

Exploring the change management process for the implementation of a digital telephony project in a higher education environment

R Labuschagne



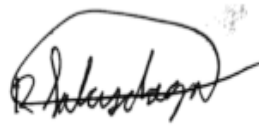
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Mini-dissertation accepted in partial fulfilment of the requirements for the degree [Master of Business Administration](#) at the North-West University

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DECLARATION

I declare herewith that the mini-dissertation which I herewith submit to the North-West University as partial fulfilment of the requirements set for the MBA degree is my own work.

A handwritten signature in black ink, appearing to read 'R. Labuschagne', is written over a horizontal line.

Signature of student

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ABSTRACT

This study is a qualitative exploration of the managerial issues and change management techniques utilised throughout the technology shift from legacy PBX telephony to a cloud-based unified communications platform in a public institution of higher education in South Africa. The study is grounded in an interpretivist theoretical framework. This study followed a qualitative research approach utilising a case study design and thematic analysis to explore the intricacies associated with the implementation of novel technologies in the context of higher education.

The study aimed to describe the environment and change management strategies employed during the technology transition. Specifically, the study focused on transforming managers' roles from decision-making to strategic communication and digital integration. The results obtained from semi-structured interviews with key stakeholders provided insights into a landscape that exhibits a readiness to adjust, but that also faces difficulties related to user acceptance and the availability of support systems. The study revealed a significant requirement for a complete approach to change management, encompassing well-defined change models, active involvement of managers, and the implementation of user-friendly technologies.

In meeting the study's secondary objectives, the study examined procedures and obstacles faced during the transition. The findings underscore the significance of strategic change management practises, effective communication, and user-centric methodologies. The inquiry was directed by the main research aim, which was to investigate the management of a transition project and its implications for change management in the context of higher education. The study's findings reveal that the effectiveness of the shift was contingent upon, not just the technological aspects, but also the efficacy of communication, support, and integration into daily practices.

This study makes a valuable contribution to the existing body of change management literature by providing actionable insights and practical recommendations specifically tailored to the management of technology transitions in the context of higher education. The findings emphasise the changing responsibilities of managers as strategic communicators and digital integrators, a critical aspect in efficiently navigating comparable developments. The research emphasises the significance of comprehensive training, support, individualised communication, and a strategy of gradual introduction of new technology.

Potential avenues for future research encompass a comparative examination of transitions across diverse institutions and assessing the enduring impacts of digital transitions on operational efficiency. The dissertation enhances the scholarly and practical comprehension of change

management in higher education institutions in the digital age, offering a significant resource for administrators and policymakers involved in comparable change endeavours.

Keywords: change management; digital transition; higher education; unified communications; qualitative research; case study; managerial strategy; technology adoption; South Africa; public university

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LIST OF ACRONYMS AND ABBREVIATIONS

IT	information technology
KPI	key performance indicator
PBX	private branch exchange
PEOU	perceived ease of use
PU	perceived usefulness
SIP	Session Initiation Protocol
SMART	specific, measurable, achievable, relevant, and time-bound
(S)RO	(Secondary) Research Objective
TAM	Technology Acceptance Model
TOE	Technology–Organization–Environment
UTAUT	unified theory of acceptance and use of technology
UCaaS	Unified Communications as a Service
MS	Microsoft

CHAPTER 1: INTRODUCTION

1.1 Introduction and Background to the Study

Public institutions of higher education are crucial enablers in the nurturing of future generations, in driving innovation, and contributing to economic growth (Menon & Suresh, 2022:166). In an era of rapid technological advancements, the effective integration of information technology (IT) services is crucial for these institutions to remain competitive and deliver high-quality education and related services (Cameron & Green, 2009). However, South African public universities face unique challenges in adopting and utilising these services (Titus, 2022:192).

One major limitation within this environment is inadequate IT infrastructure, often due to limited funding, outdated systems, and a shortage of technical expertise (Kling, 1991:41). These limitations hamper these institutions' ability to provide reliable and efficient services, which may disrupt their educational and administrative functions. Another significant barrier is a lack of technical know-how, attributed to a scarcity of qualified IT professionals, insufficient training, and inadequate incentives for attracting and retaining IT talent (Kitsantas *et al.*, 2019). The human element is also important in adopting advanced IT capabilities (Burke & Hutchins, 2007:282). Resistance to change and poor communication could hinder the adoption of innovative IT solutions (Burke & Hutchins, 2007:50).

The current study explored the complexities of the transitioning from a legacy or private branch exchange (PBX) telephony system to a cloud-based unified communications system by a South African public university. The aim of the study was to identify the challenges, examine change management strategies, and provide insights and recommendations for effective technology adoption.

1.2 Problem Statement

South African public universities can greatly benefit from IT services that enhance business functions, but a myriad challenges obstruct the successful implementation of these services, especially inadequate IT infrastructure (Mallah, 2015:514). Other challenges include constrained funding, lack of IT expertise, and outdated systems (Burke & Hutchins, 2007:282). Resistance to change, compounded by inadequate communication, also plays a significant role (Basyal & Wan, 2020:352). Ineffective communication could lead to confusion, mistrust, and even active opposition, further exacerbating resistance to technological advancements (Kotter, 2017:9).

This study was aimed at exploring the problem of challenges associated with the change management of implementing technology in an institution of higher education, in order to provide insights for effective change management in future technology transitions in this context.

The next section lists the study's research objectives and the research question.

1.3 Research Objectives

This study was aimed at exploring and describing the technological transition of a South African public university from PBX telephony to cloud-based unified communications by investigating the complexities and challenges encountered, including inadequate IT infrastructure, lack of expertise, resistance to change, and inadequate communication.

1.3.1 Primary objective

The main objective of the study was to provide a comprehensive description of the environment and change management strategies during a higher education institution's technology transition, to make practical recommendations to university managers who have to manage similar technology changes. Achieving the main objective was supported by the following secondary research objectives (SROs).

1.3.2 Secondary objectives

- SRO1: To describe the process and challenges of transitioning to cloud-based unified communications in a public university;
- SRO2: To explore change management strategies to navigate resistance during the transition;
- SRO3: To understand the role and impact of communication in implementing new technology;
- SRO4: To develop an in-depth understanding of factors influencing the success or failure of technology implementation projects; and
- SRO5: To gain actionable insights and make recommendations for the implementation of technology in institutions of higher education.

1.4 Research Question

The research question for this study was: *How was the transition from PBX telephony to a cloud-based unified communications platform managed in a South African public university, and what are the implications for technology change management in institutions of higher education?*

The research question was aimed at investigating the process of changing from traditional PBX telephony to cloud-based unified communications within the context of a public university, specifically the challenges, change management strategies, communication practices, and stakeholder resistance.

1.5 Significance of the Study

This qualitative research study offers both theoretical and practical contributions, which may be of use to various stakeholders, including institutions of higher education, administrators, policymakers, IT professionals, and the academic community. The contributions of this study are outlined below.

1.5.1 Contribution to the body of knowledge

The research enhances existing literature on the challenges information technology implementation challenges in higher education, with a focus on South African public universities. Building on previous research by Menon and Suresh (2022:169) and Mallah (2015:4), this study adds new dimensions by exploring human factors like resistance and communication.

The study also identifies gaps in the current literature and suggests avenues for future research.

1.5.2 Practical insights

The study offers empirical evidence and analytical insights into the complexities of transitioning from traditional systems to cloud-based technologies. The findings could assist administrators in developing evidence-based change management strategies.

Addressing the shortage of skilled IT personnel, this study provides insights for developing enhanced training programmes and formulating policies to attract and retain IT talent. The findings could inform higher education IT funding and infrastructure policies and decision-making. Insights into factors contributing to resistance and communication gaps offer strategic direction for risk mitigation, to improve the execution of future IT projects.

The findings of this study may be useful to stakeholders internal to institutions of higher education and the wider academic community. While focused on South Africa, the challenges explored may have broader relevance, and the findings may be benefiting institutions of higher education in other developing countries.

1.5.3 Methodological contribution

The current study followed a case study design in examining challenges and possible solutions, which process was documented in detail. The approach may be valuable to researchers and organisations facing technological changes.

The next section details the layout of the dissertation.

1.6 Chapter Layout of the Dissertation

Chapter 1 provided an introduction and back to the research by presenting the research problem, the objectives, and the research question. It detailed the rationale for and significance of the study, emphasising the importance of investigating the challenges of technology adoption in institutions of higher education.

Chapter 2 provides a review of extant literature on the topic under study. It explores the challenges institutions of higher education face in adopting and utilising new technology, together with a discussion of theoretical and conceptual frameworks pertinent to the study.

Chapter 3 details the philosophy and methodology applied in conducting the study, including the approach and design, the sampling strategy, the method of data collection and analysis. The chapter concludes with the ethical considerations pertinent to the study.

Chapter 4 discusses the data analysis and reports the findings according to the themes that emerged from the data, supported by verbatim quotes from the transcripts of the interviews conducted with the participants.

Chapter 5 discusses the findings in relation to existing literature, thereby answering the research question, and elaborates on the implications of the findings, together with recommendations.

Chapter 6 contains the conclusions and managerial implications, and provides recommendations based on the main findings. This is followed by a discussion of the study's limitations, its contributions to the field, and suggestions for future research.

The appendices contain the following supporting documents: Ethical Clearance, Permission to Conduct the Study, Interview Guide, and Informed Consent Form.

This concludes Chapter 1. The next chapter provides a review of extant literature on the topic under study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

A literature review critically analyses and evaluates existing knowledge on a particular topic, providing a solid foundation for new research (Hart, 2018:5). In the current study, an in-depth literature review was conducted to thoroughly examine how introducing new technology, specifically the shift from legacy telephony to unified communication platforms, impacts higher education institutions from a management perspective. The focus was on the organisational and human factors, such as resistance to change, communication dynamics, and change management strategies.

The review commences with an introduction to the unique challenges of technology implementation in this sector, followed by a description of change models, specifically the ADKAR Model of Change Management (Hiatt, 2003), Kotter's (1996) 8-Step Change Model, Lewin's (1947) 3-Stage Model of Change, and Davis's (1989) Technology Acceptance Model. Relevant sources were accessed through databases like Google Scholar, NWULIB, and EBSCOhost, and included books, journal articles, publications, and dissertations. The literature review informed the study's conceptual framework and guided the analysis of the case study.

The concluding part of the review highlights the main findings from the literature and identifies research gaps in the context of the implementation of digital telephony in South African institutions of higher education. Therefore, the literature review not only grounded the research in existing academic discourse guided the exploration of the specific managerial actions required for successful technological change in this context.

2.2 Definitions of Key Concepts

Listed below are several key concepts that contextualised the study and serve as a point of throughout the research.

Technology transition: Within the scope of this study, 'technology transition' refers to the shift from traditional or legacy systems to advanced digital platforms (Al-Emran & Shaalan, 2021:319). Specifically focusing on the move from PBX telephony to a cloud-based unified communications platform within a public university setting.

Public university: A public university is a higher education institution, funded by the government, that provides education and research opportunities to the general public, and form part of a broader public education system (Holmwood, 2011:25).

Change management: Change management, in this study, refers to a co-ordinated and structured approach to transitioning from old to new technology. It encompasses strategic planning, stakeholder engagement, managing resistance to change, and ensuring the successful implementation and use of the new technology (Schneider, 2018:810).

Successful transition: Successful transition, in this research, refers to the effective implementation and utilisation of a unified communications platform, as evidenced by user acceptance, sustainability, cost-effectiveness, and a positive impact the university's teaching, research, or administrative processes (Arifin & Frmanzah, 2015:787).

Utilisation: Utilisation pertains to how stakeholders in a public university context adopt and use the new unified communications platform, including frequency of use, user adoption, and integration into existing workflows and administrative tasks (Hizam-Hanafiah *et al.*, 2020:129).

Communication and change management strategies: Communication and change management strategies form the backbone of successfully transitioning to new technology in a public university setting. Communication strategies should be transparent, consistent, and tailored to meet the needs of diverse stakeholders (Cameron & Green, 2019:273; Ertmer, 1999). Change management strategies should involve stakeholders at all levels, provide continuous training and support, and be incremental and ongoing (Cameron & Green, 2019:333). Effective communication and change management can foster trust, decrease resistance, and minimise disruption during transition (Appelbaum *et al.*, 2012:772).

Change management models: Organisations can embrace technology's revolutionary potential with the help of change management models, which serve as a blueprint for change initiatives while minimising resistance and maximising the advantages of change (Cameron & Green, 2020:281). The organisation could enable its stakeholders to adjust to the shift through a planned and all-encompassing approach, ultimately improving communication experiences and promoting a more cohesive and effective organisation.

Uncertainty avoidance: The term used in the study of cultures and organisational behaviour to describe the degree to which people in a society are uncomfortable with uncertainty and unpredictability. Societies with high uncertainty avoidance tend to have strict rules and regulations, and their members are likely to seek a high level of security and certainty in their daily lives. They prefer clear guidelines and tend to avoid taking risks. Conversely, societies with low

uncertainty avoidance are more accepting of ambiguity, more tolerant of unstructured situations, and more willing to take risks. They may have fewer rules and be more flexible in their operations and thinking. This concept is significant in understanding how different cultures approach change, planning, and risk-taking (Cameron & Green, 2020:257). Cultures characterised by fragile uncertainty avoidance exhibit a heightened degree of willingness to embrace risks associated with novel processes and measures. Such cultures may, for example, exhibit a greater inclination to adopt emerging technologies that have already been proven successful in other organisations (Ali *et al.*, 2021:490).

The next section discusses organisational change, followed by models for implementing such change.

2.3 Organisational Change

Change is an inevitable part of life, including in organisations. Change can be challenging and disruptive, be it a merger, restructuring, or implementation of a new technology (Clegg & Walsh, 2004:16). The concept of change within an organisation can be broken down into several critical factors (Coghlan & Brannick, 2003:33; Kotter, 2007:67). According to Kotter (1996:33), understanding the key factors of change is crucial for successful implementation, because it helps individuals and organisations navigate the complex process of change. Leadership is the driving force behind a change process, and understanding the critical factors of change could help leaders effectively manage and guide their teams through the process (Kotter, 2007:65). Understanding the key factors of change is crucial for successful implementation, as it helps individuals and organisations navigate the complexities of change and build a strong foundation for lasting success (Cameron & Green, 2009:220).

2.4 Key Aspects of Change

The subsequent sections discuss the main aspects to be considered in change management.

2.4.1 Purpose and vision

Purpose and vision are two critical components of any successful organisation. The purpose relates to why a company exists beyond making a profit, while the vision is the desired future state that the organisation aims to achieve (Kotter *et al.*, 2021:93). However, the two concepts are interlinked, as an explicit purpose is instrumental in sculpting a resonant vision, thereby providing the workforce with strategic orientation and existential meaning (Cameron & Green, 2009:341). It elucidates the contributions of individual roles towards overarching objectives. A

cogent purpose and an inspiring vision catalyse employee motivation and enhance the organisation's allure in attracting talent (Kotter, 1996:68), and offer a constant framework and directional clarity in today's milieu of change and volatility. A purpose and vision are indispensable to an organisation's success, as it fosters coherence, inspiration, and steadfastness amongst internal and external stakeholders (Kotter *et al.*, 2021:158).

2.4.2 Nature of change

One of the critical themes that Kotter (2007:59) emphasises is the nature of change, noting that change is a complex and multifaceted process that requires a deep understanding of the organisation's culture, structure, and incentives. Kotter (2007:33) further highlights the importance of creating a sense of urgency, building a guiding coalition, and developing a clear vision and strategy to guide change efforts. In addition, Kotter *et al.* (2021:157) emphasise the importance of communication, empowerment, and leadership in overcoming resistance to change and building a solid foundation for lasting success.

2.4.3 Scope

Within the realm of change management, the concept of scope refers to the precise definition and boundaries of a change initiative, which includes embracing the various aspects and constraints of the change endeavour (Cameron & Green, 2009:341). Kotter (1996:25) identifies the specific components of the organisation, including its segments, activities, and systems, that are subject to change, and outlines the necessary timeframe and allocation of resources to implement change. The accurate delineation of the scope is crucial in determining the viability and manageability of a proposed change, serving as a precaution against 'scope creep', which refers to the gradual expansion of the change beyond its initial boundaries (Kotter *et al.*, 2021:56). The rigorous scope definition is thus integral to the change management process, as it ensures strategic focus and operational discipline (Kotter, 2007:64).

2.4.4 Stakeholders

Freeman's (2010:4) stakeholder theory argues that organisations are centres of diverse interests held by multiple constituents (Cameron & Green, 2019:104), and that management practices should consider these numerous stakeholders. In the context of change management, this philosophy necessitates carefully assessing the varied requirements and perspectives of all stakeholder groups that may be affected by organisational changes (Hussain *et al.*, 2018:125). Integrating stakeholder theory into change initiatives provides a strategic benefit by proactively

recognising and addressing stakeholder issues, mitigating resistance, and fostering an atmosphere of support and co-operation (Kotter *et al.*, 2021:61). Amis and Aïssaoui (2013:88) support this view, and posit that it ensures that modifications are aligned with the organisation's ethical framework and strategic priorities, promoting fair changes that align with the stakeholder ecosystem's shared values and objectives. Therefore, the stakeholder theory plays a crucial role as a philosophy underpinning the management of change. It promotes an inclusive strategy that aligns the change process with the organisation's core ideals and the interests of its stakeholders (Kotter, 1996:48).

2.4.5 Impact

Change within an organisation invariably affects its operations, culture, and performance, each in complex and interrelated ways (Kotter *et al.*, 2021:14). Operationally, change can lead to the reconfiguration of processes, the adoption of new technologies, or the restructuring of teams (Amis & Aïssaoui, 2013:70). Such alterations necessitate a re-evaluation of existing workflows, and may introduce new efficiencies or, conversely, unforeseen challenges that require additional adjustment (Amis & Aïssaoui, 2013:139). Culturally, change can fortify or destabilise the shared values and norms underpinning organisational life. For instance, shifting toward a more innovative and risk-taking culture could stimulate creativity and collaboration, but might clash with a previously conservative, risk-averse climate (Cameron & Green, 2020:139). The dissonance between old and new cultural elements must be managed to prevent a negative impact on morale and employee engagement (Cameron & Green, 2020:288). Performance outcomes of organisational change are equally multifaceted (Kotter *et al.*, 2021:144).

On the one hand, Kotter (1996:120) states that positive performance impacts are anticipated through improved productivity, competitive advantage, and enhanced alignment with market demands. On the other hand, Cameron and Green (2009:273) note that the turbulence of change could initially disrupt performance as employees acclimatise to new expectations and systems. Performance metrics may dip temporarily as the organisation absorbs the monetary and temporal costs of implementing change (Cameron & Green, 2009:209). Moreover, the success of change initiatives is often contingent upon the workforce's ability to adapt and embrace new paradigms, requiring that leadership invest in training and support systems (Kotter *et al.*, 2021:40). In sum, change is a catalyst that propels an organisation into a state of flux across all operational, cultural, and performance-related dimensions, with the potential for constructive transformation and challenging upheaval. Therefore, an organisation's capacity for effective change management determines the net impact of change, which moderates the transition and ensures alignment with strategic objectives.

