords: Digital transformation; Public sector; SITA; Technology Acceptance Model (TAM); Change management

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1. Introduction

The State Information Technology Agency (SITA) is at the forefront of driving digital transformation within the South African government. Established under the SITA Act of 1998, its mandate is to improve service delivery to the public and promote government departments' efficiency through providing information technology and information systems (SITA Act, 1998). Digital transformation, defined as the integration of digital technology into all areas of business resulting in fundamental changes to how organisations operate and deliver value to customers, is critical for enhancing public sector efficiency and service delivery (Vial, 2019).

SITA's strategic intent is to reshape and realign the organisation with a platform business model, fostering a digital ecosystem that enhances interactions between citizens and government services (SITA, 2023). This approach aims to position SITA as a pivotal enabler in the platform economy, which is projected to account for 70% of new value created in the economy over the next decade (World Economic Forum, 2020). However, SITA faces significant challenges in its digital transformation efforts, including high costs of technology and infrastructure, coordination difficulties among government agencies, and ensuring data security and privacy (SITA, 2023). Moreover, the need for scalability, flexibility, user acceptance, and effective data governance adds layers of complexity to SITA's digital transformation initiatives. These barriers hinder the agency's ability to deliver on its mandate efficiently, impacting overall service delivery to the public. Addressing these challenges is critical to achieving a seamless digital government environment that aligns with the Fourth Industrial Revolution's advancements (Schwab, 2017).

The theoretical foundation for this study is built upon the Technology Acceptance Model (TAM) and Kotter’s 8-Step Change Model. TAM provides insights into user acceptance of new technologies, focusing on perceived usefulness and ease of use. Kotter’s model offers a structured approach to managing organisational change, which is essential for navigating the complexities of digital transformation. These models collectively provide a robust framework for analysing the challenges and strategies associated with digital transformation at SITA.

Despite its strategic importance, SITA faces substantial barriers in its digital transformation efforts. These include high costs of technology and infrastructure investments, coordination difficulties among various government agencies, and ensuring data security and privacy. Additionally, achieving scalability, flexibility, and user acceptance and adoption presents further challenges. These underlying problems hinder SITA's ability to implement digital initiatives efficiently, affecting overall service delivery to the public. The primary research questions guiding this study are: What are the main barriers SITA faces in adopting digital technologies? How do these challenges impact SITA’s operations and service delivery? What strategies can enhance SITA's digital transformation efforts? This study adopts a qualitative research design, utilizing semi-

structured interviews with SITA employees and document analysis to gather comprehensive insights.

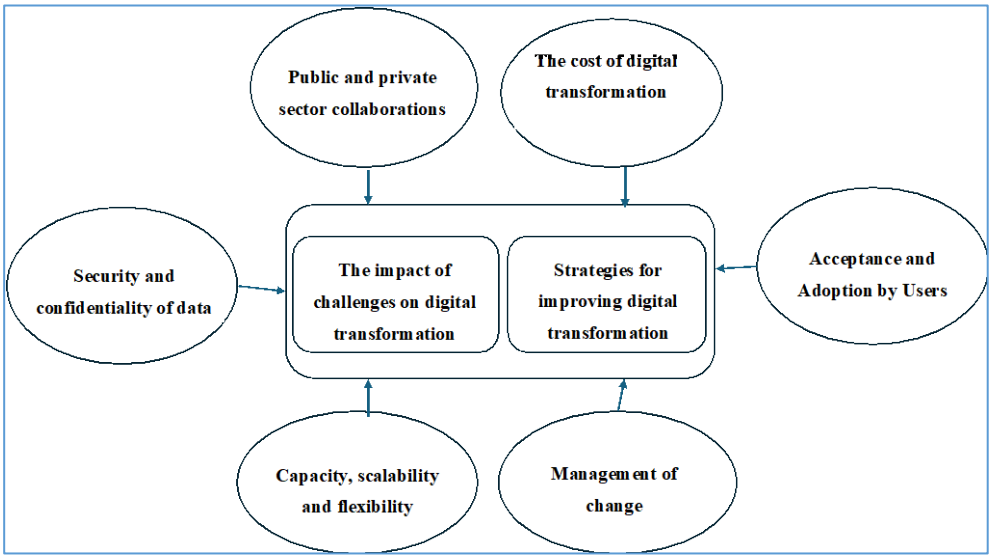
Expected findings highlight significant barriers such as financial constraints, coordination issues, and data security concerns. The study anticipates providing strategic recommendations to overcome these challenges, including enhanced cybersecurity measures, structured change management frameworks, and investments in scalable infrastructure. The discussion will address the practical implications of these strategies and the potential challenges in their implementation, offering a roadmap for successful digital transformation in the public sector.

2. Literature review

2.1. The conceptual framework

Figure 1 reveals the relationships between various factors influencing digital transformation within an organisation like SITA. The cost of digital transformation affects the organisation's ability to allocate sufficient resources for digital initiatives, influencing both the impact of challenges and the strategies that can be employed. Public and private sector collaborations can provide the necessary support and resources to mitigate challenges and improve digital transformation strategies. Security and confidentiality of data are critical factors that must be managed to prevent setbacks in digital transformation. Capacity, scalability, and flexibility determine how well the organisation can adapt to changing demands and integrate new technologies. Acceptance and adoption by users are essential for successfully implementing and utilising new digital tools and processes. Management of change ensures that the organisation can smoothly transition through digital transformation phases, addressing resistance and fostering a supportive environment.