2.4.6 Process

The progression of organisational transformation often occurs through a sequence of stages that enable a methodical shift from the present to the aspired future condition. Lewin's (1947:35) 3-Stage Model establishes a fundamental framework, which commences with the initial stage of *Unfreeze*. During this stage, the organisation undertakes preparatory measures to embrace change by acknowledging its necessity and cultivating a readiness to depart from the existing state of affairs (Cameron & Green, 2020:132). In the subsequent phase, *Change or Transition*, the change's tangible implementation occurs. This phase is frequently regarded as the most arduous, as it necessitates the deconstruction of current procedures and the implementation of novel behaviours and practices (Burnes, 2004:993). In the concluding phase, referred to as *Refreeze*, the objective is to consolidate the altered condition within the organisation's culture and operational procedures, to ensure the change's durability and integration as the prevailing standard (Cameron & Green, 2020:132). Lewin (1947b:35) Significant emphasis on the notion that change is not a solitary occurrence but rather a gradual process that necessitates meticulous planning and effective management to mitigate resistance and enhance acceptance (Al-Emran & Shaalan, 2021:174). Ultimately, this approach aims to facilitate enduring enhancements and optimise performance. Every stage of the process is of utmost importance, necessitating scrutiny, efficient communication, and the implementation of support systems to successfully traverse organisational change's intricate nature (Kotter *et al.*, 2021:135).

2.4.7 Resistance and acceptance

Researchers have discovered a combination of psychological and societal factors that contribute to resistance to change when evaluating its complexities (Kotter, 1996:17). Resistance frequently arises due to an inherent apprehension of unfamiliar circumstances, a perceived relinquishment of authority over customary practices, and challenges to existing positions or influence within the organisational structure (Kotter *et al.*, 2021:84). From a sociological perspective, resistance is exacerbated by the presence of collective norms and values that are deeply ingrained within the workforce, potentially conflicting with the proposed changes (Lewin, 1947:39). According to Cameron and Green (2009:209), the increase in resistance is often ascribed to ineffective communication tactics, a fundamental absence of trust, and the lack of solid support systems.

Appelbaum *et al.* (2012:770) emphasise the importance of fully understanding the psychological and sociological aspects involved. This understanding promotes a proactive approach to addressing resistance by employing careful strategic planning, open and empathetic communication, and deploying extensive support and resources. According to Cameron and Green (2020:132), resistance, from a constructive perspective, provides a rich environment for

improving organisational learning. Change agents should perceive resistance not as a hindrance, but as an intrinsic and enlightening aspect of the change process (Kotter, 1996:133). This necessitates employing deliberate approaches and inclusive tactics to cultivate a resilient culture capable of adapting to change (Kotter *et al.*, 2021:105).

2.4.8 Communication

Kotter *et al.* (2021:40) note that communication is pivotal in organisational transformation. Without articulating a compelling narrative that resonates on both rational and emotional levels and engendering widespread endorsement, catalysing collective action becomes an insurmountable challenge (Kotter, 1996:87). Effective communication serves as a bulwark against resistance, fostering seamless transition by engaging stakeholders through open dialogue, recognising incremental successes, and integrating new practices within organisational structures (Cameron & Green, 2009:337). Cameron and Green (2009:70) state that strategic dissemination of information requires concerted effort by corporate communication teams, human resources practitioners, and legal advisors, especially in scenarios that require workforce restructuring. A thoroughly choreographed communication strategy is informative and performative, shapes perceptions, and steers the collective psyche towards the assimilation of change (Cameron & Green, 2009:95). Thus, proficient communication is not merely an adjunct, but a central tenet of change management.

2.4.9 Implementation

The process of institutionalising changes in an organisation is a complex undertaking that necessitates the thorough integration of new practices into the fundamental structure of the organisation (Kotter & Cohen, 2012:774). Kotter *et al.* (2021:94) point out the comprehensive restructuring of fundamental procedures, which entails adjusting training programmes to align with updated skill sets, as well as aligning recruitment- and onboarding processes to match the reorganised dynamics of the organisation. Moreover, it is crucial to prioritise the reconfiguration of incentive schemes and team designs in order to align performance measurements with the recently implemented modifications (Appelbaum *et al.*, 2012:772). The systemic entrenchment of change also applies to the cultural sphere, where it is crucial to instil updated norms and values that align with the organisation's changed principles (Kotter *et al.*, 2021:94).

Lewin (1947:37) promoted workforce empowerment as crucial in cultivating a receptive climate, to facilitate change. Organisations can leverage granular insights and agility by decentralising decision-making and empowering individuals close to operational units to drive innovation (Burnes, 2004:988). Leaders are responsible for deconstructing obstacles to change, in order to

foster an environment where experimental methods and swift iteration are the prevailing standards. Empowering individuals fosters a feeling of ownership amongst employees and leads to effective results for the organisation (Amis & Aïssaoui, 2013:88).

The act of commemorating immediate achievements acts as a stimulus for maintaining forward progress and reducing doubt (Kotter *et al.*, 2021:173). However, it is crucial to approach these triumphs with strategic skill, primarily when they represent a fundamental change in the organisation that could unintentionally marginalise specific groups or established practices. The acknowledgement of group effort and the awareness of the ramifications of these results fall under the purview of leadership (Kotter *et al.*, 2021:20).

The iterative nature of change implementation underscores the significance of attentiveness and adaptability. Cameron and Green (2020:136) note the importance of ongoing monitoring of the change process, which allows identifying areas that require improvement, and ensures that the strategy remains adaptable to the ever-changing internal and external elements. This method requires a leadership philosophy open to receiving feedback and determined to make necessary adjustments to change projects based on the organisation's changing needs and external market forces (Chinniah *et al.*, 2023:101).

By following these recommended guidelines, organisations have the potential to not only achieve effective change, but also maintain the change, thereby establishing a competitive position in a constantly changing business environment.

2.4.10 Sustainability

Cameron and Green (2009:335) posit that change maintenance is vital to the long-term effectiveness of any change. If a change is crucial, sustaining the gains reached and ensuring that the changes made are beneficial in the long run are equally critical (Kotter, 1996:20). This involves careful planning and execution throughout the implementation phase, coupled with continual monitoring and adjustment to verify that the changes are operating as planned (Kotter, 2007:64).

It is vital to institutionalise favourable improvements in the organisation's systems and structures in order to preserve a change, which requires changing training programmes, revising hiring and onboarding processes, and rethinking incentive schemes and team structures to ensure consistent measurements are in place to avoid the need for more restructuring down the line (Appelbaum *et al.*, 2012:774). Additionally, driving new norms and values into the organisation's culture could help ensure that the culture aligns with the revised principles and supports the transformation (Hussain *et al.*, 2018:998).

Kotter *et al.* (2021:154) note that monitoring and assessing changes are vital to the long-term efficacy of change initiatives. This includes establishing metrics to track progress and constantly assessing these to ensure the adjustments have the desired effect. It is also crucial to be adaptable and willing to make adjustments to guarantee that the improvements stay effective in changing circumstances (Cameron & Green, 2009). By doing so, companies can ensure that the improvements made are durable and beneficial in the long term.

In summary, the essential elements that drive transformation inside an organisation should be contained in its purpose and vision. These elements serve as guiding principles, imparting direction and significance to the organisation's existence beyond mere profit-generation, delineating a desired future state. In order to effectively instigate change, it is vital to possess a comprehensive understanding of the culture and structure of the organisation. This understanding enables the creation of a sense of urgency and the establishment of a coalition to facilitate the process of change. The concept of scope encompasses the parameters that delineate the extent of change, encompassing the specific areas that will be impacted and the requisite resources. Stakeholder theory emphasises considering the interests of all parties impacted by the proposed change. The effects of change encompass various aspects, such as operations, culture, and performance, which may result in the reconfiguration of processes or the adoption of new technologies. The change process is characterised by a series of stages, and organisations should not lose sight of the significance of comprehending and effectively addressing psychological and sociological variables that may lead to resistance or acceptance. Effective communication is crucial in elucidating the justification for the change, managing opposition, and involving relevant stakeholders. The process of implementation includes the integration of modifications inside an organisation's processes and structures, the empowerment of its personnel, the recognition and commemoration of achievements, and the ongoing monitoring and adaptation of strategies. Sustainability is critical in ensuring change programmes' enduring efficacy and continuity in the long run.

Four models were used in the study to examine the change management process in implementing new technology at a public university, namely Hiatt's (2003) ADKAR Model, Kotter's (1996) 8-Step Change Model, Lewin's (1947) 3-Stage Model of Change, and the Technology Acceptance Model of Davis (1989).

2.5 Models Employed in the Study

The choice of models for the current study was based on the following. The ADKAR Model (Hiatt, 2003) is particularly beneficial in managing the human aspect of change and ensuring individuals are ready, willing, and able to support change initiatives (Boca, 2013:248). John Kotter's (1996)

8-Step Change Model prioritises staff engagement and acceptance when managing organisational change. Lewin's (1947) 3-Stage Model emphasises the importance of managing both technical and human aspects of change and acknowledges. The Technology Acceptance Model of Davis (1989) was included in the study because it offers a framework for assessing the behavioural intentions of users towards the adoption of new technology, emphasising the roles of perceived ease of use and perceived usefulness. This model is particularly relevant in the academic setting of a public university where faculty and staff adoption of new technology is critical to the success of change management processes in order to stay relevant in a competitive landscape. The Technology Acceptance Model's (Davis, 1989) inclusion complements the other models by providing insights into individual-level acceptance and usage patterns of the new technology, which is pivotal for understanding the overall efficacy of the change management strategy employed. The models are discussed below.

2.5.1 Hiatt's ADKAR Model

The ADKAR Model was developed by Hiatt (2003) and subsequently promoted by Prosci, an esteemed research and training institute specialising in change management. The acronym ADKAR stands for the five essential components for successful change — awareness, desire, knowledge, ability, and reinforcement — and the model solely focuses on effectively handling the people side of change (Ali *et al.*, 2021:489). This model functions as a goal-oriented tool that aids individuals and organisations in effectively navigating the change process. The model places significant emphasis on the attainment of predetermined business outcomes. Prosci (2009) conducted an extensive research study examining over 700 companies that had undertaken substantial change initiatives. As a result of this thorough investigation, the ADKAR Model (Hiatt, 2003) evolved into a practical tool for effectively managing the human aspect of change (Ali *et al.*, 2021:489). The model is shown in Figure 2.1 and discussed thereafter.



Figure 2.1: ADKAR Model of Change Management (Source: Hiatt & Creasey, 2012:47)

The ADKAR Model (Hiatt, 2003) proposes five stages of change.

Stage 1: Awareness — precontemplation

This stage aims to raise awareness of the need for change amongst those impacted. It entails explaining the benefits and necessity of the change, thus justifying the change, to establish it as a strategic imperative and objective (Hiatt & Creasey, 2003:40). At this point, it is necessary to raise awareness amongst staff members of the need for the technology shift. It is essential to communicate the reasoning behind the switch, which may include the desire to improve communication efficiency, scalability, or cost-effectiveness. The organisation should facilitate the arrangement of meetings or presentations to address employees' concerns and enquiries about the digital telephony solution, and elucidate its advantageous attributes (Hiatt & Creasey, 2003:49). These steps will help to optimise the effectiveness of superiors through increased management support and communication (Sulistiyani *et al.*, 2020:27).

An example of creating awareness is conducting a company-wide town hall meeting to inform employees about the current PBX system's limitations, the digital telephony solution's advantages, and how it aligns with the organisation's long-term goals (Karambelkar & Bhattacharya, 2017:6).

Stage 2: Desire — contemplation

The objective at this stage is to foster people's willingness or desire to support and participate in the change. Understanding how the change will benefit them personally and professionally should assist people in feeling motivated and emotionally invested (Hiatt & Creasey, 2003:42). The desire to change has four factors that contribute to an individual's or group's participation in a change. The personal impact of the change — how it resonates with an individual's values, needs, and aspirations — can significantly affect their support for the initiative. Additionally, the organisational culture and its approach to managing change play a crucial role; a supportive environment that values employee involvement typically enhances the desire for change. Personal life circumstances also weigh in, as external stressors or changes can diminish an individual's capacity or willingness to engage with workplace changes. Lastly, intrinsic motivation — stemming from a person's internal desire for self-improvement, achievement, and meaningful involvement — can greatly increase active participation in change efforts. These elements collectively shape the extent to which individuals and groups are willing to embrace and contribute to change processes (Hiatt, 2006:18). Addressing these factors with due diligence is paramount, as it cultivates an environment where individuals are not only willing but also eager to endorse and contribute to the change initiatives, a determinant that is vital for the successful execution of such endeavours.

A practical example of creating the desire for change is conducting focus groups or individual discussions with employees to solicit feedback, address concerns, and elucidate how digital telephony offers enhanced flexibility and improved communication capabilities. Promoting a successful and lasting organisational transformation is necessary to create an environment that is change-friendly, i.e., conducive to change. The essential conditions, support systems, and cultural factors are established in this process, and acceptance of the change initiative is encouraged (Sulistiyani *et al.*, 2020:27).

Stage 3: Knowledge — preparation

This stage entails providing people with the knowledge and abilities to adjust to the change successfully. This may entail offering training, materials, and assistance to ensure everyone knows how to implement the change correctly (Hiatt & Creasey, 2003:103). During this phase, staff members must acquire the necessary knowledge and skills to effectively utilise the newly implemented technology, to foster self-confidence. Organisations need to conduct comprehensive training sessions covering the new technology's features and functionalities, and offer tangible avenues for users to actively participate in experiential learning. They should also provide extensive educational resources to support employees' mastering of the technology

(Karambelkar & Bhattacharya, 2017:6). Various instructional methods, such as lectures, interactive workshops, online courses, and practical exercises the cater to different learning styles should be offered, and organisations should ensure that the content is easily accessible and easily understandable (Hiatt, 2006:106). From the above, it is clear that this phase entails knowledge transfer (Sulistiyan *et al.*, 2020:27).

Practical examples of methods of knowledge transfer are instructional workshops and collaboration with the project team responsible for implementing the cloud communication system. The workshops should provide comprehensive guidance to employees on utilising the new system, covering aspects such as call establishment, voicemail retrieval, and proficiency in utilising additional system functionalities.

Stage 4: Ability — action

Building upon the knowledge acquisition phase, the subsequent stage of ability development focuses on assisting individuals to acquire the necessary skills to carry out their duties effectively using the newly implemented system or process. Thus, the aim is to ensure that individuals can proficiently employ their newly acquired knowledge (Kuhn *et al.*, 1995:4). Using telephony as an example, this stage requires investing in the required resources, such as network infrastructure and data centres to ensure uninterrupted connectivity, accessibility, and data protection. The organisation should conduct a pilot programme to test and evaluate the system's functionality, performance, and user experience, prioritising cross-functional communication, knowledge sharing, and agility to adapt to changing market dynamics. The ability strategy also focuses on cost recovery and establishing a sustainable environment for the new communication model (Schmid, 2023:126).

A practical example of fostering ability is providing the necessary infrastructure, including selecting a suitable Session Initiation Protocol (SIP) service provider and conducting a pilot implementation of the digital telephony system. The pilot programme must include the entire ecosystem required for the functioning of the technology. Only then is the system implemented organisation-wide.

Stage 5: Reinforcement — maintenance

In the final phase, reinforcement is crucial to ensure the change's long-term viability. This stage involves formulating strategies to maintain the change, recognising and celebrating achievements, and implementing adjustments (Hiatt, 2006:43).

A practical example of reinforcement is recognition events to acknowledge achievements, disseminate success stories via university-wide e-mails or newsletters, and conducting periodic evaluations of the digital telephony system's efficacy and implementing enhancements. It is imperative to evaluate the performance and usability of the cloud-based system consistently. Improvement initiatives should be based on user feedback and organisational requirements.

In summary, the ADKAR Model (Hiatt, 2003) focuses on managing the human element of change and ensuring that people are capable, willing, and ready to support change initiatives (Hiatt, 2006:41). Given that people are vital to the success of any organisational change, the ADKAR Model (Hiatt, 2003) strongly emphasises the necessity of attending to individual concerns and needs throughout the change process. Change management professionals can more successfully support people and organisations through the transition by concentrating on the five components of the ADKAR Model (Hiatt, 2006:1), which will ultimately enhance the possibility of successful change implementation, ensure the sustainability of the change, and reinforce the benefits of the cloud-based communication solution. Organisations need to celebrate the successful achievement of milestones throughout and recognise teams and individuals who embrace the new system, whose success stories should be shared to motivate others (Karambelkar & Bhattacharya, 2017:7). It is imperative that organisations, throughout the change initiative, ensure that organisational leaders actively endorse and facilitate utilising the new technology, a top-down approach, by emphasising its overall positive impact on fulfilling the organisation's needs (Cameron & Green, 2009:104). The organisation should also foster a feeling of ownership and active involvement amongst employees by ensuring their active involvement in the change initiative (Kotter *et al.*, 2021:92).

2.5.2 Kotter's 8-Step Change Model

John Kotter, a renowned thought leader in organisational change, devised a robust methodology known as the 8-Step Change Model in 1996. The transformative approach prioritises staff engagement and acceptance, recognising their pivotal role in any change initiative's success (Klein *et al.*, 2022:511; Trawick & Carraher, 2023:3), and guides leaders and change agents through a comprehensive roadmap for navigating the intricacies of organisational change (Appelbaum *et al.*, 2012). By integrating the principles of urgency, collaboration, and strategic vision, this model equips organisations with the tools to embrace transformation and emerge more assertive, resilient, and future-ready (Cameron & Green, 2009:307). Pearlson and Saunders (2013:145) employed Lewin's 3-Stage Model in conjunction with a segmented interpretation of Kotter's (1999) change management framework to facilitate acceptance of IT-induced organisational transformations.

Kotter's (1996) Model is a comprehensive, systematic and adaptable approach to managing change (Appelbaum *et al.*, 2012:765). It focuses on both the technical and human aspects of change, as well as on overcoming resistance (Cameron & Green, 2020:138). The model addresses all critical stakeholders, the importance of a clear vision and communication, building momentum, cultural integration, and flexibility (Trawick & Carraher, 2023:11). The model further ensures the alignment of the transformation with the organisational culture, enabling long-term positive outcomes while celebrating short-term wins, ultimately yielding cultural integration (Kotter *et al.*, 2021:125). The model offers flexibility, as organisations can tailor the principles to suit specific contexts and needs (Appelbaum *et al.*, 2012:769). The eight steps contained in the model are discussed below (Kotter, 1999:7).

Step 1: Create a sense of urgency

The aim of this step is to identify potential threats and opportunities and discuss these with stakeholders to build a sense of urgency around the need for change. The need could emanate from different areas. Rapid technological advancements can render existing products or services obsolete (Appelbaum *et al.*, 2012:765), and organisations may need to adapt and innovate to stay relevant in the market. Adopting advanced technologies and novel solutions could establish an organisation as a frontrunner in the market. The created urgency, in turn, helps to mobilise support for the change initiative, encourages collaboration, and sets the stage for successful implementation of the subsequent steps in the change management process (Appelbaum *et al.*, 2012:766). When employees and stakeholders understand the critical need for change, they are more likely to actively participate and contribute to the transformation effort (Kotter *et al.*, 2021:40).

Step 2: Form a powerful coalition

A powerful coalition is a group of influential individuals with the necessary power, expertise, and credibility to lead a change initiative effectively (Wentworth *et al.*, 2020:514). It is crucial to identify key stakeholders, assess their power and influence within the organisation, build trust and commitment, establish a shared vision, provide resources and support, encourage collaboration, address resistance, and celebrate successes. These steps ensure that the change effort is well-supported, guided, and capable of overcoming resistance and challenges (Appelbaum *et al.*, 2012:767). A powerful coalition can effectively address resistance and maintain momentum throughout the change journey by fostering a culture of open communication and constructive feedback (Kotter *et al.*, 2021:61).

Step 3: Develop a vision and strategy

Creating a vision entails formulating a succinct, persuasive, and congruent vision that delineates the envisioned future condition of the organisation after the change has been effectively executed (Appelbaum *et al.*, 2012:769). The vision should possess clarity, persuasiveness, and realism, and include temporal constraints. It should also be measurable. The strategy should encompass a comprehensive framework that delineates concrete measures, initiatives, and strategies to achieve the envisioned outcome. The following must be established: SMART (specific, measurable, achievable, relevant, and time-bound) goals, the allocation of resources, strategic sequencing, assessment of potential risks, effective communication- and engagement strategies, and robust mechanisms for performance measurement (Toshpo'latovich, 2022:23). A well-defined vision and strategy establishes a collective understanding of the intended direction and objective, facilitating the harmonising of employees' and stakeholders' endeavours, fostering efficient collaboration, and actively contributing to the change (Kotter *et al.*, 2021:58). The step also includes the identification of areas for improvement, and aids decision-making throughout the change process by establishing key performance indicators (KPIs).

Step 4: Communicate the vision

The fourth step in John Kotter's (1996) 8-Step Change Model involves disseminating the vision. This entails customising the communication to various organisational stakeholders, employing appropriate terminology and illustrations, and adopting a multifaceted approach. This practice guarantees that the organisational vision is disseminated extensively and uniformly (Chinniah *et al.*, 2023:106). Leadership should proactively solicit feedback, inquiries, and concerns from both employees and stakeholders, promoting a culture of open communication and nurturing collaboration (Hiatt, 2006:41). Demonstrating leadership commitment is of utmost importance, and necessitates alignment of leaders' actions with their words (Sancak, 2023:5). It is imperative to acknowledge and respond to concerns and resistance, as well as utilise storytelling and visual aids to enhance the persuasiveness and memorability of the vision (Cameron & Green, 2009:250).

Step 5: Remove obstacles

This step entails the identification and elimination of barriers that have the potential to impede the effective execution of the change endeavour (Kotter *et al.*, 2021:61). This necessitates undertaking a comprehensive analysis, addressing any resistance encountered, establishing explicit targets, offering adequate resources and support, streamlining processes and policies, fostering a supportive culture, implementing structural solutions, and consistently monitoring progress (Trawick & Carraher, 2023:30). By effectively addressing these challenges,

organisational leaders can empower their employees by enabling them to actively participate in the change process, which will enhance their willingness to support the change (Trawick & Carraher, 2023:489). Consistent monitoring of progress and subsequent modifications should support the maintenance of the desired trajectory (Kotter *et al.*, 2021).

Step 6: Create short-term wins

This step entails identifying and celebrating minor yet concrete accomplishments and successes during the initial stages of the change initiative, to inspire and invigorate the workforce (Kotter, 1996:11). It necessitates the identification of areas where quick wins are possible, the setting of clear objectives, the execution of targeted changes, the acknowledgment and celebration of these achievements, the communication of the results to the wider organisation, the encouragement and reinvigorating of the workforce, the building of trust and credibility, and the strengthening of a culture conducive to change (Appelbaum *et al.*, 2012:773). By highlighting these successes, organisations can ensure that the change initiative gains momentum and additional backing, thus maintaining a progressive trajectory (Ali *et al.*, 2021:487). Employees who are motivated and engaged are essential to the broader change process, acting as champions who help overcome resistance and dismantle barriers (Kotter, 1996). Therefore, by focusing on these interim successes, organisations can make substantial strides towards achieving their broader vision and strategic objectives.

Step 7: Build on the change

According to Appelbaum *et al.* (2012:773), this stage entails utilising the credibility acquired through initial successes to propel subsequent transformation within the organisation. The process entails building credibility, discerning discrepancies in alignment, formulating comprehensive solutions, involving stakeholders, implementing a change management strategy, highlighting the importance of ongoing improvement, monitoring and evaluating outcomes, commemorating significant achievements, and establishing lasting change (Cameron & Green, 2009:168). Organisations can effectively navigate new challenges and opportunities by capitalising on the credibility they acquired through initial successes (Hamel & Zanini, 2014:16).

Step 8: Anchor the change in the organisational culture

The final step in Kotter's (1996) model is to firmly embed the change within the organisational culture, with the strategies including rewards such as promotion, staff development and recruiting in line with the changed organisation, the establishment and maintenance of transparent communication channels, acknowledgement and commemoration of achievements, and exemplary leadership (Costanza *et al.*, 2016:362).

2.5.3 Lewin's 3-Stage Model of Change

Renowned psychologist Kurt Lewin developed the 3-Stage Model of Change during the 1940s, which serves as a conceptual framework for comprehending and navigating the complexities of organisational change (Coghlan & Brannick, 2003:32). The model focuses on transitioning between three states: *Unfreeze*, *Move*, and *Refreeze*. Unfreezing entails questioning and challenging the existing state and preparing for forthcoming changes. Moving involves implementing changes and proactively handling any resistance (Cummings *et al.*, 2016:34), and refreezing solidifies the modifications made and establishes stability within the organisation. The model is shown in Figure 2.2 and discussed below.



Figure 2.2: Lewin's (1947) 3-Stage Model of Change (Source: Cummings *et al.*, 2016:34)

It should be noted that Lewin's (1947) 3-Stage Model serves as a foundational framework; the process of change in practice is often intricate, and may require multiple iterations (Appelbaum *et al.*, 2012:776). Contemporary change management methodologies emphasise ongoing change and adaptability, as well as addressing shifts in the external environment and market dynamics (Ali *et al.*, 2021:487). The selection of the most suitable approach is contingent upon the contextual factors and requirements of the organisation (Ali *et al.*, 2021:39).

2.5.4 Davis's Technology Acceptance Model

Davis (1989:340) presented the Technology Acceptance Model (TAM) as a theoretical framework for understanding users' attitudes and behaviours with regard to new technologies. The model focuses on perceived usefulness and ease of use as key determinants of technology acceptance.

The TAM was developed by Fred Davis in 1989, and is widely recognised as significant and influential (Bryan & Zuva, 2021:138). It provides a comprehensive framework for understanding the factors influencing individuals' computer usage behaviour. The primary objective of the TAM (Davis, 1989:340) is to evaluate the process by which users adopt and employ technology, specifically in the setting of an organisation (Rauniar *et al.*, 2014:8). According to Davis's (1989:340) theoretical framework, there are two primary characteristics of technology, perceived usefulness and perceived ease of use, that play a crucial role in determining an individual's attitude towards adopting a specific system (Al-Emran & Shaalan, 2021:422). These, in turn, significantly impact individuals' behavioural intentions and actual use of the technology. The TAM (Davis, 1989:340) has undergone thorough testing, and has continuously exhibited its effectiveness in forecasting and elucidating user behaviour towards various technologies (Rauniar *et al.*, 2014:8).

The theoretical underpinning of this concept is anchored in the theory of reasoned action, which elucidates the cognitive mechanisms influencing the acceptance of technology (Al-Emran & Shaalan, 2021:2). This theory postulates that individual behavioural intentions are shaped by attitudes toward the behaviour and subjective norms, which, together, govern the likelihood of embracing new technological systems. The TAM's (Davis, 1989:340) relevance extends beyond its academic significance; it serves as a practical foundation for designing, implementing, and evaluating user interactions with technological systems (Venkatesh & Bala, 2008). The TAM (Davis, 1989:340) has made substantial contributions to information systems research by emphasising the psychological acceptance of technology (Al-Emran & Shaalan, 2021:17). Al-Emran and Shaalan (2021:274) indicate that Davis (1989) provided valuable insights into user adoption processes and facilitated the development of technology designs that better correspond with user objectives and expectations. Perceived usefulness and perceived ease of use are discussed below.

2.5.4.1 Perceived usefulness

Perceived usefulness (PU) refers to individuals' belief in the potential of a specific technological system to enhance their job performance (Rauniar *et al.*, 2014:10). The performance improvement is framed as a rational and forward-looking evaluation of the prospective advantages of the system, rather than subjective or emotional consideration (Al-Emran & Shaalan, 2021:17).

Within the context of an organisation, the concept of PU is often addressed by employing quantifiable enhancements across a range of performance indicators. For example, if a novel software is observed to diminish the time needed to do a task, enhances the calibre of the output, or facilitate the accomplishment of previously unachievable tasks, it would be deemed

exceedingly valuable (Bryan & Zuva, 2021:10). The tangible benefits frequently materialise as improved task efficiency, enabling users to execute their job functions more expeditiously and with reduced exertion. This leads to increased productivity, resulting in more work being completed within the same time frame (Rauniar *et al.*, 2014:10). Additionally, there is an overall enhancement in the quality of performance, with the completed work meeting or surpassing established standards (Tsai, 2012:61).

The evaluation of PU is conducted to determine a technological innovation's prospective adoption and utilisation. When individuals have high expectations of experiencing substantial job-related benefits from utilising a system, they are more inclined to cultivate a positive attitude towards adopting it. Consequently, this optimistic mindset impacts their practical utilisation patterns (Al-Emran & Shaalan, 2021:2). PU is thus a vital measure for system designers and organisational leaders seeking to implement and endorse novel technologies in the workplace (Wallace & Sheetz, 2014:250). It is crucial to comprehend and improve PU in order to properly deploy and utilise information systems in order to support their acceptance and seamless integration into regular work routines.

2.5.4.2 Perceived ease of use

Perceived ease of use (PEOU) is another fundamental component of the TAM (Davis, 1989:340). It refers to an individual's perception of the effortlessness of utilising a particular system (Rauniar *et al.*, 2014:11), i.e., the cognitive and physical exertion involved, which are fundamental considerations in the decision-making process with regard to adopting technology (Bryan & Zuva, 2021:137).

The concept of PEOU comprises a range of dimensions that pertain to the user's interaction with technology (Bryan & Zuva, 2021:139). The factors encompassed in this assessment are the user's subjective understanding of the learning curve involved, the interface's ease of use, the clarity and comprehensibility of the instructions or documentation, and the level of intuitiveness integrated into the system's design (Al-Emran & Shaalan, 2021:62). A system that exhibits ease of use is characterised by its perceived attributes of learnability, controllability, predictability, and comprehensibility (Wallace & Sheetz, 2014:251).

From a psychological perspective, the PEOU construct is associated with the user's self-efficacy regarding technology utilisation, previous encounters with comparable systems, and general familiarity with technology (Al-Emran & Shaalan, 2021:422). The perception of user-friendly systems has been found to mitigate the apprehension of failure and the accompanying anxiety that frequently arises when individuals interact with novel technologies. Consequently, this

perception increases the probability of acceptance and sustained use (Wallace & Sheetz, 2014:252).

In the context of an organisation, the PEOU holds significant importance. A system perceived as cumbersome or challenging to navigate by employees can have detrimental effects on productivity, causing a rise in dissatisfaction and potentially resulting in the complete rejection of the system (Rauniar *et al.*, 2014:10). Hence, it could be argued that PEOU serves as both a predictive factor for technology acceptability and a crucial driver of the overall efficacy of a technology post-implementation (Wallace & Sheetz, 2014:250). As a result, designers and implementers of systems have to make an effort to improve PEOU by optimising interfaces, simplifying procedures, and offering sufficient training and support (Tsai, 2012:63). This ensures that systems are designed to be user-friendly and easily accessible (Al-Emran & Shaalan, 2021:35).

In summary, the TAM (Davis, 1989) remains a significant theoretical framework for comprehending the intricacies of technology adoption and implementation within organisational contexts. The fundamental components of this model are the constructs of PU and PEOU, which play a crucial role in shaping consumers' level of involvement and their overall perception of novel technological advancements. PU, which encompasses the alignment of technology potential with performance enhancement, and PEOU, which pertains to the perceived effort necessary to use the technology, jointly comprise a validated predictive model of user behaviour that has been extensively examined in various studies and technological environments.

The TAM (Davis, 1989:340) goes beyond theoretical investigation, to actual applications that inform the creation and deployment of technological solutions that prioritise user needs. The TAM (Davis, 1989:340) provides practical insights for organisations seeking to optimise their technological infrastructure by highlighting the significance of PU and PEOU. This framework ensures that new technologies offer functional advantages and prioritise user-friendliness. This creates an atmosphere that promotes effective and efficient technology utilisation.

The subsequent sections examine the role of management in technology change initiatives.

2.6 Role of Management in Technology Implementation

Managers have a crucial responsibility in the decision-making process of adopting and implementing novel technologies in the organisational context. It is imperative to assess the organisation's preparedness for change and ascertain that the technology is congruent with its objectives and capacities (Bruque & Moyano, 2007:250).

The Technology-Organization-Environment (TOE) Framework, formulated by Tornatzky and Fleischer (1990), is a highly regarded conceptual framework for examining the process of the management of the adopting and implementing novel technologies within organisational contexts (Aligarh *et al.*, 2023:3). The framework comprises three fundamental elements: technology, organisation, and environment (Awa *et al.*, 2017:895). *Technology* pertains to distinct technological advancements or resolutions, whereas 'organisation' pertains to the internal attributes of the adopting entity, including leadership, employee competencies, communication, and decision-making procedures (Horani *et al.*, 2023:3). *Environment* encompasses a broader range of economic, regulatory, market, and competitive conditions.

The TOE Framework (Bryan & Zuva, 2021:139), offers valuable insights into the effective adoption and implementation of novel technologies, indicating that organisations exhibiting a high level of technological preparedness and alignment with their external context are more inclined to achieve successful adoption and implementation of such technologies. Furthermore, the influence of the external environment, encompassing factors such as market demand and regulatory conditions, could serve as both catalysts of and impediments to adopting technology (Chinniah *et al.*, 2023:4). According to Tornatzky *et al.* (1990), the TOE Framework delineates the key responsibilities that managers have with regard to the adoption and implementation of technology. These are discussed below.

2.6.1 Surveillance and assessment of technological advancements

Managers must proactively monitor and evaluate technological progress and breakthroughs pertinent to their organisation's field. The process entails analysing the surrounding environment to identify emerging technologies that may benefit the organisation (Shute *et al.*, 2016:45).

2.6.2 Evaluation of technological opportunities

After identifying potential technologies, managers are required to evaluate their feasibility and potential advantages for the organisation. This task entails assessing the merits and drawbacks of adopting particular technologies (Tyler & Steensma, 1995:61).

2.6.3 Effective management of technological implementation

Implementing a novel technology can be intricate, encompassing multiple stakeholders and necessitating the allocation of various resources (Horani *et al.*, 2023:898). It is imperative that managers effectively supervise the implementation process, allocate resources judiciously, and co-ordinate activities meticulously in order to facilitate a seamless integration of technology within

the organisation (Horani *et al.*, 2023:486). Managing technology integration with organisational structure and processes is crucial to effective management of the change process. Implementing novel technological advancements frequently necessitates modifying pre-existing organisational frameworks, operational procedures, and workflow systems (Awa *et al.*, 2017:486). In order to optimise the advantages of technology, managers must actively facilitate the integration of said technology with the organisation's pre-existing systems (Miller *et al.*, 2009:8).

2.6.4 Addressing technological uncertainty and risk

The process of adopting technology could encompass various levels of uncertainty and risk. Managers must proactively tackle potential challenges and risks arising from adopting and utilising novel technologies and formulate contingency plans as necessary (Roca *et al.*, 2017:1216).

2.6.5 Facilitating technological learning and training

In order to optimise the advantages brought about by emerging technologies, it may be imperative to provide employees with appropriate training and development opportunities to cultivate the requisite skills. Managers must provide backing for and encouragement of learning endeavours to facilitate employees' proficient utilisation of technology (Bostrom, 2003:3164).

2.6.6 Continuous monitoring and evaluation of technological performance

Following the implementation phase, it is imperative that managers consistently monitor and evaluate the performance and effects of the technology. This requires the collection of feedback, the analysis of data, and the implementation of necessary adjustments in order to optimise utilisation of the technology (Ogor, 2007:359).

2.6.7 Interacting with external entities

Managers may be required to engage with external entities, including technology providers, industry experts, or government agencies, to acquire information, solicit assistance, or engage in collaborative technological initiatives (Kotter, 1996:111).

In general, the TOE Framework acknowledges the significant contribution of managers in adopting technology. It underscores their obligations to ensure technology is effectively integrated with the organisation's requirements, objectives, and external circumstances (Awa *et al.*, 2010:7).

2.6.8 The human element of technology

Managers must also take into account the human element of technology implementation. They must address the concerns of employees and other stakeholders, and ensure they are adequately trained and supported to use the new technology (Rogers, 2003:124). Managers must communicate effectively about the benefits of the technology and how it will affect individuals and the organisation as a whole (Prosci, 2009:61). They must also provide ongoing support and guidance to ensure the technology is used effectively and to its full potential (Menon & Suresh, 2022:171).

This concludes the discussion of organisational change, the related models, and the strategic role of managers in organisational change. The next section provides a detailed discussion of the context within which the technology change under study was conducted, i.e., a public university.

2.7 The Public University as Context

Public universities play a critical role in South Africa, providing higher education opportunities to diverse students, regardless of socioeconomic status. As with many global counterparts, they are primarily tasked with offering education, conducting research, and serving their communities (Bound *et al.*, 2019:43). However, South Africa's economic, political, and social landscape introduces certain unique complexities and challenges. An in-depth understanding of how public universities in South Africa manage their resources is crucial, given the inherent risk of funding volatility (Bound *et al.*, 2019:49). Decisions on state funding, the economy, and political agendas could substantially impact these universities' capability to deliver high-quality education and research.

Competition from private institutions and the rise of online education providers further intensify these challenges. This competitive landscape may influence staff and student recruitment, potentially impacting with potential ramifications on public universities' reputation and performance (Miotto *et al.*, 2020:343). Furthermore, the intersection of digital technology and cybersecurity is becoming increasingly concerning (Dioubate & Wan Daud, 2022). Given the vast amount of sensitive data these universities manage, understanding how they navigate this digital minefield and the implications for stakeholder trust are imperative considerations.

2.8 Introduction of New Technology in Public Universities

The introduction of new technology in public universities is viewed as a transformative process, enabling these institutions to enhance their educational services, research capabilities, and

administrative efficiency (Garrison & Kanuka, 2004:99). From a teaching and learning perspective, the utility of digital technology to facilitate remote access and flexible learning is substantial. Gaining a nuanced understanding of how these opportunities are leveraged and socioeconomic challenges is crucial (Helbing *et al.*, 2011:172). Technology can boost universities' research capabilities (Titus, 2022:259), and has the potential to streamline administrative processes (Yaseen *et al.*, 2023:215).

Successful deployment and uptake of new technology are essential for maximising advantages and reducing potential shortcomings of public universities (Cameron & Green, 2009:262). Offering a structured framework to negotiate the difficulties of technological integration in an academic setting This model takes into account many factors that may have an impact on how successfully technology is integrated into an organisation (Awa *et al.*, 2017:4). According to the Balance Model (Smith & Sainfort, 1989), the following are the primary factors that influence the implementation process.

2.8.1 New technology characteristics

This element refers to the newly introduced technology's precise characteristics and qualities, such the technology's usability, compatibility with current systems, complexity, and adaptability. It is easier for people to accept and incorporate new technology into their work processes if the technology is user-friendly (Batz *et al.*, 1999:122).

2.8.2 Organisational structure

Technology implementation is significantly influenced by organisational structure. Communication routes, decision-making procedures, and management backing can influence how well employees embrace and use new technology. A flexible and supportive organisational structure fosters an open-minded approach to change (Laforet, 2011:381).