Figure 1 Conceptual framework



Source: Authors concept, 2024

2.2. The cost of digital transformation

According to research, the expenses associated with implementing digital transformation are still a major obstacle. This includes purchasing new technology, building infrastructure and employing skilled personnel. Effective financial planning is crucial in managing these costs through phased investments. An essential factor for successful investment lies in developing a comprehensive digitization strategy that aligns IT and business objectives while optimizing resource allocation (Hess et al., 2016; Kane et al., 2015). In Africa, where limited funding accessibility can further exacerbate this challenge of financing innovation projects, there remains an urgent need to seek collaborative partnerships with international organisations and public-private collaborations (Kaivo-Oja et al., 2017) to effectively overcome these fiscal barriers.

The digital transformation efforts in South Africa are met with financial obstacles similar to those faced by other nations. Progress is frequently postponed due to budget limitations and resource allocation priorities. To aid these endeavours, Dengler and Matthes (2018) propose innovative funding options as well as assistance from foreign countries. SITA encounters infrastructure funding difficulties necessitating significant initial investments in technology and infrastructure development, making it crucial for them to engage in strategic fiscal planning.

2.3. Public and private sector collaborations

To achieve a successful digital transformation, diverse stakeholders must collaborate effectively and coordinate their efforts. This necessitates harmonization and teamwork across varied departments and organisations to guarantee smooth execution (as noted by Matzler et al., 2018; Caputo et al., 2018). Sadly, the absence of coordinated actions among government agencies in Africa often obstructs progress on digital transformation initiatives. Overcoming these hurdles requires strong leadership coupled with an integrated approach (Heavin and Power, 2018).

A lack of inter-departmental coordination affects the efficient implementation of digital transformation initiatives in South Africa. Centralized governance structures and frameworks are crucial to promote collaboration and streamline processes (Grover and Kohli, 2013). To effectively coordinate various government agencies and stakeholders, SITA plays the role of a central facilitator, aiming to promote cooperation across the public sector while driving digital transformation efforts forward (SITA, 2023).

2.4. Security and confidentiality of data

In the realm of digital transformation, it is vital to prioritize safeguarding both data security and privacy. Implementing strong cybersecurity frameworks and adhering to relevant data protection regulations are imperative to protect sensitive information (Kaivo-Oja et al., 2017; Dengler and Matthes, 2018). However, in Africa specifically, daunting challenges lie ahead with a substantial risk of cyber-attacks and heightened demand for reliable measures ensuring robust data protection. Strengthened by adopting international standards for cybersecurity alongside regional cooperation efforts will be

key advances towards achieving thoroughgoing enhancement throughout all facets of secure substructures dedicated solely to protecting valuable data assets (Beier et al., 2017).

While South Africa encounters data security and privacy obstacles, enacting the Protection of Personal Information Act (POPIA) positively reinforces data protection. Nevertheless, additional endeavours are necessary to guarantee compliance and security on digital platforms (Tiefenbeck et al., 2018). SITA's (2023) digital transformation strategy emphasizes preserving both data safety and confidentiality. This agency safeguards delicate government information while abiding by pertinent regulations by allocating resources toward state-of-the-art cybersecurity technologies and frameworks.

2.5. Capacity, scalability and flexibility

To meet the evolving needs of users and manage growing data volumes, it is imperative to create digital platforms that are both scalable and flexible. It's important to have adaptable technology architectures that can keep pace with changing demands (Hess et al., 2016; Nambisan et al., 2019). This need is particularly pressing in Africa where accommodating diverse requirements calls for solutions built on cloud-based infrastructure and adaptive technologies. Carlsson (2018) suggests emphasizing a scalable IT framework as an essential element enabling businesses' growth while maintaining flexibility within their systems to achieve this goal.

For South Africa to effectively accommodate its diverse needs, it is crucial that digital platforms are both scalable and flexible. Therefore, investing in adaptable technology solutions and ensuring the adaptability of these platforms for future requirements must be a priority (Frishammar et al., 2018). As such, SITA (2023) strives to create digital platforms with scalability and flexibility embedded throughout their design process by building modular architectures capable of managing large data volumes while affording high accessibility and security.

2.6. Acceptance and adoption by users

The success of digital platforms heavily relies on user acceptance and adoption, hence requiring intuitive design, user-friendly interfaces, and comprehensive training programs for users to increase engagement levels and satisfaction (Heavin and Power 2018; Grover and Kohli 2013). However, in Africa's case, low rates of digital literacy alongside resistance towards change pose a significant barrier against widespread user acceptance. Henceforth measures such as enhancing the acquisition of technological skills through education geared specifically toward end-users are necessary thus improving their embracement aimed at augmenting usage frequency across diverse populations (Butschan et al., 2019)

The levels of digital literacy in South Africa present a challenge for user acceptance. To improve adoption rates, targeted training programs and user-focused design are crucial (Sommer et al., 2017). To enhance acceptance and adoption of its digital services, SITA

(2023) prioritizes developing intuitive platforms that prioritize user engagement and emphasise educational solutions for users.