2.8.3 Task considerations

The type of work that people in the organisation are doing is referred to as the 'task factor'. The technology must complement the duties carried out by personnel and increase their productivity. The workforce is more inclined to adopt new technology if it increases task performance and decreases workload (Mathieson & Keil, 1998:222).

2.8.4 Environmental characteristics

The external environment, including economic, social, and regulatory variables, may influence the implementation process (Ali *et al.*, 2021:489). Adopting a specific technology may be influenced by economic factors, market trends, and regulatory restrictions. Understanding the external situation makes prioritising opportunities and problems during implementation easier (Awa *et al.*, 2017:386). Business and society have undergone radical change due to the Fourth Industrial Revolution, making the adopting of new technologies essential for expansion and competitiveness. Solving these issues requires a context-specific strategy considering the organisation's setting, culture, and technology. Agostini and Filippini (2019:408) point out that managers must evaluate particular difficulties, such as staff opposition, technological know-how, and data security issues.

2.8.5 Human factors

Human factors strongly influence the adoption and successful introduction of technology. These factors include people's attitudes, convictions, drives, and perceptions towards the novel technology (Fallman, 2011:3). Adoption may be hampered by resistance to change and technological anxiety. These worries can be allayed and technological acceptance increased through the proper training and assistance.

According to the Balance Model (Carayon, 2009:314), successful technology implementation occurs when these variables are balanced. There may be difficulties with the adoption process if any of the elements are not appropriately addressed. The approach stresses the significance of considering technical and psychological factors while integrating new technologies. The Balance Model recognises human behaviour's cognitive and physiological components when faced with technological developments by merging psychological and biological ideas (Carayon, 2009:316). It acknowledges that people's ability to accept new technology is influenced by their emotions, cognitive talents, physical capacities, and technical factors. The Balance Model encourages organisations to think about the interactions between the technology itself, the organisation's structure and culture, the nature of the tasks performed, the external environment, and the people who will use the technology in attempts to implement it holistically (Rao, 2017:3; Smith & Sainfort, 1989). This thorough understanding enables businesses to create and carry out technology adoption plans that are more likely to be successful and benefit the company and its staff.

2.8.6 IT resources

IT management resources aid in maintaining a competitive advantage (Agostini & Filippini, 2019:15; Chan *et al.*, 2004:17-35; Haseeb *et al.*, 2019:3). Such resources and their effective management are a particularly important consideration in the current higher education landscape, which is increasingly focusing on online teaching (Ali *et al.*, 2021:185).

From the above, it is clear that a systematic framework is required for public universities to integrate and adopt new technologies (Kolus *et al.*, 2018:819). The framework should include a needs analysis, goal setting, budgeting, resource allocation, research, vendor selection, pilot testing, infrastructure integration, training, change management, rollout and monitoring, evaluation and continuous improvement, security and data privacy, and sustainability (Kitsantas *et al.*, 2019:388). This strategy will increase user confidence and enhance the technology's alignment with the university's mission and vision, ultimately benefitting the institution's administrative and learning processes (Ali *et al.*, 2021:488).

The current study probed the challenges of introducing new technology at a public university in South Africa, including resistance to change, resource limitations, technical knowledge gaps, integration difficulties, and security and privacy concerns, as documented by previous authors (Moraes & Cunha, 2022:80; Netshakhuma, 2022:204; Rohlfer *et al.*, 2022:109), to gain an understanding of how managers navigated these challenges. A key area of focus was how stakeholders, including faculty members and students, engaged with and responded to the introduction of new technologies, which is a critical consideration in implementation (Deacon *et al.*, 2023:455).

2.9 Chapter Summary

The literature review examined existing knowledge on implementing new technology, with a focus on the management perspective. The review examined the external, organisational, and human factors, that need to be considered. This was followed by a review of the models considered in the current study, whereafter technology change initiatives in universities were discussed. The review identified critical factors that influence the successful implementation of new technology and, highlighted the importance of a structured framework to negotiate the difficulties of technological integration in an academic setting.

This concludes the literature review. The next chapter, Chapter 3, details the methodology applied in conducting the study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter details the study's philosophical paradigm, the research approach and design, followed by a description of the population and the methods employed in sampling, data gathering and analysis. Methodological decisions dictate the research approach used to address specific questions in line with the study's objectives and design (Opoku *et al.*, 2016:33). The choice of methodology of the current study was guided by the Research Onion of Saunders *et al.* (2018:130), shown in Figure 3.3.

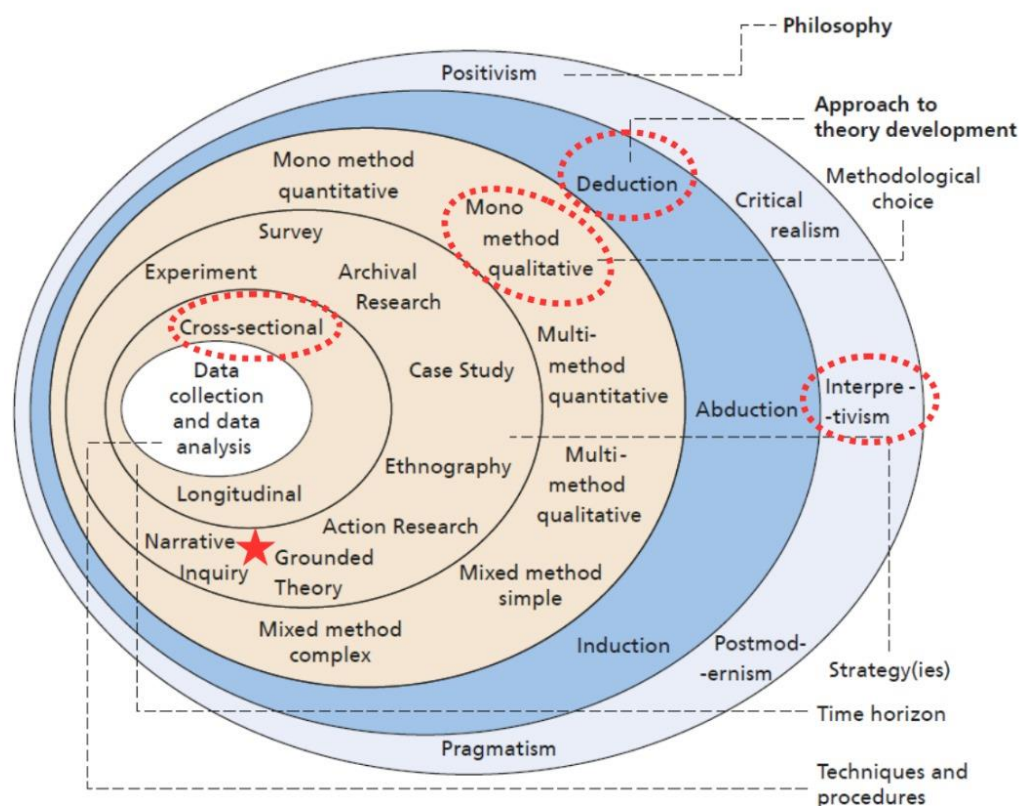


Figure 3.3: Research Onion (Source: Saunders, 2018:130)

3.2 Research Philosophy

A research paradigm sets the foundation for conducting research within a specific field, and encompasses the assumptions that will guide the choice of methods to conduct the study (Maree, 2007:47). The research paradigm relates to the researcher's belief regarding the nature of knowledge or reality, and how such knowledge can be gained (Maree, 2007:48). The current

study followed an interpretivist philosophy, which is commonly used in social sciences, which holds that reality is subjective and socially constructed and interpreted (Saunders *et al.*, 2009:137). In following an interpretivist philosophy, the researcher attempts to understand the nuanced lived experiences of the participants of social actors in their context (Shah & Al-Bargi, 2013:262), in the current study, the first-hand views of managers of the implementation of a technology change project at a public university in South Africa. The researcher has to interpret the study, and is therefore embedded in the study. While personal experience of the phenomenon may be advantageous, the researcher has to guard against pre-determined beliefs and bias in analysing the data and drawing conclusions (Ojebode *et al.*, 2018:377).

3.3 Approach to Theory Development

In the current study, a deductive approach was followed in developing theory, which entails commencing with a theory or a set of hypotheses and subsequently gathering and scrutinising qualitative data to ascertain if the data substantiate the theory or hypotheses (Saunders *et al.*, 2009:531). This strategy is distinguished by its emphasis on testing or investigating the suitability of established ideas within particular contexts or settings, rather than creating new hypotheses based on the facts, as is customary in an inductive approach (Saunders *et al.*, 2009:533). In the current study, this method facilitated comprehension of the effects of change using established models of the change management process.

3.4 Methodological Choice

The current study followed a mono-method qualitative research approach, whereby the researcher gathers detailed and in-depth information from the research participants' perspectives (Maree, 2007:259). Such information is in non-numerical form, and could include words, texts, images, and objects. The qualitative approach prioritises depth and contextual understanding over statistical representation (Cypress, 2015:20). It allows the researcher to probe the reasons behind participants' views and ask follow-up questions, which is not possible in quantitative studies, where vast amounts of numeric data are gathered and analysed statistically. Unlike quantitative research, qualitative research seeks to understand the meanings individuals or groups attribute to social or human issues, experiences, behaviours, and interactions (Bradley, 1993:357). Qualitative research is usually limited to smaller samples, and, unlike quantitative research results, the findings cannot be generalised to the study population. However, the findings may be applicable to other, similar contexts (Saunders *et al.*, 2009:194).

3.5 Research Strategy

The research strategy employed in the current study was an exploratory and descriptive single case study. A case study is an empirical inquiry of a contemporary phenomenon within its real-life context (Maree, 2007:75). This design is instrumental when the boundaries between the phenomenon and context are blurred, and researchers often rely on multiple sources of evidence (Yin, 2009:18). For this research, a case study design is adopted to deeply explore the impact of implementing new technologies in public universities, focusing on a specific institution as a case. The case study was exploratory in nature, which strategy allows the researcher to delve further into a topic neglected in prior scholarly investigations, to determine the exact nature of the research problem, and allows study participants to make valuable contributions to advancing knowledge within their profession (Lehmann, 2010:5).

3.6 Time Horizon

A study can be either cross-sectional (also called 'shortitudinal') or longitudinal. In longitudinal studies, data are collected at intervals over an extended periods, to enable comparisons in order to identify developments and changes over time. In cross-sectional research, data are collected and analysed at once, providing a view of the phenomenon at a specific point in time (Ojebode *et al.*, 2018:24). Due to various constraints, such as time and resources, the current study was cross-sectional.

3.7 Techniques and Procedures

The subsequent section describes the study population, followed by the techniques and procedures employed in carrying out the study.

3.7.1 Study population and sampling

The study population was manager stakeholders affected by the transition from legacy to digital telephony in a South African public university. Purposive sampling, which is a form of non-random sampling also known as 'judgement sampling', was employed, whereby the researcher selected participants based on their knowledge and ability to contribute rich and insightful data to the study (Maree, 2007:79). In using non-random sampling, not every member of the study population has an equal chance of being selected for participation in the study (Saunders *et al.*, 2009:281). The study participants were chosen from various support departments across the institution, to ensure that diverse experiences and viewpoints were captured, as recommended by Saunders *et al.* (2009:278). Participants were selected from support departments where high numbers of users

had migrated to Skype for Business. The criteria for inclusion were participants who held a managerial position and had personal experience of the technology change under study. The researcher further ensured that they possessed insights into the institutional processes and outcomes related to the change.

3.7.2 Realised sample

The sample size was determined by data saturation, which is the point at which additional interview yield no new information (Liu, 2016:130). Data saturation was achieved after 10 interviews, whereafter a further two interviews were conducted to confirm saturation. Thus, a total of 12 participants were interviewed. All had proficiency in using communication technologies within academic support contexts. As the researcher was involved in the implementation of the technology change, the interviews were conducted by the institution's gatekeeper, who had no direct affiliation with the department implementing the change. This approach mitigated any bias in data collection.

3.7.3 Data collection

Data were collected via semi-structured interviews, guided by an interview guide (see Appendix E) containing open-ended questions. The use of open-ended questions allows participants to freely elaborate on their views and underlying reasons, thereby enriching the gathered data (Bradley, 1993:330). While the interview guide ensures uniformity in the questions posed and that all participants are asked all the questions, in semi-structured interviews, the researcher is able to change the order of the questions to maintain the flow of the conversation (Saunders *et al.*, 2009:374). The researcher is also able to ask follow-up and probing questions to obtain clarity and further insights.

3.7.4 Data analysis

Employing a well-defined framework for data analysis is pivotal in ensuring that the findings are credible. Patton (2014:432) explains that qualitative data analysis is the process of methodically and rigorously converting unprocessed data into meaningful observations that accurately capture the intricacies of the social situation being examined. This ensures that valid conclusions are drawn (Saunders *et al.*, 2007:311). Analysis involves various steps that are undertaken in a structured and organised manner to ensure the accuracy and reliability of the findings.

In the current study, the data were analysed using thematic analysis, which entails identifying, analysing, and reporting patterns or themes within the data that address the research questions

and objectives (Braun & Clarke, 2006:82). The identification of themes was further supported by the observation of their repeated occurrence, which indicates importance (Braun & Clarke, 2006:82). The current researcher employed ATLAS.ti (Version 23) to facilitate the importation and analysis of the transcribed interview data. The analysis was enhanced using the Gioia (2021) methodology. The methods of analysis are discussed below.

3.7.4.1 *Thematic analysis*

The current researcher followed the six steps suggested by Braun and Clarke (2006:87) in conducting the thematic analysis:

Step 1: Acquaintance with the data;

Step 2: Methodical creation of preliminary codes;

Step 3 Compilation of codes into probable thematic categories;

Step 4 Constructing a thematic map analysis entails comprehensively examining the identified topics, the coded extracts, and the entire the data set;

Step 5: Through continuous analysis to identify and subsequently refine the themes; and

Step 6: Compilation of the report in accordance with the aims of the research.

The current researcher utilised the software application Atlas.ti (Version 23.3.4.28863) to conduct the thematic analysis. Atlas.ti allows the researcher to code the data by highlighting quotations in the transcripts that are related to categories using different colours. The researcher is then able to create visuals of these codes and categories in order to identify patterns or themes emerging from the text (Kalpokaite & Radivojevic, 2019:120). As elucidated by Kalpokaite and Radivojevic (2019:120), Atlas.ti is a potent analysis tool that facilitates many tasks, including organising the data, the analytical processes, and generating comprehensive a report containing visual depictions of the findings.

The application of the six steps of Braun and Clarke (2006:87) in the current study are detailed below.

In Step 1 (Acquaintance with the data), the researcher transcribed the recorded interviews verbatim with the assistance of Read.ai. The researcher then verified the transcripts against the audio recordings to ensure accuracy. Further immersion in the data was achieved by reading and re-reading the transcripts.

In Step 2 (Methodical creation of preliminary codes), initial codes were generated by systematically labelling and organising meaningful units of information within the data.

In Step 3 (Compilation of codes into probable thematic categories), these codes were collated and reviewed to identify potential themes that captured the main ideas patterns that emerged from the data.

In Step 4 (Constructing a thematic map analysis entails comprehensively examining the identified topics, the coded extracts, and the entire the data set), the identified themes were reviewed and refined through an iterative process, whereby the researcher compared and contrasted different data segments to ensure consistency and coherence in the interpretation.

In Step 5, the themes were refined and labelled with a concise descriptive phrase.

The researcher then completed Step 6 (Compilation of the report in accordance with the aims of the research) by providing a comprehensive narrative that describes and explains the findings, in alignment with the research aim and objectives, substantiated by verbatim quotes from the interview transcripts. As recommended by Braun and Clarke (2006:87), the researcher ensured that the findings are presented in a coherent and organised manner, using clear and concise language.

To further analyse the data and confirm the findings, the current researcher employed the Gioia (2013) Methodology, discussed below.

3.7.4.2 *The Gioia Methodology*

The methodology of Gioia *et al.* (2013:1) is a systematic approach to qualitative research devised to generate comprehensive and reliable hypotheses. The formulation of this concept was informed by a range of scholarly publications, most notably the works of Corley and Gioia (2011) and Gioia, Corley, and Hamilton (2013), which were expanded upon by Gioia in 2021. The significance of this approach lies in its contribution to the advancement of grounded theory, as it ensures adherence to the strict standards of dependability mandated by prestigious academic journals. Gioia *et al.* (2013) describe the methodology comprehensively. The methodology has gained significant traction amongst scholars, particularly in the field of organisational management (Gioia, 2021). The Gioia (2021:23) Methodology emphasises a systematic approach to presenting qualitative data, allowing researchers to analyse and organise their findings to improve the clarity and dependability of their research. Within academia, specifically in MBA studies, utilising the Gioia (2021) Methodology signifies a dedication to maintaining methodological rigour in qualitative analysis (Gioia *et al.*, 2013:26). This commitment is crucial in order to provide research outputs that are both credible and valuable.

Applying the Gioia (2021) Methodology to qualitatively examine change management strategies, specifically in the transition to new technological platforms like Skype for Business, as was done in the present study, is a meticulous approach to synthesising complex participant experiences into a structured and coherent analytical framework. By breaking down the qualitative data into first-order concepts, second-order themes, and aggregate dimensions, this methodology facilitates a deep and nuanced understanding of the multifaceted nature of organisational change management. In the present study, the analysis began with the extraction of first-order concepts directly from participants' narratives, in which diverse experiences of change management efforts — ranging from commendations for effective communication and proactive information dissemination to criticisms regarding insufficient practical training and engagement — were catalogued. Such direct quotes from participants served as the raw material for the subsequent analytical phases.

Identifying second-order themes is the process of identifying patterns across these individual perspectives, where the varied experiences of communication, training, and engagement coalesce into broader insights. For example, effective communication, as highlighted by one participant, was recognised as a critical factor in reducing resistance to change. At the same time, the need for practical training and more engaging methods of information distribution emerged as a recurrent theme from other narratives. Thus, the findings underscored the importance of communication together with its execution and integration with comprehensive training to ensure operational readiness and a smooth transition.

The final analytical stage involves abstracting these insights into aggregate dimensions, encapsulating overarching themes, e.g., *Strategic communication and training* and *Engagement and readiness*. These dimensions offered a high-level view of the critical strategic components of successful change management. The methodology thus not only dissects participant experiences into analysable segments, but also reconstructs them into a theoretical model that provides clear, actionable insights into effective change management practices.

Employing the Gioia (2021) Methodology in this context underscored its effectiveness in dissecting and reconstructing qualitative data into an academically rigorous and practically relevant findings. The methodology transformed individual narratives into general strategic insights, thereby enhancing research findings' clarity, coherence, and dependability. This structured approach not only aids in advancing grounded theory but also ensures that the research outputs are credible, valuable, and reflective of the complexities inherent in managing organisational change. The findings of both the thematic analysis and the Gioia Methodology analysis are reported in detail in Chapter 4.

The next section addresses the strategies employed to enhance the trustworthiness of the study.

3.8 Strategies to Ensure Trustworthiness

The quantitative research criteria of reliability and validity are represented by trustworthiness in qualitative research, which encompasses credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985:290). Credibility relates to the believability of the findings, i.e., that the findings reflect the data. Dependability relates to the researcher explaining how the findings were derived to build trust in the process and findings. Confirmability is enhanced by the researcher remaining conscious of possible bias and actively taking steps to avoid influencing the findings. Confirmability relates to the researcher explaining the study setting and the research methods used in sufficient detail to enable readers to judge whether the findings may be applicable to their context (Lincoln & Guba, 1985:290).

A number of strategies could be employed to satisfy these criteria, including triangulation (using multiple data sources), member-checking, peer-debriefing, maintaining an audit trail, and reflexivity (Lincoln & Guba, 1985:290).

In the current study, the researcher employed triangulation by using multiple data sources. Interviews were conducting with multiple stakeholders from different departments, and the findings were related to extant literature. The researcher employed member-checking by sharing the research findings with participants to verify the accuracy and authenticity of the representation of their views. This practice enhances transparency and ensures that the researcher's perspectives are acknowledged and appropriately managed. The research process was thoroughly documented, and the methodological choices and application were justified and discussed in detail, including the data collection process and analysis.

To further enhance objectivity, the researcher employed bracketing. Bracketing, a crucial element of phenomenological investigation, pertains to suspending one's preconceived notions, biases, and assumptions to comprehend the lived experiences of the individuals involved, referred to as 'Epoché'. This present chapter delves into the theoretical foundations of bracketing, elucidates its practical implementation in qualitative research, and offers illustrative instances to underscore its value.

The concept of bracketing has its roots in the philosophical framework of phenomenology developed by Edmund Husserl (1913), who encouraged researchers to practise Epoché, which involves temporarily withholding judgment regarding the natural world to uncover human experiences' fundamental nature (Keller, 1999:19). Researchers can thereby minimise the impact

of their own experiences and cultural biases on their data analysis and understanding (Creswell & Poth, 2016:59). Bracketing is particularly relevant when it is essential to comprehend human experiences and views, and is a valuable tool for MBA researchers in augmenting the rigour of their research, particularly in studies that entail subjective interpretations, such as those on consumer behaviour, leadership effectiveness, organisational culture, or employee motivation.

Bracketing, or using parentheses or square brackets, can be implemented using techniques like journaling, reflexive notes, and dialogical participation (Tufford & Newman, 2012:80). These methodologies recognise and temporarily suspend the researcher's pre-existing understandings that may influence the study.

The utilisation of bracketing entailed keeping a reflexive notebook, in which preliminary ideas, anticipations, and predispositions were documented before each interview. Following the completion of data collection, the researcher re-examined these entries in order to differentiate pre-existing notions from the emergent patterns and themes. Furthermore, peer debriefing sessions were conducted throughout the coding phase to critically examine any biases and verify the accuracy of the interpretive process.

In order to maintain objectivity, an impartial gatekeeper, who had no affiliation with the participants interviewed, was enlisted to conduct the interviews. The utilisation of this particular approach had a twofold objective: first, to mitigate the potential impact of personal biases and, second, to enhance the acquisition of unreserved perspectives from participants. The presence of an intermediary, as opposed to a researcher with preconceived preconceptions, potentially fostered greater openness amongst participants.

The gatekeeper's role further contributed to the reflexivity of the bracketing process. Preceding each interview, the researcher conducted a preliminary discussion with the gatekeeper regarding the researcher's views and expectations, which were deliberated over and subsequently recorded in a reflexive journal. After the interview, a thorough analysis was conducted of these records, with the researcher and gatekeeper carefully examining the disparities between the researcher's initial assumptions and the participants' perceptions. As part of data analysis, a thorough examination of the notes was conducted by the researcher and the gatekeeper, to discern and critically assess any personal biases that may have influenced the analysis and interpretation. This collaborative effort ensured that the thematic analysis remained unbiased by personal perspectives and remained grounded in the participants' lived experiences.

While bracketing techniques are valuable in reducing the influence of researcher bias, it is widely recognised that achieving absolute neutrality remains an impossible goal (Saunders *et al.*,

2009:135). It is thus acknowledged that the interpretations presented in this study cannot be considered wholly objective.

Furthermore, bracketing might be difficult in contexts characterised by substantial transformation, wherein fervent viewpoints or opposition might exist towards the newly introduced systems (Maree, 2007:52). It is then even more important that the researcher maintain a state of impartiality and objectivity to effectively document the experiences and viewpoints of the research participants.

Including the gatekeeper in the bracketing process enhanced the credibility of the research findings and offered a distinct perspective to comprehend the intricacies of organisational culture. This approach has contributed to a more comprehensive exploration of the underlying themes and heightened the researcher's understanding of intricate interactions within the study setting.

The next section details the ethical considerations pertinent to the current study, which were upheld throughout.

3.9 Ethical Considerations

Ethical considerations in research are the principles, guidelines, and values researchers must adhere to when conducting research. Ethical considerations are necessary to preserve the rights and welfare of participants, ensure scientific integrity, and promote public confidence in research (Hasan *et al.*, 2021:1-2).

The study received ethical clearance from the Research Ethics Committee of North-West University (see Appendix A), and permission to conduct the study was obtained from an institution of higher education (see Appendix B). Every effort was made to protect the participants' rights and welfare. As recommended by Hasan *et al.* (2021:1-2), participants were fully informed of the aims of the study and what their participation entailed, and that the data would be used for academic purposes, which may include publication in a journal. Participants had to sign an informed consent form containing this information before commencement of the interviews, and the interviews were conducted by an impartial gatekeeper.

Participation was voluntary, and participants were informed that they had the right to withdraw from the study at any time, without any negative consequences. The interviews were audio-recorded with participants' permission. In adhering to the Protection of Personal Information Act No. 4 of 2013, participants were also assured of anonymity. The researcher anonymised supporting documentation where necessary to protect the identity of the organisation, and

participants' names were replaced with a number in the reporting (P1, P2, etc.), as recommended by Fox and Busher (2022:7).

To mitigate bias, the researcher practised reflexivity, which involves self-awareness and critical reflection on possible biases and assumptions that may influence the research process. The researcher documented personal reflections and engaged in ongoing discussions with the research supervisor and peer researchers.

Bracketing was used in the current study to enhance impartiality in the analysis of the data while exploring the impact of organisational change. This was considered necessary because of the researcher's expertise in the domain under study, and the researcher considered it vital to recognise inherent biases that may influence the study process and outcomes.

The researcher further ensured that no personal identifiers were used in the reporting. The data are securely stored, and accessible only by the researcher and study leader, and will be destroyed five years after completion of the study.

This concludes the discussion of the research process. The next chapter reports the findings of the study.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Introduction

The subsequent sections offer a detailed exposition on the methodologies employed for data analysis. As delineated in Chapter 3, the researcher adopted thematic analysis as the primary analytical strategy, as it is a rigorous method to convert textual data into relevant and meaningful observations (Patton, 2014:432) and to ensure that valid conclusions are drawn (Saunders *et al.*, 2007:311).

The research question and the secondary objectives through which it was answered are reiterated here to facilitate ease of reference for the reader.

The main research question was: *How is the transition from legacy PBX telephony to a cloud-based unified communications platform managed in a South African public university, and what are the implications for change management in higher education?*

The secondary objectives of this study were:

- To describe the process and challenges encountered during the legacy PBX to a cloud-based unified communications platform project in a public university;
- To explore the change management strategies utilised in navigating the resistance to change during implementation of the project;
- To understand the role and impact of communication in facilitating the implementation of a new technology project in a public university;
- To develop a nuanced understanding of the factors contributing to the success or failure of new technology projects; and
- To generate actionable insights and recommendations for higher education administrators planning similar technology implementation projects in the future.

4.2 Thematic Analysis

Thematic analysis involves various steps that are undertaken in a structured and organised manner to ensure the accuracy and reliability of the findings. Thematic analysis entails identifying, analysing, and reporting patterns or themes within the data that address the research questions and objectives (Braun & Clarke, 2006:82). The identification of themes was further supported by the observation of their repeated occurrence, which indicates importance (Braun & Clarke, 2006:82). To augment this approach, the methodology articulated by Gioia *et al.* (2013) was also

applied, thereby enriching the thematic analysis framework. This dual-method approach was intended to ensure a comprehensive exploration of the data, facilitating a nuanced understanding of the emergent themes.

A distinct network was established for each thematic category code. An exhaustive analysis was then performed on each code and its associated quotations, to determine their relevance to the research objectives. A consolidation of codes was carried out to refine the focus of the investigation and discussion, highlighting significant sub-themes related to the themes. This revealed several interconnected themes. However, these topics were initially studied and addressed as separate entities to ensure analytical clarity. The focus of this analysis was on the sub-themes and the related quotations. This approach enabled a more nuanced comprehension of each theme before exploring linkages between the themes.

ATLAS.ti was used to generate a Word Cloud. ATLAS.ti's *Concepts* function is designed to discern and extract noun phrases, enumerate their occurrences, and rank them based on frequency, subsequently producing the *Concepts* Word Cloud, thereby providing the foundation for addressing the research question. The Word Cloud is shown in Figure 4.4.



Figure 4.4: ATLAS.ti-generated word cloud (Source: Researcher's own)

4.3 Using the Gioia Method to Enhance the Data Analysis

Utilising the Gioia (2021) Methodology, participants' experiences related to change management strategy and its communication during the transition to new technology within an organisational setting were distilled. This structured approach allows the identification of first-order concepts based on individual perspectives, extract second-order themes representing shared patterns across those perspectives, and ultimately draw broader implications for the change management process. The subsequent section report the themes that emerged from the thematic analysis, accompanied by the findings from the Gioia (2021) Methodology.

4.4 Emergent Themes

The AI-coding feature of ATLAS.ti to execute a comprehensive coding procedure, which yielded more than 580 unique codes, mapped to approximately 383 unstructured quotations. These quotations were subsequently organised into four discrete code groups, forming the basis for data categorisation. This categorisation was pivotal in articulating the emergent research themes. The gathered quotations were then systematically arranged into four distinct code groups, which served as the foundation for the classification of the data. This classification process was instrumental in delineating the emergent themes of the research. Utilising the capabilities of ATLAS.ti, 26 separate concepts within the interview transcripts were discerned and categorised, with three of these concepts singled out as particularly critical to the research findings.

Figure 4.5 contains a screenshot of the thematic analysis executed with the aid of Atlas.ti.

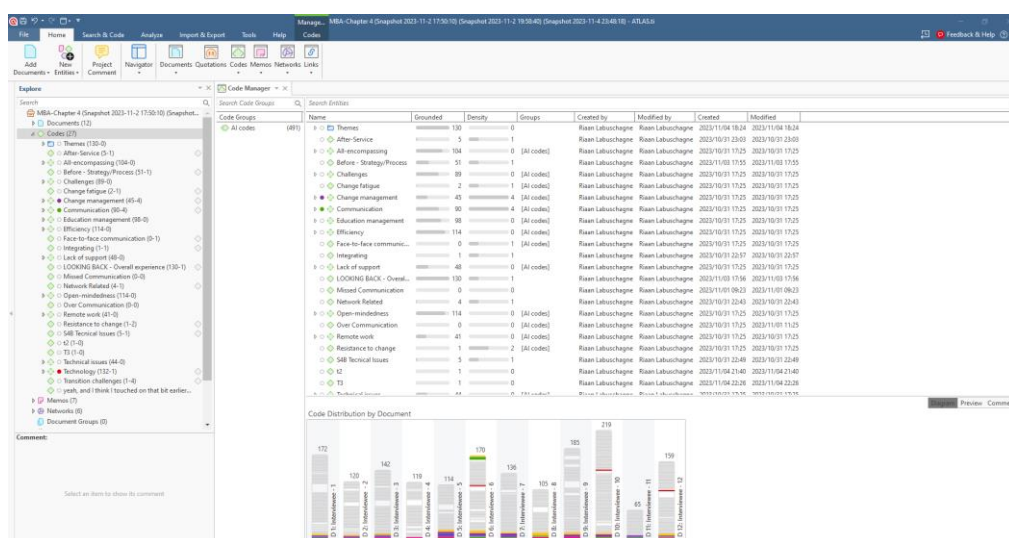


Figure 4.5: Thematic analysis using Atlas.ti (Source: Researcher's own)

Listed below are the initial codes and emergent themes, together with the frequency with which they occurred (noted in brackets).

CATEGORY: STRATEGY/PROCESS:

Theme 1: *Change management strategy* (23)

- Strategy communication (9)
- Addressing resistance to change (13)

Theme 2: *Awareness and motivation* (48)

- Change communication (30)
- Communication of implementation process (18)
- Leadership (7)

Theme 3: *Enhancing knowledge and competencies* (15)

- Training (8)
- Support (8)

CATEGORY: POST-IMPLEMENTATION

Theme 4: *Feedback evaluation* (16)

Theme 5: *Occupational stress* (17)

- Overwhelmedness (5)
- Impact on daily work (13)

Theme 6: *Overall experience*

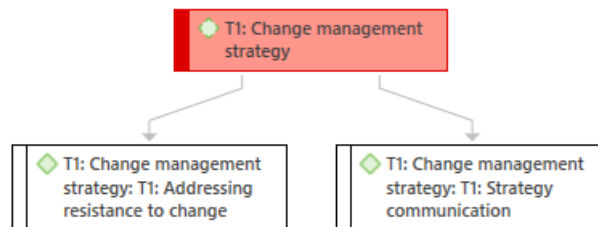
- Positives of transition (13)
- Negatives of transition (22)

The themes and codes are discussed in detail in the subsequent sections.

Within the category of **Strategy/Process**, three pivotal themes were identified: (1) Change management strategy, encompassing aspects of strategic communication and techniques to address resistance to change; (2) Awareness and motivation, which includes the facets of change communication, detailing of the implementation process and the crucial influence of leadership; and (3) Enhancing knowledge and competencies, focusing on initiatives for training and support. These themes are elaborated upon in the subsequent discussion.

4.5 Theme 1: Change management strategy

This theme comprised two principal codes: (1) Strategy communication and (2) Resistance to change.



4.5.1 Code: Strategy communication

Participants were asked the following question:

Did the change management approach used in this project work well for your team? If so, what parts were most helpful? If not, what could have been done better to make it more effective?

Participants remarked the following:

P1: *"I think the change management was good. There was proper communication, there was awareness of the change coming, and people were aware of what the consequences thereof was in my team. It might be that we kind of have privy information because we were part of the project team, but ... I think the communication from the project management team, the project owner and the project was sufficient enough to minimise the impact of the change, although you always will have a resistance to change."*

"We discussed this a bit earlier on. Communication in anything is key. If you don't communicate or fail to communicate, you will fail in your endeavours. So, it was very important that the message got out there, but also to break through all the noise of the messages that's out there in the community. I know of a few initiatives, some of them was generating of a new website, and the other was sending regular e-mails to the user community about the upcoming change. I know departments were contacted during the process, in advance of the change, to have somebody close to the user community to assist and to advocate what is coming, but also there is some of the technology challenges that users will face."

P2: *"If I remember correctly, ... there was sessions regarding that. If I remember, no there was a lot of e-mail communication. Now, e-mail communication can be very efficient and effective, or it can be the opposite. You will never be able to please everyone. So, someone is going to read that communication, and ... the next guy is not going to read, because that's coming from at **** e-mail address is in the delete folder immediately."*

"I think it was, for me personally, I think there was enough communication. I don't like over-communication things. So you don't have to send me every second day e-mail regarding something. So, personally, I think it was enough communication, but, like I said, for the next person, it might be not enough. It was communicated in everything. I think it was in the ... newsletter, ... in the ... daily communication. I think it was there for weeks. So, yes, at one stage, you don't read it anymore because it's fun, but sometimes someone is not reading it. ... So, for me, there was enough communication, and I definitely, for me, that the e-mails and the sessions both are working well, worked well in this."

P7: *"Ok, as I said to you, it was challenging for our department, but, in our experience, there was no change management, although there was regular communication. But the communication was only telling you what you need to do. You were just informed that you had to move to the transition from Skype to Business, and you need to switch over as soon as possible, but without nothing, nothing, no training at all, no direct contact with us. And I reiterate it again, we are users. This is the day-to-day job to use the telephones or the Skype for Business. It's not end-users only like myself. So, as I said, from our experience, they can really improve for the next whatever they want to have in mind to change, to do it better. ...although there was communication, I agree. I don't necessarily think it adds to time management."*

P6: *"Yes. So, in summary, we are not that positive about the change. But we accept that there is a change and that we have to adapt with it. And some more help would be good. Some question-and-answering session would be good. And if it's not me and my 150 staff members, at least me and my management team of five people. And we can get the message further on to our staff. That would be very good."*

"I think the change management was theoretically in place, but didn't reach the people. It didn't reach the right ears, and people were uninformed because they didn't act on the information that was send to them and sent to them and send to them again, like we know we have to do. And we experience it with students as well, where you communicate, but they don't read it. The students don't read it. I think the staff is in the same place. They don't read what you send to them. I'm one of them."

“I think most people that do have access to computers did get the mails. Like I said, we are a service provider to a lot of customers on the outside world. I think none of us envisaged the change that this would have on our business. We struggled a lot to get up and running again, to get communicating again. And we still have some issues of things not just working. And it's not working like we were used to it. And there's maybe alternatives that we should just envisage or activate like Skype for Business on a cell phone, stuff like that. But we struggle to know who to talk to and who's the specialist that can help us with it.”

As noted, the findings from the thematic analysis were further refined using the Gioia (2021) Methodology for each code. The outcomes are reported under each code and then related to extant literature, followed by recommendations based on the outcomes.

4.5.1.1 Gioia analysis

Applying the Gioia (2021) Methodology to synthesise the participant experiences with change management strategies in the context of a shift to new technologies like Skype for Business yielded the following outcomes:

- First-order concepts (Participants' perspectives)

P1 praised the change management for effective communication and proactive dissemination of information, which mitigated resistance within the team.

P7, conversely, perceived a lack of practical training, and felt that communication was insufficient for operational readiness, expressing the need for improved change management.

P6 shared that, despite the presence of communication, it did not translate into effective change management, due to a failure to engage and inform all staff adequately.

- Second-order themes (Patterns across perspectives)

Effective communication: P1's experience suggests that well-executed communication can significantly reduce resistance to change.

Need for practical training and support: P7's account underscores the importance of accompanying communication with practical training to facilitate a smooth transition.

Engagement and information distribution: P6's feedback reflected a gap in reaching the broader audience within the organisation, indicating a need for more engaging and widespread communication methods.

- Aggregate dimensions

Strategic communication and training: A strategic approach to change management communication should integrate informative and practical training to support the change process.

Engagement and readiness: Successfully adopting change initiatives requires engaging communication strategies that ensure all employees are well-informed and ready for the transition.

4.5.2 Code: Addressing resistance to change

Participants were asked the following question:

Did you experience any resistance to change in your department to the implementation of the project, and, if so, how was it addressed and resolved?

Participants remarked the following:

P4: *"No, no, I did not have any resistance or did not experience any resistance in my team. I think, during the change, the physical change, it was a little bit unknown to them exactly how it was going to happen, but it was well communicated in the end. It was well executed in the end, and, no, there was no resistance from our side or my team."*

"I think the fact that they told us in advance what was going to happen and clearly told us that we were going to get rid of the old way of doing things helped us to adapt quickly, to anticipate the change, and manage it before time. So, by the time it actually rolled out, my team was well aware of what was going to happen, and we could prepare for that. So, no, I think it was done very well."

"Yes, the change management process worked well because they communicated about the process, what the process was, and what was going to happen."