2.7. The governance of data

Developing and implementing comprehensive data governance frameworks is critical in Africa to ensure data quality, accessibility, and security. Inadequate standardized policies pose a challenge for stakeholders' collaboration regarding the sharing of information (Evangelista et al., 2018; Carlsson, 2018). Thus, it becomes necessary to establish clear data governance protocols that can facilitate efficient management of vital resources (Beier et al., 2017).

South Africa must develop sturdy policies for data governance to effectively manage the copious amounts of data generated by digital platforms. To enhance this process, it is imperative that collaboration and standardization are prioritized (Tiefenbeck et al., 2018).

2.8. Management of change

To succeed in digital transformation projects, efficient change management is crucial. The implementation of well-planned and structured strategies for managing change, such as stakeholder engagement, constant communication, and training, play a pivotal role in ensuring seamless transitions (Sommer et al., 2017; Butschan et al., 2019). In Africa specifically, effective handling of change is essential to overcoming any resistance to digital transformation. Therefore, it becomes imperative to engage stakeholders while providing continuous communication and training interventions that foster positive outcomes during the transition process (Carlsson, 2018).

The management of change in South Africa presents significant hurdles, especially with regard to managing resistance and ensuring seamless transitions. To effectively support digital transformation initiatives, the implementation of well-planned change management strategies is critical (Frishammar et al., 2018). SITA's focus involves adopting structured approaches towards effective alteration control that prioritize stakeholder engagement through constant communication and training programs to promote successful adoption (SITA, 2023).

2.9. Cybersecurity

To safeguard data integrity and privacy, it is imperative to invest in cybersecurity measures that include continuous monitoring, advanced technologies for security purposes as well as proactive steps. As stated by Frishammar et al. (2018) and Farrington and Alizadeh (2017), these are vital components required to shield digital platforms against cyber threats. In Africa where the threat of cyber-attacks remains rampant, adopting international cybersecurity standards along with regional cooperation becomes essential in ensuring robust cybersecurity practices (Beier et al., 2017).

The escalating instances of cyber-attacks in South Africa present substantial cybersecurity obstacles that demand immediate attention. Safeguarding digital platforms through the implementation of cutting-edge security technologies and ongoing surveillance is

essential (Tiefenbeck et al., 2018). In light of these concerns, SITA has prioritised cybersecurity within its digital transformation strategy by allocating resources toward advanced cybersecurity measures and persistent platform monitoring to safeguard critical government data.

2.10. The impact of challenges on DX

Challenges such as high costs, lack of coordination, and cybersecurity threats significantly hinder global digital transformation efforts. High initial investments in technology and infrastructure often delay projects, while inadequate collaboration among stakeholders can fragment efforts, leading to inefficiencies. Moreover, the increased risk of cybersecurity threats can result in data breaches, undermining trust and halting digital initiatives (Hess et al., 2020).

In Africa, financial constraints and infrastructure gaps are pronounced, slowing down the adoption of digital technologies and affecting the efficiency of transformation initiatives (Carlsson, 2020). For instance, the digital divide, particularly between urban and rural areas, exacerbates these challenges, leading to unequal access to digital services (Konyana and Konyana, 2013).

South Africa faces regulatory complexities and skills shortages, which lead to project delays and inefficiencies in service delivery and innovation. The legacy of past discriminatory policies continues to impact the quality of education and access to digital resources, further widening the digital divide (Mhlanga and Moloi, 2020). Additionally, resource limitations and infrastructural deficiencies are significant barriers, particularly in rural areas with inadequate power supply and internet connectivity (Adams et al., 2020).

SITA encounters substantial financial and coordination challenges, necessitating strategic planning and collaboration to effectively manage these barriers and ensure the successful digital transformation of government services (Dengler and Matthes, 2020).

2.11. Strategies for improving digital transformation

Several strategies can be adopted to address these challenges and improve digital transformation. This strategy should include a vision, roadmap, and continuous alignment to adapt to changing market conditions (Hess et al., 2020). Enhancing cybersecurity through robust measures and regular security assessments is crucial to protecting digital assets and building user trust (Alkayyal et al., 2023). Fostering a digital culture that encourages innovation and continuous learning, supported by strong leadership, is also key (Heavin and Power, 2020).

In Africa, leveraging public-private partnerships can provide the necessary funding and expertise, while investing in robust digital infrastructure like reliable internet connectivity and power supply is essential (Carlsson, 2020). For example, addressing the digital divide by enhancing infrastructure in rural areas can significantly improve access to digital services (Konyana and Konyana, 2013).

Establishing supportive policies and regulatory frameworks can create an enabling environment for digital transformation in South Africa. Consistent enforcement of data protection laws is also critical (Tiefenbeck et al., 2020). Implementing targeted training programs to enhance digital literacy and skills within the workforce can significantly improve the capacity to undertake digital transformation projects (Frishammar et al., 2020).

Strategic financial planning and phased investments are critical to managing high costs for SITA. Centralized coordination among government agencies can streamline efforts and improve efficiency (SITA, 2023). Regularly reviewing and updating digital strategies to reflect changing technological capabilities and market conditions can help maintain alignment with business goals and ensure long-term success (Matt et al., 2020).