P7: *"And it's not only because of Skype for Business, it is the case with anything else. If we are now moving to the new system, I can tell you it will be the same thing. So, we are very aware of change management with this kind of things. But, as an IT department who are not knowing their customers very well or the inside of the day-to-day job, I think that is where the problem comes in. Not necessarily that I have, I critique the Skype for Business. I just think the method that we have used was a bit overwhelming. And that's, I think, that's my inner crux, in a nutshell, that that's the crux of it. It was a bit overwhelming for them, and they are still struggling to get used to it. But we are not going, we don't want to go back at all. So, we just need time to get used to this new norm."*

P5: *“We found that we had to, every time that we call, we had to redo the sound setup. That was the challenges. I think that was the biggest challenge that we experienced, and I presume that there was training offered. But because our focus was on the MS Teams environment, I didn't attend any training sessions, etc. I focused more on the training and the change management communication that was offered in terms of the MS Teams environment, which was deployed simultaneously with Skype for Business at University X.”*

4.5.2.1 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P4's lack of resistance aligns with Kotter's (1999:61) practical change management communication principles, which stress the importance of educating stakeholders about the change process in order to reduce resistance. In contrast, Lewin's (1947) 3-Stage Model, which outlines the psychological effects of change and how the transition phase can produce discomfort and anxiety amongst stakeholders, is consistent with P7's experience of being overwhelmed, even in the absence of overt resistance. As noted in the change management literature, P5's emphasis on a different system (MS Teams) and the corresponding technical difficulties draws attention to the fact that concurrent changes can reduce the efficacy of change management initiatives and heighten resistance as a result of divided attention and resources (Armenakis & Harris, 2009).

- Second-order themes

As P4 pointed out, preparation and communication as a proactive approach to change management can successfully lessen resistance; this perspective is corroborated by current theories that link successful communication with decreased resistance to change (Kotter, 1999:67).

The experiences of P7 and P5 highlight the difficulties in managing change, as awareness and communication alone may not be enough to overcome the practicalities of the process, leading to feelings of overwhelmedness and resistance. This emphasises the need for a more sophisticated strategy that incorporates support systems, training, and communication (Bagga et al., 2023:128).

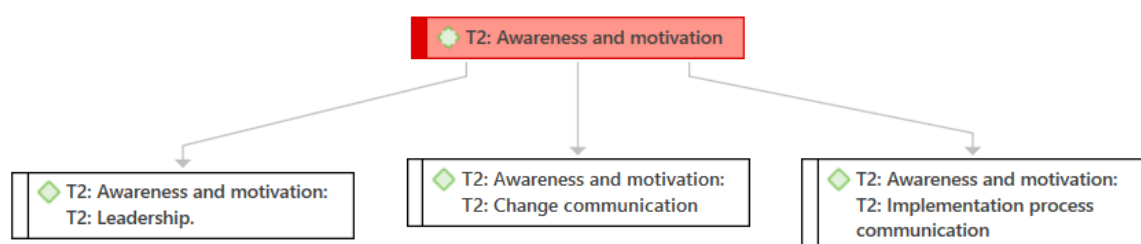
- Aggregate dimensions

The need for proactive change communication: In line with Kotter's (1999:61) model, which emphasises the necessity of effective communication during the *Unfreeze* stage, the experiences of P4, in particular, demonstrate the relevance of proactive communication in lessening resistance to change.*

The experiences of P7 and P5 point to the necessity of user-centric change strategies — strategies that put the user experience first. This is consistent with the TAM (Davis, 1989), which highlights PU and PEOU as essential to the adoption of new technology.

4.6 Theme 2: Awareness and motivation

This theme comprised three principal codes: (1) Leadership (2) Change communication, and (3) Implementation process communication.



4.6.1 Code: Leadership

Participants were asked the following question:

Can you give any examples of how your role as a manager altered throughout that time, including any new challenges you faced? What does this transformation signify for the management of higher education institutions?

Participants noted the following:

P1: *"In my opinion, it enables you to put the trust in the people that are working for you. Give them the guidelines so you can focus on taking the institution forward. If there is a person working according to the clock at the office or he is two minutes late at the office after lunch, that is*

micromanagement. Hopefully, it will fall away for managers who focus on micromanaging the stuff.”

“So, we would have expected to have more guidance through the step-by-step transition to the Skype for Business. From my experience, it's very easy for IT guys to transform from one system or from one platform to another, or from anything in terms of something that has to do with technology, because this is what they do for a life, each and every day. When they struggle with something, they sort it out themselves. It's not the case for all the departments. You cannot assume that, when this is working good, perfectly, when the IT has tested it and it's working very good for them, they cannot expect the same experience from the end-users as well. And some are very mature in helping themselves, and others are not. They are very slow ... they are not very good at change. And, at this university, we had to change almost daily. There's change all the time.”

“And I think we suffer from change fatigue in this organisation. So, it's a good thing. I agree with it. I love the Skype for Business. For me, as a single end-user, for me, it's a very good thing. I like it. I like the way it's working. I don't like the telephone instrument on my table anymore. I don't like that. But, as I said, we are, and you must look at the level of the staff who are dealing with this, this is our very entry-level staff members, and they are in the majority, that has to cope with this new scene now, on their own and without any guidance. So, we need to take them by the hand. And it's not only because of Skype for Business; it is the case with anything else. If we are now moving to the new system, I can tell you it will be the same thing. So, we are very aware of change management. But, as an IT department who are not knowing their customers very well or the inside of the day-to-day job, I think that is where the problem comes in. Not necessarily that I have; I critiqued the Skype for Business. I just think the method that we have used was a bit overwhelming. And that's, I think that's my inner crux, in a nutshell, that that's the crux of it. It was a bit overwhelming for them, and they are still struggling to get used to it. But we are not going, we don't want to go back at all. So, we just need time to get used to this new norm.”

P8: “Oh yeah, it's a good thing that the university is also able to move with times, especially such a change from how things have been done traditionally for years to modern technology, which allows flexibility. So, as educational institutions, we should also lead by example in adopting technology and allowing change to happen.”

P9: “I think it was more the managers who addressed it with their team members. Obviously, the other thing was, which I think was a bit ideal, and sometimes it may sound a bit hard or harsh, but if you don't have a choice to change, you need to jump on the wagon, or you are left behind. If you didn't accept the change, then you would not be able to call anybody or receive calls. I think,

sometimes, you have to push people and have a cut-off date and time and say, 'Listen, up to this date, you'll be able to use your phone.'"

"They embrace it from the start because they can see the potential in it, and they run with it, and then they actually make the other guys more positive. So that helps."

"I know it's always difficult as well because managers are also very busy, especially at the higher levels, executive level, but it sometimes helps, even if it's an online, again, a little video information session that we start with a management team, just to give them a bit more background and a bit more detail upfront, and let them help drive the change process. That's one area where I think we can maybe improve. But I know there are also challenges with that. I mean, it's just an idea."

4.6.1.1 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P4 recounted no resistance within the team, attributing this to adequate forewarning and communication about the changes.

P7 described an overwhelming change process, indicating a mismatch between the IT department's strategies and the day-to-day realities of the staff.

P5 noted technical challenges and a lack of tailored training, where the focus was on MS Teams instead of Skype for Business.

- Second-order themes

Proactive communication: As experienced by P4, effective and early communication is crucial for minimising resistance.

Adjustment time: The overwhelmedness felt by P7 highlights the need for adequate adjustment time for staff to familiarise themselves with new systems.

Technical support and training: P5's experience underscores the importance of targeted technical support and training specific to the new technology.

- Aggregate dimensions

Anticipation and preparedness: Change management strategies should include proactive measures to anticipate potential resistance and prepare teams accordingly.

Understanding user experience: A user-centric approach to change is essential, considering how changes impact staff's daily tasks.

Continual support: Post-implementation support and training are vital to ensure staff can effectively use new technology and sustain productivity.

4.6.2 Code: Change communication

Participants were asked the following question:

How important was communication during the technology shift to Skype for Business, and were there any specific communication channels or technologies that were particularly effective or inefficient in reaching stakeholders?

Participants stated the following:

P1: *"I think the communication between the project team and the end-users were done using channels that were already available and having a support team that was dedicated to address any questions as soon as it arose from the user community, and so there was confidence in the ability to support and do the transition to the solution, but also it took away the fear. So, the initial fear is it will be so new I will be struggling to use this technology. I was more comfortable to transition from what I attained and, as I mentioned earlier, on the dashboard they made available on the website to say we have migrated X of X users definitely had a big impact."*

P2: *"I could follow the progress and I could see how there is still ten percent that needs to be done. So, there was a lot of stats sending through so you can see what's going on. If there was a common error everyone got e-mail, because that's normally what they do with it. I must be honest, this is quite a long time. I can't, I don't have all that e-mails anymore."*

P7: *"Ok, as I said to you, it was challenging for our department, but, in our experience, there was no change management, although there was regular communication. But the communication was only telling you what you need to do. You were just informed that you had to move to the transition from Skype to Business, and you need to switch over as soon as possible."*

P12: *"And you were not actually aware of the transition phase on the planning stages and so forth until the implementation, until we actually received an e-mail that just stated that it has to be done now. So, I think, if I can say that, I won't say the communication was not done efficiently. I think some of us just don't have the time to pay attention to, you know, all these e-mails circulating on*

changes that is happening within the university. And I think there might be a consideration for a different approach.”

“I think that was one of the things that was done because we missed some of the communication. And then again, also, there was no proper training provided, which results in us not utilising the application to its full capacity.”

4.6.2.2 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P1 reported a successful change management experience with effective communication, suggesting that being part of the project team may have provided insider advantages.

P2 commented on the efficiency and effectiveness of e-mail communications, but noted the potential of these communications being ignored.

P7 and P6 described a change management approach that lacked sufficient practical support, such as training, leading to challenges in transitioning.

- Second-order themes

Effective communication: There was a shared recognition of the importance of effective communication in facilitating change, with variations in perceived success.

Information dissemination versus engagement: While information was disseminated, there was a gap in engaging stakeholders in the change process, leading to different levels of preparedness and acceptance of the change.

Actionable support deficiency: A common concern was the lack of actionable support accompanying communications, such as hands-on training and direct contact for assistance.

- Aggregate dimensions

Communication strategy: A robust communication strategy is essential, integrating not just the dissemination of information, but also ensuring engagement and providing actionable steps for stakeholders.

Stakeholder inclusion: The change management process must consider stakeholders' varying levels of access to information and technology literacy.

Training and support: Effective transition to new systems requires advanced notice, training, and ongoing support to address challenges as they arise.

4.6.3 Code: Implementation process communication

With regard to this code, participants remarked the following:

P12: *"I think the communication between the project team and the end-users were done using channels that were already available and having a support team that was dedicated to address any questions as soon as it arose from the user community, and so there was confidence in the ability to support and do the transition to the solution, but it also took away the fear. So, the initial fear is it will be so new I will be struggling to use this technology. I was more comfortable to transition, as I mentioned earlier, on the dashboard they made available on the website to say we have migrated X of X users definitely had a big impact."*

"Guidance, yes. Yeah, we were able to sort it out. One thing that was a bit of an issue at some stage is everybody was moved over to the new system. So, sometimes, there were a bit of a uncertainty about who will be upgraded when. I just think the process should have maybe clearly stated units or groups for the move over a certain time. Some other colleagues in other departments I noticed also, because they asked me, 'The guy next to me moved over already, but I don't know when I am moving to the new system.'"

P3: *"There were constant updates on the progress. And then there was also, somewhere I saw, some schedules about the planning of who's moving over when. It's not that it was a surprise to me; it's just I more or less had the idea of what was going on, but I think that the primary source for feedback and information was e-mail."*

"I didn't have any concerns, so I will not be able to give you information. If I did have a concern or issue, it was resolved quickly. So, on that one, I can't be of much help. But the communication, as I said, I knew exactly. In which month would our department be scheduled to be upgraded? They contacted me and asked me if they should send somebody over to assist, and I said, 'It's fine'. I think the communication and the willingness to assist for the people that were not able to do it themselves, it was there. The support was there, yes."

P7: *"So, we have received regular communication in this regard. I really can't say that we haven't received any communication, but we were told, 'You need to do the transition, and you need to switch over as soon as possible'. So, it was a bit of a hurry. And then they give feedback in terms of the percentage of staff members moving over, if I remember correctly, if I don't confuse it now with something else, when we moved over to the Microsoft as well. So, I can't complain. I think the communication was very good and very regular. One can't say that we haven't received*

communication, but there's a huge difference in receiving communication and then actually really knows ... how will it impact on my day-to-day job. And I think that was a missing part, to my mind."

4.6.3.1 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P12 appreciated the availability of support and communication channels, indicating a successful alignment with best practices in change management communication.

P12 also noted a lack of clarity in transition scheduling, reflecting the need for detailed planning in change management.

P3 expressed satisfaction with the consistency of updates, indicating an awareness of the importance of keeping stakeholders informed.

P7 recognised the regularity of communication, but pointed out the lack of detailed guidance on the practical impact of the new technology, highlighting a gap between information dissemination and its operational relevance.

- Second-order themes

Efficient support and accessibility: The significance of having a dedicated support team and accessible communication channels was a common view, resonating with the recommendations by Venkatesh *et al.* (2003:453) for successful technology transitions.

Clarity in transition scheduling: A shared concern amongst participants was the need for clear and precise scheduling information, a critical factor in reducing uncertainty and easing the transition process, as outlined by Kotter (1999:62).

Reliance on e-mail communication: Participants' experiences indicated that, while e-mail is a primary tool for communication, it may not always be the most effective stand-alone method for engaging stakeholders. This point is consistent with the observations of Klein *et al.* (2022:518).

- Aggregate dimensions

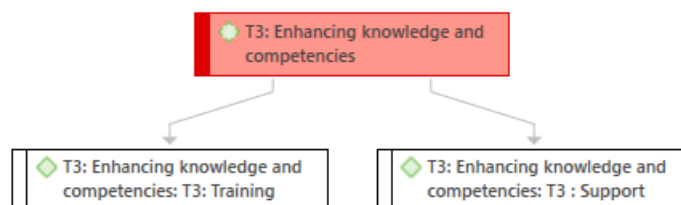
Strategic employment of communication channels: Using varied communication channels is crucial for effective information dissemination.

Importance of comprehensive support systems: The necessity for support systems that address immediate concerns and enable users to utilise new technologies efficiently was reinforced, which aligns with Klein and Knight (2005:115) change management values.

Diversity in communication efficacy: The varied communication effectiveness reflects stakeholders' diverse needs and preferences, necessitating tailored approaches.

4.7 Theme 3: Enhancing knowledge and competencies

This theme comprised two principle codes: (1) Training and (2) Support.



4.7.1 Code: Training

Participants were asked the following question:

Can you tell me what you think were the main factors that made the tech transition work well or caused some issues?

Participant provided the following responses:

P5: *"Speaking from the changes that I experienced in terms of MS Teams, and then, I presume the same happened with Skype for Business, I think what we lack at the university, this is now my honest, my honest view is that we should, when it gets to the skills training, that staff need to function optimally in a digital, digitally enabled environment. I believe it should be part of the professional development option that our HR people and culture offer to all staff. I believe they should be built into the development of all staff at University X. There should be a skills development component that's built into our development from people and culture's side, and then, training, like, for example, for the digital telephony training and for MS Teams. Staff are to be scheduled for that type of training for a tick box, literally a tick box that you need to tick. We function as a digitally enabled organisation, and, therefore, all staff need that skill to function*

optimally and not to leave this, for example, when you deploy a system or start using a system or, and then as part of the change management process, when you start using the new system that you only then tackle or address. That's that lack of skills. But that should be built into the skills development of all staff."

P6: "One thing that I just want to add is something that is also frustrating. When you are in a meeting, and then the system knows you're on a meeting, so your phone is not available. And then the telephone start ringing now at my assistant, but it's also ringing on my phone. So, then the whole system gets confused, and you don't know which one to put down to get the guy to say, 'I'm not available, I can't speak to you right now.' So, that's the thing. We've got a computer on our desk, we've got a cell phone in our hands, we've got earpieces in our ears, and it is total chaos when something like that happens in meetings."

P7: "To know and then just to have a chat with what implications would the change and the switching, and how can we prepare for that. Even give us a bit of training beforehand before we switched finally over to this system, because it adds to our reputation and, at this stage, we received complaints of people that said that they cannot get all of us, we're not answering the calls."

"In fact, we didn't have a choice. We needed to transform to this new Skype for Business. Of course, there was resistance for change, because it's not working. But we don't leave them any option to go back. If you are in it, you need to deal with that. So we've tried our best by our line managers, tried to give training by themselves with their limited knowledge. They phoned to find IT, they've tried to get some more information, and then they took the training upon themselves to assist our staff members to get over this or to get used to this new way of work."

P9: "I think, you know, it's a first level almost, if I want to call it, is we can do it by e-mail. And then, if people want more information, then they can deep dive into a video training video, or I wouldn't even go as far as saying individual training sessions, because that is impossible at the university level with the number of people we have."

"I know it's always difficult as well because managers are also very busy, especially at the higher levels, executive level, but it sometimes helps, even if it's an online, again, a little video information session that we start with a management team, just to give them a bit more background and a bit more detail upfront, and let them help drive the change process. That's one area where I think we can maybe improve. But I know there are also challenges with that. I mean, it's just an idea."

"Okay, in short, while the change management approach had some merits, we have to admit there's definitely merits to how they dealt with it. It has been dealt with on a very positive approach, but it fell short in terms of training. The biggest problem was that the approach lacked a clear and

comprehensive training plan. I'm of the opinion that the team members need a more face-to-face training structure guidance. And that was the problem, because we got everything via e-mails, and, every now and then, there were nice documents, but the oversight resulted in confusion, and it slowed down the adaption process. The challenges we faced during the transition to digital telephony did have notable impacts on our team's productivity and efficiency."

4.7.1.1 Gioia analysis

The Gioia (2021) Methodology was used to analyse participants' experiences with the training component during the technological transition, and the analysis yielded the following outcomes:

- First-order concepts

P5 underscored the lack of integrated skills training in professional skills development, suggesting a gap in the digital proficiency that critical in optimising performance in a digitally enabled environment, resonating with the literature emphasising the importance of skills development in change management (Klein & Knight, 2005:2).

P6's experience points to operational disruptions due to a lack of clear guidelines on the new system, indicating the necessity for on-demand support. This sentiment is aligned with the literature on user support and system usability (Dachner *et al.*, 2021:295).

P7's commentary suggests the need for pre-emptive training to prepare for the transition, highlighting the importance of readiness in change management (Ford & Meyer, 2014:58).

P9's preference for face-to-face training suggests a demand for more personal and interactive training methods, consistent with studies favouring blended learning approaches over purely digital methods (Burke & Hutchins, 2007:266).

- Second-order themes

Integration of training in development: Participants' views reflected the need for training programmes to be embedded within the broader framework of professional development, aligning with theories that advocate for continuous learning and adaptability (Vakola & Nikolaou, 2005:163).

Operational support and troubleshooting: Participants' views emphasised the significance of providing immediate support and clear troubleshooting guidance, which is critical in maintaining operational efficiency during technological transitions (Klein & Sorra, 1996:1058).

Pre-transition preparedness: Participants highlighted the importance of proactive training and readiness, to minimise disruptions and enhance the transition experience, as suggested by (Kotter, 1999:64).

- Aggregate dimensions

Comprehensive training strategies: There is a need for holistic training approaches that address digital literacy and the practical application of new technologies, as noted by (Bass & Riggio, 2006:6).

Leadership-driven change initiatives: Initiatives for change driven by leadership necessitate a mandate for proactive engagement and support in steering transformative efforts.

4.7.2 Code: Support

Applying the Gioia (2021) Methodology to studying technological transitions within a university context unearthed a wealth of experiences concerning support mechanisms and their efficacy.