2.12. Theoretical framework for the study

2.12.1. The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), originally developed by Davis (1989), remains relevant today with its updates and extensions. The model explains how users come to accept and use technology, identifying two primary factors: perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness refers to the degree to which a person believes that using a particular system would enhance their job performance. In the context of SITA, it is essential to evaluate how employees and stakeholders perceive the benefits of new digital tools and systems in improving their efficiency and effectiveness (Alalwan et al., 2022). Perceived ease of use is the degree to which a person believes that using a particular system would be free from effort (Venkatesh et al., 2021). Ensuring that the digital solutions implemented by SITA are user-friendly and accessible is vital for gaining user acceptance and promoting widespread adoption. These factors influence users' attitudes toward technology, which in turn affect their intention to use and actual usage of the technology (Dwivedi et al., 2020).

2.12.2. Change management theory

Effective change management is crucial for the successful implementation of digital transformation initiatives. Kotter's 8-Step Change Model, though developed in the 1990s, continues to be validated and applied in contemporary studies (Kotter, 2021). The model includes creating a sense of urgency to highlight the importance of digital transformation, forming a powerful coalition to build a strong leadership team, and creating a vision for change to develop a clear strategy for digital transformation (Kotter, 2021). It also emphasizes the need to communicate the vision widely, remove obstacles to change, create short-term wins to build momentum, build on the change using early successes to drive further transformation and anchor the changes in corporate culture to ensure sustainability (Pollack and Pollack, 2015).

2.12.3. Integrating the theories

By integrating TAM and Kotter's 8-Step Change Model, this study provides a holistic framework for understanding and managing the challenges and strategies for the digital transformation process at SITA. The combined framework addresses both the technological acceptance and the organisational change aspects. It evaluates how employees perceive the benefits and usability of digital tools (TAM) and applies Kotter's model to manage the transition process, ensuring that the organisation is prepared, obstacles are removed, and the change is sustained. This integrated approach ensures that both the human and technological factors are considered, making the digital transformation process more effective and sustainable.

2.13. Linking the theory to the research objectives

Table 1 Linking the theories to the research objectives

Research Objective	Technology Acceptance Model (TAM)	Change Management Theory
1. To identify key barriers to digital transformation within the organisation.	TAM helps identify user acceptance issues such as perceived usefulness and ease of use, which are barriers to technology adoption (Davis, 1989; Venkatesh and Davis, 2000).	Change Management theory, especially Kotter's model, emphasizes creating a sense of urgency and identifying obstacles that hinder change (Kotter, 1996).
2. To explore the impact of challenges on SITA's operations and its service delivery.	TAM provides insights into how perceived barriers affect user acceptance and system usage, impacting overall operations and service delivery (Davis, 1989).	Kotter's model focuses on understanding the impact of barriers and resistance on the change process and devising strategies to overcome these challenges (Kotter, 1996).
3. To provide recommendations to overcome challenges and enhance the activities related to digital technology and competition.	TAM can guide the development of user-centric solutions that enhance perceived usefulness and ease of use, improving technology adoption rates (Venkatesh and Davis, 2000).	Change Management theory provides a framework for implementing change through steps like building a guiding coalition, developing a vision, and generating short-term wins (Kotter, 1996).

Source: Authors, 2024

3. Problem statement

The State Information Technology Agency (SITA) aims to drive digital transformation in government services through a platform business model. However, SITA faces significant challenges in this endeavour, including the high cost of technology and infrastructure investments, coordination difficulties among various government agencies, and ensuring

data security and privacy. Moreover, achieving scalability and flexibility, gaining user acceptance and adoption, and managing data governance are complex tasks. These challenges hinder SITA's ability to efficiently implement digital transformation initiatives, affecting the overall service delivery to the public. Therefore, it is crucial to identify key barriers to digital transformation, assess the impact of these challenges on SITA's operations and service delivery, and develop strategic recommendations to overcome these barriers, thereby enhancing the effectiveness and competitiveness of SITA's digital technology initiatives.

4. Aim and objectives of the study

The primary aim of this study is to investigate the challenges to digital transformation within SITA, the impact of these challenges and provide recommendations for the identified challenges. The specific objectives are:

- To identify key barriers to digital transformation within the SITA.
- To explore the impact of challenges on SITA's operations and its service delivery.
- To provide recommendations to overcome challenges and enhance the activities related to digital transformation.

5. Research methodology

5.1. Research design

This study adopted a qualitative research design, utilizing a case study approach to deeply explore the digital transformation process within the State Information Technology Agency (SITA). A qualitative approach allowed for an in-depth understanding of the experiences, perspectives, and contextual factors that influenced digital transformation efforts (Almendingen et al., 2021; Younis et al., 2021). The case study method was particularly suitable for this research as it comprehensively examined SITA's specific challenges, strategies, and outcomes related to digital transformation (Piva et al., 2018).

5.2. Target population

The target population for this study included nearly 3000 SITA employees, drawn from various departments. The target population was selected to provide diverse perspectives on the digital transformation process and its impact on SITA's operations and service delivery (Barrot et al., 2021).

5.3. Sampling strategy

A purposive sampling strategy was employed to select participants who had extensive knowledge and experience in digital transformation projects at SITA. Purposive sampling allowed for the intentional selection of individuals who could provide rich, relevant, and insightful data related to the research objectives (Bork-Hüffer et al., 2021). Ten participants from SITA were selected to ensure a diverse and comprehensive understanding of the digital transformation process.