4.7.2.1 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P5's statement indicates a systemic gap in integrating digital skills support into the organisational culture, suggesting a need for pre-emptive skills development as part of professional growth.

P6 and P7 articulated the confusion and operational disruptions caused by the new technology, emphasising the need for immediate, hands-on support during the transition period.

P9's observation points to the shortcomings of an e-mail-based support strategy, suggesting a need for more interactive and personal forms of support.

- Second-order themes

Integration of proactive support: The need for pre-emptive and integrated support mechanisms as part of professional development programmes was echoed across perspectives.

Responsiveness to operational needs: The importance of responsive support systems that can address immediate operational challenges during technological transitions was highlighted.

Communication complexity: Participants identified the complexity of communication and the need for straightforward, readily available support channels.

- Aggregate dimensions

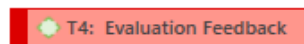
Support infrastructure: A robust support infrastructure, both digital and human, is essential for facilitating transitions to new technologies.

Leadership and support symbiosis: Active involvement of leadership in the support process can drive a more effective change process by mitigating resistance and confusion.

Adaptive support strategies: Support strategies should be adaptive and considerate of staff members' varying levels of digital literacy.

The category **Post-implementation** contained three themes: (1) Evaluation of sustainability, (2) Remedial actions, and (3) Overall experience.

4.8 Theme 4: Evaluation Feedback



Participants were asked the following question:

How did you perceive the move to the new technology, and does this empower your colleagues to be more productive?

Participants provided the following insights:

P1: *"The move was, in my opinion, well-planned and well-communicated. It definitely enables my team to improve the communication. ...available, and no need to have an extra five minutes after a meeting to get into the new meeting room because they were working at another site. They would have been able to transition between meetings and conversation much quicker and become more available. Because it's no longer a stationary telephone number you need to phone, you know, the phone number in it may ring in my office or your office, or even the Vice Chancellor's office."*

P4: *"I think technology has increased my ability to reach my team wherever they are and whenever, that's the first thing. And, second of all, by providing an official tool with official uses,*

such as laptops, it's now possible for me to reach people which I, in the past, would not have been able to reach."

P6: "The issue was, then, if I start from the top in my office, I could switch my phone through to my secretary, and then my secretary can receive my calls. But my secretary can't phone me to tell me, 'Listen, you've got a call from so-and-so.' [He/She] has to stand up from [his/her] desk and walk to me and tell me that, because I'm maybe in a meeting or something like that. So, the fact that your computer is now also your phone doesn't work for my level of work."

"So, it is Skype, it is Teams, it is e-mails, it's cell phones. So, the combination of all of these things together, it's getting, you know, you're getting over-informed or being over-busy with the same thing."

P11: "I think the one thing that had a positive change is the fact that, if you had a missed call, you received an e-mail. So, you can return the call immediately afterwards. With the old-school system, you did not add that functionality."

4.8.1.1 Gioia analysis

Applying the Gioia (2021) Methodology to analyse the experiences with new technological adoption and its influence on productivity yields structured insights.

- First-order concepts

P1 viewed the technological shift as well-executed and beneficial to team communication and availability by enhancing the team's ability to transition between tasks efficiently.

P4 believed that the new technology had expanded the capacity to connect with team members, regardless of location, citing the provision of laptops as a critical enabler.

P6 outlined the practical issues arising from the merger of computer- and telephony systems, indicating a disruption in established communication practices within the work context.

P6 also mentioned the cognitive overload caused by the multiplicity of communication platforms, indicating that it led to decreased productivity.

P11 appreciated the new functionality of receiving e-mail notifications of missed calls, which was unavailable in the previous system.

- Second-order themes

Communication enhancement: Participants acknowledged that the new technology had the potential to enhance communication by increasing reach and accessibility.

Workflow disruption: The transition to new technology had disrupted existing workflows, particularly in more traditional office settings.

Cognitive overload: The increase in communication channels led to an overload of information, potentially hindering productivity.

Technological utility: The added functionalities of the new technology, such as e-mail notifications of missed calls, were seen as beneficial.

- Aggregate dimensions

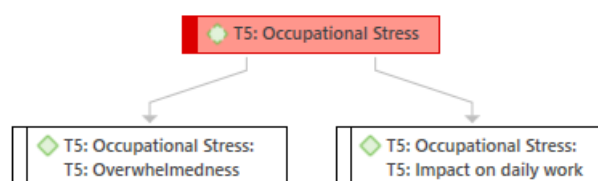
Aligning technology with workflows: Ensuring that new technologies complement and enhance existing workflows is crucial to maintaining productivity.

Managing technological complexity: Simplifying the user experience and managing the complexity of new systems is necessary to prevent cognitive overload and maintain productivity.

Maximising technological benefits: Focusing on new technologies' most valuable features could provide users with tangible benefits.

4.9 Theme 5: Occupational stress

This theme comprised two principle codes: (1) Overwhelmedness and (2) Impact on daily work.



4.9.1 Code: Impact on daily work

Participants were asked the following question:

How did you perceive the move to the new technology, and does this empower your colleagues to be more productive?

Participants provided the following responses:

P6: *"The issue was, then, if I start from the top in my office, I could switch my phone through to my secretary, and then my secretary can receive my calls. But my secretary can't phone me to tell me, 'Listen, you've got a call from so-and-so.' [He/She] has to stand up from [his/her] desk and walk to me and tell me that, because I'm maybe in a meeting or something like that. So, the fact that your computer is now also your phone doesn't work for my level of work."*

"Well, some of the staff left it till the 99% stage, and then they were forced and told, 'Listen, we're going to cut off your telephone line today at 12 o'clock. If you don't go over, it's done. You are not being served anymore.' So, there's a lot of them that then went over. And then another issue started when their phone numbers changed and they couldn't get their phones working and couldn't get back the old phones. Remember, we communicated our phone numbers to the whole world outside, especially in residence services, where students have to get hold of a residence and a residence parent and a residence officer."

P7: *"I think it's premature to say, because we're still experiencing some challenges. If the network, is down, the system is also down. Even last week, we couldn't make phone calls to cell phone numbers. So, we're still struggling to adapt to this new Skype for Business. So, it's still for us, I think it's premature to say at this stage that it has improved on our day-to-day job, because we are now still struggling with some challenges. And when the network is off, you cannot contact someone from IT from that particular network or station or device."*

P12: *"The integration with Outlook is absolutely perfect. But I would suggest, and that's one of the struggles that I had was, say, for example, you receive phone calls on Skype for Business. Skype for Business does not, I don't know if there's something wrong just with mine, but it doesn't update with immediate information. So, say, for example, somebody has phoned you, and you have missed the phone call. Now, yes, I know there's an e-mail sent to Outlook, but that e-mail goes and is placed within Other."*

4.9.1.1 Gioia analysis

The Gioia analysis yielded the following outcomes:

- First-order concepts

P6 identified a disconnect between the new technology and existing workflows, particularly noting the challenges of intra-office communication.

P6 also expressed concern regarding hasty technology transitions, including changes to phone numbers that disrupted established communication lines.

P7 highlighted the dependence on network connectivity, noted that significant disruptions resulted when the network was down.

P12 appreciated the integration with Outlook, but faced issues with the responsiveness of Skype for Business, particularly with notifications of missed calls not being updated promptly.

- Second-order themes

Workflow disruption: Introducing new technology disrupted established workflows, necessitating adjustments to accommodate the changes.

Transition management: Participants pointed out the need for better-managed transitions to new technology, with clear communication and planning.

System reliability: Reliable performance of the new technology was crucial, especially concerning network dependency.

Integration and responsiveness: While software integration was often successful, the system's responsiveness posed challenges.

- Aggregate dimensions

Workflow compatibility: Change management strategies must ensure that new technologies are compatible with existing workflows, and employees need to be given the requisite skill development to enable transitioning to new systems.

Structured transition planning: To reduce operational disruptions, the transition plan should be carefully structured and communicated to all stakeholders.

Infrastructure dependability: A reliable technology infrastructure is essential for effectively implementing new systems.

Software ecosystem coherence: To maintain operational efficiency, the software ecosystem should be coherent, with timely updates and notifications.

4.9.2 Code: Overwhelmedness

Participants were asked the following question:

Can you tell us what you think were the main factors that made the tech transition work well or caused some issues?

Participants noted the following:

P1: *"So, it is Skype, it is Teams, it is e-mails, it's cell phones. So, the combination of all of these things together, it's getting, you know, you're getting over-informed or being over-busy with the same thing."*

P11: *"To be honest with you, you get so many e-mails per day within the university, from daily comms, from wellness, from IT, that, at the stage, you don't read those e-mails anymore. It was just too much."*

P12: *"Well, seeing that some of us don't usually always read the communication that is distributed by the University X, and that's mainly based due to a lack of time, some of the communication was missed. And then, suddenly, they would pop up an e-mail directly from either IT infrastructure or IT services, or how you may call it, and they would just send you an e-mail and say, 'Listen, we are transitioning to Skype for Business now. You have five days left, and your landline will be cut and blah, blah, blah. We have to do it immediately.'"*

P13: *"And you were not actually aware of the transition phase on the planning stages and so forth, until the implementation, until we actually received an e-mail that just stated that it has to be done now. So, I think, if I can say that, I won't say the communication was not done efficiently. I think some of us just don't have the time to pay attention to, you know, all these e-mails circulating on changes that is happening within the university. And I think there might be a consideration for a different approach to, you know, into changes"*

4.9.2.1 Gioia analysis

The Gioia (2021) Methodology was used to delve into the concept of 'overwhelmedness' as experienced by participants P1, P11, P12, and P13 following the introduction of new communication technologies. The analysis yielded the following outcomes:

- First-order concepts

P1 experienced an overload of information due to the simultaneous use of multiple communication platforms.

P11 felt inundated with e-mails, leading to a disregard for most communications.

P12 missed important updates because of overwhelming communications and a lack of time to process them.

P13 described an inefficient communication strategy, where crucial information about the transition was relayed too abruptly for adequate preparation.

- Second-order themes

Information overload: All participants reported a saturation of information from various sources, leading to decreased attention and engagement.

Communication strategy flaws: There was consensus that the strategy for communicating changes had been less than optimal, as it had caused confusion and resistance.

Time-management issues: Participants expressed experiencing difficulties in managing the volume of information within the time they had available, leading to missed communications.

- Aggregate dimensions

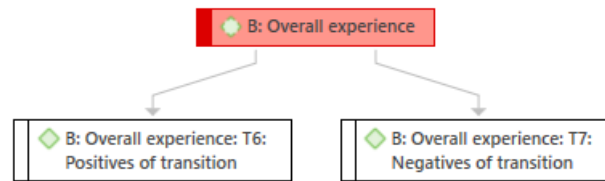
Streamlined communication approach: There is a need for a communication strategy that is efficient in delivering messages and that takes into consideration the time constraints and capacity of the receivers.

Balance of communication channels: A balance must be struck between using various platforms to ensure message delivery and avoiding overwhelming recipients.

Timing and preparation for change: Change communications should be timeous and allow adequate preparation to minimise resistance and enhance engagement.

4.10 Theme 6: Overall experience

This theme comprised two principle codes: (1) Positives of transition and (2) Negatives of transition.



4.10.1 Code: Positives of transition

Participants were asked the following question:

How did you perceive the move to the new technology, and does this empower your colleagues to be more productive?

Participants contributed the following views:

P1: *"That's imperative for improving productivity. It also assisted when people started working from home, as we know, with the COVID pandemic. The university needed to make a big shift in how the communication works. There were multiple platforms chosen or tested, some supported, some unsupported, but the big thing there was to have the flexibility and taking that flexibility to the next level in terms of hybrid work. Without this technology, that would have not been possible, and it will be kind of unmanageable."*

P2: *"For myself, it is the fact was that I don't need to be in the office, so I can really use the hybrid working environment to my extent, and I don't need to be in an office to answer the phone. And that's one of the biggest benefits for me. And I think that is a really good thing. And then the other thing is, and I don't think this is a challenge, but sometimes you see who is calling you, and you have to take a mind-set change before you answer it, or you just ignore it. So, that's not a nice thing, because now it only rings, and I'm the only one that could hear that someone is calling me. So, yes, that is one of the things. But, for the, for a university, I think in the management for university ... the fact that hybrid working can be implemented without any issues, because students can get hold of lecturers, management can get hold of the teams. Outside, applicants can get hold of the university, and that person on the other side can be any place. So, we can have reliable hybrid working environment, a good hybrid working environment with this."*

P3: *"Well, I think technology came at the right time. It would have been in a very, very bad thing during COVID. If we could not be reached in any way other than an office phone. So, I think the timing of that project was very good, and everything after that was the work from home. This whole project enabled us and made that possible, or aided it in a process so that that could be*

possible. I don't think it gave us new capabilities. It's not the case of we were able to do things. Let me just think, I'm going to phrase that, I just want to say it didn't make or improve anything major."

"The change was all positive. One thing to be careful of is it is now possible to reach anybody anytime. But that is up to the person on the receiving end to manage that and keep your, for instance, office hours. So, there is a better of discipline required in this new work process. But that is also a big advantage in cases where there's a crisis. It is all of a sudden easier to get in contact with your colleague. You can actually have a discussion and you can have more than a few people in the call, and it's not always possible to do like a video call or something."

"Definitely an enabler to being more productive. I think it was a good move. It was also a well-timed move. Again, we really would have been having a couple of issues if we were not reachable when the university was, for instance, closed during COVID. It is not always possible for everybody to do a virtual meeting or something like that. They might not have a laptop at home, or they might not have sufficient internet, but the fact that those calls can be either an IP call or a normal telephone call made a lot of people reachable that would not have been reachable otherwise."

4.10.1.1 Gioia analysis

The Gioia (2021) Methodology was used to analyse the positive aspects of the technological transition as experienced by P1, P2, and P3, specifically concerning the shift to a hybrid work environment during the COVID-19 pandemic. The analysis yielded the following outcomes:

- First-order concepts

P1 viewed the transition to new technology as a critical enabler of flexibility and productivity, which was significant for the shift to hybrid work during the pandemic.

P2 appreciated the autonomy provided by the new technology, allowing work from anywhere and enhancing the hybrid work experience.

P3 saw the timing of the technology shift as fortuitous, as it enabled continued operations during the pandemic and avoided significant disruption.

- Second-order themes

Enhancement of flexibility and productivity: Participants generally perceived the new technology as a positive shift that enabled more flexible and productive work arrangements.

Facilitation of hybrid work: The technology facilitated the transition to hybrid work, allowing for a seamless shift during the pandemic.

Timing and preparedness: The implementation timing was seen as beneficial, as it coincided with the need for remote work capabilities.

- Aggregate dimensions

Organisational agility: The transition to the new technology contributed to organisational agility, allowing for quick adaptation to external changes such as the pandemic.

Infrastructure for remote work: Establishing a robust infrastructure to support remote work facilitated this transition.

Employee autonomy and work–life balance: While the technology enabled greater autonomy, individuals must now manage their availability to maintain a work–life balance.

4.10.2 Code: Negatives of transition

Participants noted the following:

P2: *“Like someone was used to picking up the phone quickly and phoned someone, and suddenly, because this was nothing to pick up with your hand, they did not start doing it, they didn't pick up the phone and quickly ask something, they'd rather go look where is a document. So, I think that was some ways that it really assisted us. And I think that was something other thing, is, with when COVID happened, we were already in the transition of using other methods, so this one was easier for us. I think, if we go back now, I don't think the university, and definitely our department, is using Skype for Business that much, the phone part, ...and that is perhaps a good thing. The other times, it's not a good thing, but the benefit is you don't have to be in your office to answer a phone. So, if someone phoned you, you can answer that phone from anywhere, that is a big, big plus of not being in your office. You don't have a list of numbers to find when you come back to your office, you can answer your phone wherever you are, the phone show immediately, in a meeting. So these, no disruptions like that. So that is, I think, that is, for me, a big benefit... We were more accepted, and it was easier for us to, the transition for us was easier than for some of our users, so with a little bit of assistance, I think everyone were there and were ready to go.”*

P3: *“So, both teams seldom use Skype for Business, the telephony option that's available if you're on Skype for Business. So, I mean, if you look at my records that the system provides every*

month, I believe, since the beginning of the year, I made one call on Skype for Business. And that was simply ... to give feedback on the project."

P5: "It's probably just a comment. I think I mentioned the point partly that Teams came in with a functionality which we didn't have ... which partly took some of the functionalities of the phone. So, technically, right now, anyone within the university, I can get hold of them by calling through Teams. And, I think, if it happens that eventually it evolves to allow calling outside, that will actually be great. Then you know you're only dealing with one application for all your communications needs."

P10: "Well, if I have to use this as an example, overall, the transition has not been a smooth one, and it has introduced more challenges than advantages of, you know, of this university. But I do like that we have, you know, especially with the other technology, like using Outlook, because now you've got more integration, you get more functionality out of the MS Office software. That is excellently done, but this telephone, you know, I think we should rather revert back to the old systems. Overall, the transition has not been a smooth one, and it has introduced more challenges than advantages for the public university. We were more effective with the old system than this new Skype system."

P12: "Well, because we are mainly responsible for short course training for all the faculties of the university, this was very beneficial to us, because our units are very prone to a more digitalised, paperless working environment where our duties can be fulfilled anywhere and not be limited to our offices. However, to be bluntly honest, I hate Skype. It is the most inefficient implementation ever done by the university. Skype is not user-friendly. I have to, my experience is, I have to log into Skype every time it requests you for credentials, which is time-consuming."

4.10.2.1 Gioia analysis

The Gioia (2021) Methodology was used to explore the negative aspects of the technological transition experienced by participants P2, P3, P5, P10, and P12. The analysis yielded the following outcomes:

- First-order concepts

P2 experienced mixed feelings, i.e., an appreciation of the mobility offered by Skype for Business, but missed the immediacy and tangibility of a traditional telephone.

P3 and P5 found that they seldom used the telephony option in Skype for Business, indicating a low adoption rate for this specific feature.

P10 felt the transition introduced more challenges than benefits, and indicated a desire to revert to the old system.

P12 criticised Skype for Business as inefficient and user-unfriendly, which was contrast to the appreciation for a digitalised work environment expressed earlier.

- Second-order themes

Adaptation challenges: Participants noted difficulties adapting to new communication methods that lacked the immediacy of traditional systems.

Utilisation and preference: There was a notable divergence in utilising new technologies, with a preference for previous systems or other digital platforms.

Efficiency and user experience: Participants emphasised the importance of efficiency and a positive user experience, which they found lacking in the new system.

- Aggregate dimensions

Integration with established workflows: Change management strategies should ensure that new technologies integrate seamlessly with existing workflows and complement or enhance current practices.

User-centric design: The design of user-friendly interfaces that cater to users' needs and preferences is crucial for successful technology adoption.

Training and support: Offering thorough education and assistance is crucial to ease the shift to new systems and enhance user satisfaction..

This concludes the reporting of the findings. The next chapter discusses the findings in detail, together with recommendations, coupled with extant literature.

CHAPTER 5: DISCUSSION OF FINDINGS AND RECOMMENDATIONS

5.1 Introduction

The present study was aimed at thoroughly examining the administrative processes governing technology change in a South African public higher education institution, specifically the transition from a conventional PBX telephony systems to cloud-based unified communications solution. Given the unique challenges faced by these institutions, the research explored the complexities, change management strategies, and broader implications for higher education.