5.4. Data collection method

Data were collected through semi-structured interviews, allowing for flexibility in exploring specific topics while ensuring consistency across interviews. Semi-structured interviews provided a balance between guided questions and open-ended responses, enabling participants to share their experiences and insights in depth (Mant et al., 2021). Additionally, relevant documents such as strategic plans, progress reports, and internal memos related to digital transformation were reviewed to complement and triangulate the interview data (Depaoli et al., 2020).

5.5. Data analysis

Data analysis followed a thematic analysis approach, which involved identifying, analysing, and reporting patterns (themes) within the data. Thematic analysis was suitable for qualitative research as it allowed for a detailed and nuanced understanding of the data (Neirotti et al., 2019). The process involved coding the data, identifying significant themes, and interpreting the findings in relation to the research objectives and theoretical framework (Caliskan et al., 2021).

5.6. Trustworthiness

To ensure the trustworthiness of the study, several strategies were employed:

Credibility: Although there were no prolonged engagements or observations, credibility was ensured by providing participants with the interview guide in advance. This allowed them to prepare thoroughly and reflect on their experiences, thereby offering rich and in-depth responses during the virtual interviews (Karchmer-Klein and Konishi, 2021).

Transferability: Detailed descriptions of the research context, participants, and processes were provided to allow readers to determine the applicability of the findings to other settings. This included comprehensive background information about SITA, the roles of the participants, and the specific digital transformation initiatives being studied (McKenna-Plumley et al., 2021).

Dependability: An audit trail was maintained, documenting the research process, decisions, and reflections to ensure the study's findings were consistent and replicable. This involved keeping detailed records of all research activities, including data collection methods, coding processes, and analytical decisions (Gelles et al., 2020).

Confirmability: Data sources and methods were triangulated to minimize researcher bias and enhance the objectivity of the findings. This included using multiple data sources, such as interviews and documents, and applying various data collection and analysis methods to ensure comprehensive and unbiased results (Lovrić et al., 2020).

6. Results and discussion

6.1. Results

Table 2 Thematic presentation of results

Objective	Question	Main Theme
To identify key barriers to digital transformation within the organisation.	What are the main barriers SITA faces in the adoption and implementation of digital technologies, including organisational, technological, environmental (external), and financial challenges?	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?	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?	Multifaceted resistance to digital transformation.
To explore the impact of challenges on SITA's operations and its service delivery.	How has digital transformation impacted the efficiency and effectiveness of SITA's service delivery to its clients?	Limited digital transformation Service accessibility
To provide recommendations to overcome challenges and enhance the activities related to digital technology and competition.	What strategic recommendations would you suggest to enhance SITA's approach to digital transformation?	Comprehensive and integrated strategy for digital transformation

Source: Research results, 2024

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: Limited digital transformation	6	60%
10	Theme 5: Service accessibility	5	50%
10	Theme 6: Comprehensive and integrated strategy	7	70%

Source: Research results, 2024

6.2. Discussion

6.2.1. Objective 1: To identify key barriers to digital transformation within the SITA

Theme 1: Systemic barriers to digital transformation

This theme was identified by 60% of the respondents, indicating that systemic barriers such as organisational, technological, environmental, and financial challenges are significant concerns in the digital transformation process at SITA. These barriers need to be addressed comprehensively to ensure successful digital transformation.

Participant 1**:** *The CRM, Customer Advocacy, and TCS are on the brink of losing client interest due to slow digital transformation. SITA bureaucracy - the same people have been in positions for too long. They are not interested in a new innovation. Old policies and procedures. Lengthy approval process.*

Participant 2: *SITA's slow action in driving innovation in the public service and thereby being overtaken by Industry, especially OEMs. Inadequate latest technology understanding by Customer Advocates and CRMs as the first touch point between SITA and clients; selling this technology and services is challenging.*

Participant 10: *The majority of the current SITA workforce is highly skilled in supporting existing legacy systems, meaning they will need to be reskilled to enable SITA to implement its digital technologies successfully.*

Participants identified several systemic barriers to digital transformation at SITA, including organisational, technological, environmental, and financial challenges. These barriers are consistent with findings in the literature, where a lack of digital-savvy leadership and skills gap were noted as significant organisational barriers (Cyber Sentinel, 2023; McKinsey, 2023). Technological challenges, such as inadequate infrastructure and internet connectivity, were also prominent (Depaoli et al., 2020; Caliskan et al., 2021). Additionally, regulatory hurdles and high costs were identified as external and financial barriers (Barrot et al., 2021; Almendingen et al., 2021).

Theme 2: Implementation of robust security measures and policies

Participant 2: *The SITA Security Operations Center is fully operational and monitoring both SITA and onboarding more clients. SITA's recent partnership with CISCO is another effort to show how serious it is regarding data security and privacy.*

Participant 3: *SITA needs to strengthen its cybersecurity frameworks to protect sensitive government data.*

Half of the respondents highlighted the need for robust security measures and policies. This underscores the importance of implementing strong cybersecurity strategies, regular security assessments, and continuous training to protect sensitive data and maintain user trust.

SITA has implemented comprehensive cybersecurity strategies to manage the risks associated with digital transformation. These include regular security assessments and employee training to mitigate risks related to data security and privacy concerns (Lovrić et al., 2020; Younis et al., 2021).

Theme 3: Multifaceted resistance to digital transformation

50% of the respondents are concerned about resistance to digital transformation. This includes resistance due to fear of job displacement, lack of digital skills, and cultural inertia. Addressing these resistances through change management frameworks, training programs, and clear communication is crucial for smooth digital transformation.

Participant 3: *Data sharing amongst government departments or entities to enable quick decision-making and improve service delivery. These have been mitigated through the signing of the MOU (i.e., Memorandum of Understanding); however, the process of doing that is very lengthy because each department and entity involves their legal for approval.*

Participant 4**:** *There's a significant resistance to change due to fear of job losses and a lack of understanding of digital tools.*

Resistance to digital transformation at SITA arises from various sources, including cultural inertia, fear of job displacement, and lack of digital skills among employees and stakeholders. This multifaceted resistance is a common challenge in digital transformation initiatives, requiring targeted change management strategies to address (McKenna-Plumley et al., 2021; Piva, 2018).

6.2.2. Objective 2: Exploring the impact of challenges on SITA's operations and service delivery

Theme 4: Limited digital transformation

Participants identified several challenges related to the limited digital transformation at SITA, impacting both operations and service delivery. The slow pace of digital transformation has led to inefficiencies within SITA's operations.

Limited digital transformation was identified by 60% of the respondents, indicating that many processes remain manual and lack integration and innovation. Investing in scalable and flexible infrastructure solutions is essential to enhance digital capabilities.

Participant 1 highlighted how: *Our CRM and Customer Advocacy teams are struggling to keep client interest because our digital transformation is moving too slowly.*

This sentiment is echoed by

Participant 5 pointed out that: *The slow pace of digital transformation means that many processes remain manual, leading to inefficiencies. Our processes are still very manual, which makes everything slower and less efficient.*

Participant 2 noted that: *The Service Delivery Model itself is fine, but our support structures are outdated and weak.*

This indicates a lack of integrated and updated systems to support efficient operations, further slowing down the digital transformation process.

Participant 4 discussed employee resistance to change, arguing: *A lot of people here are afraid of losing their jobs and don't understand how to use the new digital tools, so they resist the changes.*

This cultural inertia is a significant barrier to adopting new technologies and improving operational efficiency.

Participant 6 pointed out the issues with internet accessibility, especially in rural areas: *Without reliable internet access in many rural areas, it's hard for people to use our digital services.*

This lack of reliable internet access significantly hampers the ability of people in these areas to utilize SITA's digital services, limiting the reach and effectiveness of digital transformation efforts.

Participant 7: *We need to invest in leadership training programs so our leaders can understand and drive digital transformation.*

The literature reviewed also supports the participants' views. Vial (2019) highlights the importance of digital transformation and its significant impact on organisational operations. Implementing these changes can be a time-consuming and labour-intensive process. In their study, Hess et al. (2016) delve into the difficulties that arise when trying to incorporate new technologies into established systems. This often results in a sluggish uptake and a continued dependence on manual methods. Hess et al. (2016) emphasise the drawbacks of fragmented operations resulting from the absence of integrated systems. According to McKinsey (2023), many organisations that have not fully embraced digital transformation face the common challenge of relying on manual processes. According to McKinsey (2023), organisations are hindered from fully capitalising on the advantages of digital transformation due to outdated support structures. Heavin and Power (2018) highlight the importance of modern support systems to manage new digital tools effectively. Kotter (2021) emphasises the importance of change management frameworks in addressing employee resistance, with a focus on clear communication and training. In their study, Heavin and Power (2018) highlight the significant obstacles to digital transformation, including cultural inertia and the fear of job displacement. According to the World Bank (2020), the limited internet infrastructure, particularly in rural areas, hampers access to digital services and worsens the digital divide. McKinsey

(2023) emphasises the importance of having dependable internet access to support digital transformation efforts effectively. The significance of strong leadership in propelling digital transformation and conquering related obstacles is highlighted by Heavin and Power (2018). Kotter (2021) emphasises the importance of leadership training in equipping leaders with the necessary skills to drive digital initiatives and cultivate an innovative culture.

Theme 5: Service accessibility

Service accessibility is a concern for 50% of the respondents. Enhancing service accessibility by investing in digital infrastructure, particularly in rural and underserved areas, and promoting digital literacy programs is crucial for ensuring equitable access to digital services.

Participant 6 highlighted a significant barrier to service accessibility: *In many rural areas, people lack reliable internet access, making it difficult to use our digital services.*

This infrastructural challenge makes it difficult for residents in these regions to access SITA's digital services. The digital divide between urban and rural areas remains a critical issue that needs addressing to ensure equitable access to services.

Participant 5 noted that the manual nature of many processes at SITA leads to slower operations and inefficiencies. Reliance on manual processes indicates a lack of digital integration and automation, which are crucial for improving service speed and accessibility.

Participant 5: *Our processes are still very manual, which makes everything slower and less efficient.*

Service accessibility at SITA is significantly impacted by several factors, including inadequate infrastructure and connectivity, slow digital transformation affecting client management, outdated support structures, and reliance on manual processes.

The World Bank (2020) emphasizes that inadequate infrastructure and poor internet connectivity significantly hinder the delivery of digital services, particularly in remote and rural areas. The Department of Communications and Digital Technologies (2020) highlights that many rural areas still lack the necessary infrastructure to support high-speed internet, limiting the reach of digital services.

Investments in infrastructure development are needed to improve service accessibility across the country. To improve service accessibility, SITA needs to focus on modernizing its digital infrastructure, automating processes, and ensuring that its digital platforms are user-friendly and inclusive. Engaging with stakeholders and investing in leadership training can also help drive the digital transformation necessary to enhance service accessibility (Cyber Sentinel, 2023; McKinsey, 2023).

6.2.3. Objective 3: To provide recommendations to overcome challenges and enhance the activities related to digital transformation.

Theme 6: Comprehensive and integrated strategy

The highest percentage of respondents (70%) identified the need for a comprehensive and integrated strategy for digital transformation. This includes addressing systemic barriers, implementing robust security measures, managing resistance, and ensuring service accessibility. Developing a clear governance structure, fostering public-private partnerships, and promoting a culture of continuous improvement and innovation are essential components of this strategy.

Participant 7: *We need to invest in training programs for our leaders to understand and drive digital transformation.*

Participant 8: *Public-private partnerships could provide the necessary funding and expertise to advance our digital initiatives.*

Key recommendations include developing digital leadership through targeted training programs, continuous workforce development, and fostering a culture of innovation (Cyber Sentinel, 2023; McKinsey, 2023). Investing in robust digital infrastructure and enhancing cybersecurity measures are also crucial (Depaoli et al., 2020; Lovrić et al., 2020). Moreover, engaging with policymakers to advocate for supportive regulatory frameworks and exploring innovative funding mechanisms, such as public-private partnerships, were suggested to overcome financial constraints (Barrot et al., 2021; Almendingen et al., 2021).

7. Conclusions

7.1. Theme 1: Systemic barriers to digital transformation

The systemic barriers to digital transformation within SITA include organisational, technological, environmental, and financial challenges. Participants highlighted the lack of digital-savvy leadership, inadequate digital infrastructure, and financial constraints as major obstacles. Addressing these systemic barriers requires a comprehensive strategy focusing on leadership development, infrastructure investment, and innovative funding mechanisms. Overcoming these challenges is essential for SITA to adopt and implement digital technologies successfully.

7.2. Theme 2: Implementation of robust security measures and policies

SITA has implemented robust security measures and policies to manage risks associated with digital transformation. However, participants pointed out the need for strengthening these frameworks to protect sensitive government data. Regular security assessments and continuous employee training are critical to maintaining a high level of cybersecurity. Enhancing cybersecurity measures will protect data and build trust among stakeholders, facilitating smoother digital transformation.

7.3. Theme 3: Multifaceted resistance to digital transformation

Resistance to digital transformation at SITA stems from cultural inertia, fear of job displacement, and a lack of digital skills among employees and stakeholders. This multifaceted resistance hinders the adoption of new technologies and slows down the digital transformation process. Addressing these issues requires targeted change management strategies, including clear communication about the benefits of digital transformation, training programs to upskill employees, and measures to alleviate fears about job security. Building a culture that embraces change is crucial for the successful implementation of digital initiatives.

7.4. Theme 4: Limited digital transformation

Limited digital transformation has significantly impacted SITA's operational efficiency and service delivery. Participants noted that many processes remain manual, support structures are outdated, and the pace of innovation is slow. These issues have led to inefficiencies and reduced the overall effectiveness of SITA's services. To address these challenges, SITA must accelerate its digital transformation efforts by automating processes, modernizing support structures, and fostering a culture of innovation.

7.5. Theme 5: Service accessibility

Service accessibility at SITA is significantly affected by inadequate infrastructure, poor internet connectivity, and low digital literacy. Participants highlighted that rural areas, in particular, suffer from a lack of reliable internet access, limiting the reach of digital services. Improving service accessibility requires strategic investments in digital infrastructure, especially in underserved areas, and initiatives to enhance digital literacy among users. Ensuring that digital platforms are user-friendly and inclusive is also critical to making services accessible to a broader audience.

7.6. Theme 6: Comprehensive and integrated strategy for digital transformation enhancement

A comprehensive and integrated strategy is essential to enhance SITA's digital transformation. Participants recommended focusing on developing digital leadership, continuous employee training, investing in robust infrastructure, and advocating for supportive regulatory frameworks. Public-private partnerships and innovative funding mechanisms can provide the necessary resources and expertise. A user-centric approach to designing digital services will also improve accessibility and adoption. Implementing these strategic recommendations will help SITA overcome existing challenges and achieve successful digital transformation.

8. Contributions

8.1. Theoretical contributions

This study makes several theoretical contributions to the field of digital transformation, particularly within the public sector. By integrating the Technology Acceptance Model

(TAM) and change management theory, the research provides a comprehensive framework for understanding the complexities of digital transformation in a governmental context.

Combining TAM with change management theory offers a robust approach to examining how technological, organisational, and environmental factors influence digital transformation. This integrated framework helps explain users' acceptance of new technologies and the organisational dynamics and resistance accompanying digital transformation efforts (Davis, 1989; Kotter, 1996).

The study identifies and categorizes systemic barriers to digital transformation, including organisational, technological, environmental, and financial challenges. This framework provides a structured way to analyse and address the multifaceted obstacles that public sector organisations like SITA face (Cyber Sentinel, 2023; Depaoli et al., 2020).

The research contributes to understanding how limited digital transformation impacts service delivery efficiency and accessibility. By linking digital transformation challenges with operational outcomes, the study underscores the importance of addressing infrastructure gaps, resistance to change, and leadership issues to improve public sector service delivery (McKinsey, 2023).

8.2. Practical contributions

The findings of this study have significant practical implications for SITA and other public sector organisations undergoing digital transformation. The recommendations provided can be directly applied to enhance the effectiveness and efficiency of digital transformation initiatives.

The study offers actionable strategies to overcome identified barriers, including developing digital leadership, investing in infrastructure, enhancing cybersecurity measures, and fostering a culture of innovation. These strategies provide a clear roadmap for SITA to follow in its digital transformation journey (Cyber Sentinel, 2023; McKinsey, 2023).

The emphasis on continuous training and development programs for employees highlights the practical need to upskill the workforce. Implementing these programs can address resistance to change and improve employees' overall digital literacy, facilitating smoother transitions to new technologies (Bork-Hüffer et al., 2021; McKenna-Plumley et al., 2021).

The recommendation to leverage public-private partnerships (PPPs) provides a practical solution for overcoming financial constraints and accessing cutting-edge technologies and expertise. This approach can help SITA and similar organisations achieve their digital transformation goals more efficiently (Barrot et al., 2021; Almendingen et al., 2021).

The study's focus on addressing infrastructure gaps through investment and innovative solutions offers practical guidance on enhancing digital service accessibility. Improving

broadband access, especially in rural areas, is a critical step toward ensuring that digital services reach all users (World Bank, 2020; ITU, 2021).

8.3. Policy contributions

The study also makes significant policy contributions by identifying the need for supportive regulatory frameworks and streamlined approval processes to facilitate digital transformation in the public sector.

The study provides valuable insights for policymakers by advocating for policies that support digital infrastructure development and reduce bureaucratic hurdles. These recommendations can help create an enabling environment for digital transformation, ensuring that regulatory barriers do not impede progress (Depaoli et al., 2020; Cyber Sentinel, 2023).

The call for streamlined regulatory processes addresses the practical challenges that public sector organisations face when implementing new technologies. Simplifying these processes can accelerate the deployment of digital infrastructure and services, making it easier for organisations like SITA to innovate and adapt (McKinsey, 2023).

The study emphasizes the importance of policies promoting digital inclusion and bridging the digital divide. Ensuring equitable access to digital services for all citizens, particularly in underserved and rural areas, is crucial for the success of digital transformation initiatives (World Bank, 2020; ITU, 2021).

The focus on enhancing cybersecurity measures and protecting sensitive data highlights the need for robust data security and privacy policies. Policymakers can use these insights to develop regulations that safeguard digital assets and build trust among users (Lovrić et al., 2020; Younis et al., 2021).

9. Recommendations

9.1. Systemic barriers to digital transformation

Develop a strategic financial plan that includes efficient budgeting and explores innovative funding mechanisms, such as public-private partnerships, to ensure adequate resource allocation for digital initiatives. Establish a centralized governance framework to oversee digital transformation projects and ensure alignment across departments.

9.2. Implementation of robust security measures and policies

Strengthen cybersecurity measures by implementing comprehensive cybersecurity strategies, conducting regular security assessments, and providing continuous training for employees. Develop policies that prioritize data confidentiality and ensure compliance with international security standards.

9.3. Multifaceted resistance to digital transformation

Implement structured change management frameworks that include clear communication of the benefits of digital transformation, comprehensive training

programs to upskill employees, and support systems to address resistance. Foster a culture of innovation and digital adoption by involving stakeholders in the transformation process and maintaining transparent communication.

9.4. Limited digital transformation

Invest in scalable infrastructure solutions, such as cloud computing, to enhance the organisation's capacity, scalability, and flexibility. Adopt flexible technologies that allow for easy adaptation to changing demands and ensure the integration of new digital tools.

9.5. Service accessibility

Enhance service accessibility by investing in digital infrastructure, particularly in rural and underserved areas. Promote digital literacy programs to increase user engagement and ensure that digital services are user-friendly and inclusive. Develop interfaces that are accessible to all users, including those with disabilities.

9.6. Comprehensive and integrated strategy

Develop a comprehensive and integrated digital transformation strategy that addresses systemic barriers, implements robust security measures, manages resistance, and ensures service accessibility. Foster public-private partnerships to leverage resources and expertise and promote a culture of continuous improvement and innovation. Engage stakeholders throughout the transformation process and ensure transparent communication to build trust and support.

Addressing obstacles to digital transformation within SITA requires a comprehensive strategy encompassing strategic financial planning, strong cybersecurity measures, and efficient change management frameworks. SITA can greatly enhance its operational efficiency and service delivery by investing in scalable infrastructure solutions and improving service accessibility. An all-encompassing and unified strategy for digital transformation, which includes all parties involved and utilises collaborations between the public and private sectors, will guarantee ongoing innovation and constant enhancement. These recommendations aim to establish a robust and flexible organisation that can effectively navigate the challenges of digital transformation and meet the changing requirements of the public sector. By implementing these strategies, SITA will establish itself as a frontrunner in digital governance, propelling the digital transformation agenda in South Africa.

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