Transitioning from legacy PBX to cloud-based Unified Communications is a formidable undertaking for South African public universities. Such a shift requires a high-calibre IT infrastructure, while public universities are plagued by limited funding, outdated systems, a lack on technical skills, and a shortage of skilled IT personnel. Kling (1991:33) emphasises the influence of these constraints on service delivery, resonating with the finding of the current that infrastructure inadequacy remains a chief barrier to technological progression. Change initiatives are further hampered by resistance to change due to ineffective communication and confusion (Basyal & Wan, 2020:353).

The subsequent sections discuss the findings per theme as reported in Chapter 4, together with recommendations.

In following recommendations relate to the category **Strategy/Process**.

5.2 Change Management Strategy

This theme had two codes: Strategy communication and Addressing resistance to change.

5.2.1 Strategy communication: Discussion

The experience of P1 aligns with Kotter's (1999:63) emphasis on the importance of effective communication in change management. It demonstrates the positive impact that clear communication has on the acceptance of change.

P7's perspective resonates with Armenakis and Harris's (2009:130) argument that preparing an organisation for change involves more than just communication — it requires creating a readiness for change through practical training and support.

P6's insights regarding theoretical versus actual implementation of change management echo the findings of Cameron and Green (2019:205), who identify the phenomenon of communication saturation, where too much communication can lead to disengagement.

The diverse viewpoints expressed by the participants regarding the effectiveness of the change management technique employed in the project reflect the complex and comprehensive character of change management processes. P1 highlighted the importance of communication, reiterating the assertion of Armenakis and Harris (2009:135) and Kotter (2013:6) that good communication is vital to successful change management. The positive experience of P1, which demonstrated knowledge and the expectation of change, resulting in less resistance, supports the notion that effective communication can promote change by fostering collective comprehension and preparedness amongst the individuals involved (Armenakis & Harris, 2009:135).

In contrast, P7 offered a divergent perspective by highlighting the absence of explicit training and direct communication, indicating a potential deficiency in the change management approach. This is consistent with Herold *et al.* (2008:354), who suggest successful change initiatives should incorporate communication and support systems such as training.

P6 highlighted that, although change management was theoretically implemented, it did not engage the intended audience effectively. This observation aligns with the notion that change communication needs to be both actionable and engaging to effectively reach and elicit responses from the intended recipients (Herold *et al.*, 2008:348).

Furthermore, the remarks of P2 and P6 regarding the frequency and effectiveness of e-mail communications raised the issue of communication saturation. As highlighted by Lewis (2007:189), this phenomenon occurs when excessive communication results in decreased engagement, which may lead to vital information being disregarded.

Overall, the observations noted above indicate that, although some aspects of the change management process demonstrated efficacy, such as the utilisation of diverse communication channels for information dissemination, there exists potential for enhancement, particularly in terms of fostering more engaging communication and offering sufficient support mechanisms such as training and direct contact. Incorporating Lewin's (1947:32) model into future change management activities has the potential to provide favourable outcomes. By ensuring that all stages of change, namely *Unfreeze*, *Change*, and *Refreeze*, are accompanied by thorough communication strategies and support systems, the effectiveness of these initiatives could be enhanced while minimising resistance.

5.2.2 Strategy communication: Recommendations

The institution under study should enhance training and support by developing comprehensive training programmes to accompany change communication, to ensure that employees are able to effectively handle new systems and processes. Interactive and engaging communication

methods, such as chat applications and regular topic-specific meetings across various organisational levels and departments, should be employed to ensure that the message of change reaches and resonates with all organisational levels.

The institution should continuously monitor the effectiveness of communication strategies, and adapt them to address any emerging challenges or resistance to change. However, change management should be mindful of the volume and frequency of communication, to avoid saturation and ensure that important messages are not overlooked or ignored.

5.2.3 Addressing resistance to change: Discussion

P4's favourable experience of the change management process is consistent with the view of Armenakis and Harris (2009:770), who contend that workers might become more receptive to change through efficient communication.

P7's description of feeling overwhelmed is similar to the sensations that Cameron and Green (2020:13) observe, noting that psychological transitions, not simply situational transitions, are a part of the transformation process.

P5's preference for MS Teams over Skype for Business aligns with the concerns raised by Davey (1956:355), who contends that the simultaneous implementation of several innovations can cause disarray and a loss of focus.

The need for proactive change communication: In line with Kotter's (1999:61) model, which emphasises the necessity of effective communication during the *Unfreeze* stage, the experiences of P4, in particular, demonstrate the relevance of proactive communication in lessening resistance to change.

The experiences of P7 and P5 point to the necessity of user-centric change strategies that prioritise the user experience. This is consistent with the TAM (Davis, 1989), which highlights PU and PEOU as essential elements in adopting new technology.

Participants' views offered significant insights into the dynamics of change management and resistance within their particular departments. P4 highlighted the absence of opposition, ascribing it to proficient communication and thorough preparation that facilitated the ability to foresee the impending change. The statement aligns with existing scholarly literature that recognises proactive communication as crucial in addressing and reducing resistance to change (Hughes, 2016:459).

In contrast, P7 saw the change management approach as overpowering, but noted that there was no resistance. This sentiment underscores a common obstacle encountered in change

management, where the rapidity and magnitude of the change can engender sensations of being inundated despite the absence of overt resistance (Lewin, 1947:32). The issue expressed by P7 implies that, although the team did not oppose the change, they required more time to adapt to the new systems. This feeling aligns with the view that individuals need a period of adjustment when faced with new processes (Musamali, 2018:247).

P5 highlighted a distinct technical obstacle that emerged during the execution of the modification, indicating a possible deficiency in training or support. Although P5 appreciated the provision of training, the simultaneous implementation of another program, namely MS Teams, resulted in a diminished level of involvement with the accessible resources. As mentioned above, the situation highlights the need to provide customised assistance and instruction during periods of transformation, as well as the intricacies involved in overseeing concurrent modifications (Herold *et al.*, 2008:355).

The synthesis of the viewpoints of P4, P7, and P5 demonstrates that effective change management necessitates more than mere communication. It necessitates a strategic framework encompassing the team's contextual factors, offering sufficient support and training, and allowing sufficient time for adaptation to the implemented changes. The analysis suggests that, although communication played a significant role in the change management process, there were potential areas for improvement in ensuring sufficient preparation and support for all participants during the transition, particularly in the context of simultaneously implementing multiple changes.

5.2.4 Addressing resistance to change: Recommendations

To address operational problems and facilitate the shift, organisations need to offer stakeholders thorough training and assistance (Armenakis & Harris, 2009:130). To prepare stakeholders and lessen opposition, organisations need to ensure early and transparent dissemination of information about the change process, as recommended by Kotter (1999:67) and Lewin (1947:32).

To ensure that the changes are viewed as beneficial and straightforward to implement, organisations need to create change strategies that centre on the end-user experience, as indicated in the TAM (Davis, 1989:134). Franken *et al.* (2009:54) consider the effects of simultaneous changes, and note that these should be managed to ensure that stakeholders are not overwhelmed.

These conclusions and suggestions, which are based on current theories and comparative analysis, indicate that, although communication is essential, it must be a part of an all-encompassing change management plan that also incorporates user-centric planning,

stakeholder engagement, and robust support systems in order to handle resistance to change successfully.

5.3 Awareness and Motivation

This theme had three codes: Leadership, Change communication, and Implementation process communication.

5.3.1 Leadership: Discussion

The absence of resistance reported by P4 aligns with Kotter's (1999:67) view that effective communication is critical to successful change management. Clear, early, and consistent information can lead to a smoother transition.

P7's experience reflects Lewin's (1947:22) model, specifically the *Unfreeze* stage, suggesting that change can be overwhelming if the transition phase is not managed well, underscoring the importance of giving staff sufficient time to adapt.

P5's insights resonate with the argument of Armenakis and Harris (2009:132) that practical support in training is crucial for reducing resistance to change, alongside communication.

P1 emphasised the importance of executive-level communication to manage resistance to change. This perspective is supported by Kotter's (1996) principle that effective change leadership requires clear and continuous communication (Appelbaum *et al.*, 2012:767). P1's insight suggests that top-down communication in change initiatives can be critical in mitigating resistance, and underscores managers not being mere decision-makers, but also change communicators.

P3 reflected on the role of technological advancements in reducing mundane administrative tasks, echoing the sentiments in the literature that technology can enhance managerial efficiency (Brynjolfsson & Hitt, 2000:25). By adopting new telecommunication platforms, managers can reallocate time to more strategic tasks, signalling a shift towards a more digitally integrated management approach in higher education.

P7 touched on the collective effort of line managers in aiding their teams through informational support, which aligns with the servant leadership concept, whereby leaders prioritise the needs of their team members (Brynjolfsson & Hitt, 2000:11). This co-operative approach indicates a transformation in management roles towards more supportive and team-centred leadership.

P9 discussed the necessity of imposing change and setting clear deadlines, resonating with the concept of 'change or perish', which is prevalent in the dynamic educational environment (Fullan,

2015:113). As described by P9, the manager's role has evolved to one of a change enforcer, ensuring team members adapt to new systems in order to remain operational.

P9 further suggested empowering managers to become change advocates, which aligns with distributed leadership that fosters leadership capacity across the organisation (Spillane *et al.*, 2004:5). This approach proposes transforming management roles to include more autonomy in driving change initiatives, and positions managers as pivotal change agents within higher education institutions.

In summary, these insights from the participants reveal a significant transformation in the management of higher education institutions. Managers have evolved from traditional administrative role players to becoming critical communicators, change enforcers, digital integrators, and advocates for change. This evolution signifies a shift towards a more collaborative, technologically savvy, and adaptable management framework in response to the dynamic demands of the higher education landscape.

5.3.2 Leadership: Recommendations

The institution should enhance its communication strategies by developing comprehensive communication plans that clearly articulate the change process and its implications well before implementation.

Leadership should allocate sufficient time for adjustment to new technologies, in order to reduce the likelihood of resistance due to feelings of being overwhelmed. This should be underpinned by a focus on detailed, role-specific training and ongoing technical support to address operational challenges and ensure the successful adoption of new technologies.

While pro-active communication is essential, it must be part of a holistic approach that includes understanding the user experience and providing ongoing support. This integrated strategy is crucial for managing resistance to change and ensuring an organisation's successful implementation of new technologies.

5.3.3 Change communication: Discussion

The positive feedback from P1 aligns with Elving's (2005:130) emphasis on the importance of communication in change management. This suggests that, when stakeholders are well-informed, resistance can be minimised.

The experiences of P7 and P6 reflect Fischer *et al.*'s (2020:4) change model, particularly the need for a managed transition phase, indicating that, without proper engagement and support, stakeholders may feel overwhelmed despite having been provided information.

The gap in practical support highlighted by P7 and P6 resonates with Amis and Aïssaoui's (2013:85) recommendation that change readiness requires providing stakeholders with the necessary tools to adapt to change.

The importance of communication was visible with the technology transition to Skype for Business. P1 emphasised the importance of prompt assistance and the comfort derived from receiving real-time updates through dedicated platforms, such as a project dashboard on the website. This observation aligns with the principle articulated by Venkatesh and Bala (2008:278) concerning the criticality of timely support during technology transitions.

P2 appreciated the transparency and ability to track progress through statistics updates, suggesting that consistent and informative communication was highly valued. In line with the view of Clegg and Walsh (2004:222), the feedback indicates that continuous updates can potentially improve stakeholder participation and mitigate uncertainty.

In contrast, it was observed that P7 and P12 expressed a dearth of comprehensive change management, despite regular interactions. The experience of P7 indicates that the mere transmission of information is inadequate without including actionable elements, such as training. P12 also expressed this view. The absence of active involvement and effective communication aligns with the view of Ford and Ford (1995:542), who posit that effective change management communications should possess clarity, engagement, and actionability.

P12's observations regarding the inefficiency of e-mail communications, attributed to the substantial influx of messages and the limited time available to attend to these adequately, address the phenomenon commonly referred to as 'communication overload'. The effectiveness of well-intended messaging can be compromised when stakeholders are inundated with a large volume of information, as indicated by the findings of Bawden and Robinson (2020:1).

The observations shared by the participants emphasise the importance of employing a comprehensive strategy for communication in the context of change initiatives (Ali *et al.*, 2021:498). This strategy should encompass more than just providing regular updates and support resources. It should also involve engaging methods customised to the target audience's needs and time limitations (Appelbaum *et al.*, 2012:77). The absence of training was a notable observation, indicating a necessity for implementing interactive and practical communication strategies to improve the acceptance and utilisation of emerging technology (Dachner *et al.*, 2021:77).

5.3.4 Change communication: Recommendations

The institution should develop comprehensive communication plans that detail the change process, the anticipated impacts, and support measures available to stakeholders (Dachner *et al.*, 2021). The communication plan should consider engagement and support. Communication should be bolstered by engagement opportunities and support mechanisms that allow stakeholders to feel part of the change process and capable of handling the new technologies. The communication should also inform training, so that the institution is able to provide targeted and customised training programmes that address the specific needs of different stakeholder groups within the organisation.

Thus, the communication strategy should go beyond informing stakeholders about upcoming changes, and actively involve them in the transition process, coupled with adequate support and training. By doing so, organisations can effectively manage resistance to change and facilitate a smoother adoption of new technologies.

5.3.5 Implementation process communication: Discussion

The experiences reported by participants were analysed against current studies in change management, revealing significant correlations and insights. Participants' need for role-specific training and support echoes the views of Klein and Knight (2005:6) and Vakola *et al.* (2013:117) by highlighting the importance of aligning training strategies with individual roles and responsibilities.

The views presented by participants P12, P3, and P7 underscored the significance of communication in transitioning to Skype for Business. The testimony provided by Participant P12 highlighted the significance of having easily accessible communication channels and a responsive support team in mitigating concerns related to the adoption of novel technologies, as proposed by Bawden and Robinson (2020:4). The dashboard referenced by P12, which provided updates on the progress of the migration, serves as an illustrative instance of a customised communication tool that may proficiently disseminate information and instil confidence amongst stakeholders.

Participant 12 also observed a certain level of perplexity around the upgrade timetable. This participant suggested that, although communication was generally satisfactory, there is potential for enhancing the precision and comprehensibility of the information conveyed on the transition timeline. The absence of clear communication can potentially lead to ambiguity, which has been observed to have a detrimental effect on stakeholders' attitudes in organisational transformation (Bordia *et al.*, 2004:509).

P3 presented a favourable viewpoint about communication, highlighting the consistent provision of updates and a perception of being well-informed about the department's transition schedule. The significance of assisting pro-actively, as discussed by P3, highlights the crucial role of support in change initiatives, aligning with the research conducted by Cresswell and Sheikh (2013:104), which emphasises the essentiality of user support in ensuring the successful deployment of technology.

Finally, the comments made by P7 indicate a division between the consistency of communication and its efficacy in adequately equipping users for the consequences of their everyday professional tasks. The feedback provided aligns with the notion of 'communication effectiveness', a term that encompasses not only the frequency of communication but also its capacity to cultivate comprehension and preparedness for change (Hovland & Weiss, 1951:1).

In conclusion, good communication was a crucial consideration during the transition period, and specialised support teams and regular updates through e-mail and web dashboards proved particularly beneficial. Nevertheless, based on the participants' accounts, it is evident that, although there was a high level of communication, there were opportunities for improvement by providing more straightforward transition schedules and effectively communicating the practical consequences of the shift in daily activities.

5.3.6 Implementation process communication: Recommendations

The institution should ensure that transition scheduling is communicated with utmost clarity through diverse channels, to inform all stakeholders effectively (Ali *et al.*, 2021:490). Various communication support mechanisms could be considered, such as platforms for FAQs (frequently asked questions (Appelbaum *et al.*, 2012:775). The institution should ensure that transition scheduling is communicated with utmost clarity through diverse channels, to inform all stakeholders effectively on, tutorials, and in-person assistance, to cater to different levels of user proficiency (Kitsantas *et al.*, 2019:392). These mechanisms should be incorporated into a comprehensive multi-channel communication approach using various communication methods, to account for individual preferences and enhance message comprehension at all organisational levels (Trawick & Carraher, 2023:27).

The institution needs to ensure that communications address the practical impact of technology changes, giving stakeholders a clear understanding of how their daily work will be affected (Trawick & Carraher, 2023). By integrating these insights, organisations can refine their change management processes to facilitate effective — thorough, transparent, and engaging — communication and support, ultimately leading to a smoother technological transition for all stakeholders (Jones & Smith, 2002:1386).

5.4 Enhancing Knowledge and Competencies

This theme had two codes: Training and Support

5.4.1 Training: Discussion

The data analysis revealed a common thread — the importance of integrating training into the broader professional development framework. This aligns with the view of Vakola and Nikolaou (2005:163), who advocate continuous learning and adaptability. The findings also underscore the importance of leadership in change initiatives, resonating with Bass and Riggio's (2006:6) principles of transformational leadership.

The viewpoints expressed by the participants underscore the pivotal significance of training in effectively implementing new technologies within an organisation. P5 emphasised the imperative of incorporating skills training into the professional development of personnel to enhance the organisation's operational efficiency within a digital context. This perspective aligns with the assertion that proficiency in technology amongst employees is a fundamental element in facilitating digital transformation, as posited by Vakola and Nikolaou (2005:163), who underscore the significance of enhancing human resources in the context of organisational change.

Both P6 and P7 raised apprehensions regarding the pragmatic obstacles encountered throughout the transition, encompassing disturbances brought about by implementing the new system and the necessity for enhanced readiness and instruction to alleviate any harm to the institution's reputation resulting from service disruption. In this regard, Ford and Meyer (2014:47) posit that insufficient readiness for change might result in operational inefficiencies and a deterioration in service quality.

P9's thoughts indicate a conviction regarding the indispensability of an organised, in-person training methodology instead of sole reliance on electronic communication such as e-mails and documents. The remarks made by this participant align with the arguments of Burke and Hutchins (2007:279) regarding the limitations of e-learning in meeting all educational requirements. Blended learning methods that integrate electronic media with conventional instructor-led instruction have the potential to be more successful (Burke & Hutchins, 2007:279).

The recommendation by P9 to involve management in facilitating the change process aligns with the view of Bass and Riggio (2006:6) that leaders could have a crucial impact on the effectiveness of change endeavours through their ability to inspire and direct personnel.

In brief, the primary elements that the participants identified as significant contributors to the achievement of the technological shift were: well-organised and comprehensive training

initiatives, active involvement of management, and the adoption of blended learning methodologies. On the other hand, concerns emerged regarding excessive dependence on training in the form of digital communication, inadequate prior readiness, and a dearth of practical assistance. The abovementioned observations emphasise the significance of implementing a thorough and all-encompassing training approach as part of change management endeavours.

5.4.2 Training: Recommendations

The institution should foster continuous learning culture by prioritising ongoing learning, including ensuring that employee development at all levels includes digital skills training (Kitsantas *et al.*, 2019:387). The institution should also establish a robust support infrastructure, so that employees are able to access immediate help from staff equipped to address the technical challenges that arise during the transition (Cameron & Green, 2009:262).

It is imperative that leaders received training and engage with the process to drive training of all employees (Prosci, 2009:63). The institution should ensure that training is personalised to meet the diverse individual needs of staff, to ensure they are fully equipped to handle the new technology (Ali *et al.*, 2021:485). The institution should also remain abreast of and address ongoing training needs. By incorporating these insights into their change management strategies, organisations can better facilitate the adoption of new technologies, ensuring that transitions are smooth and that staff members are both competent and confident in their use of new systems (Clegg & Walsh, 2004:339).

5.4.3 Support: Discussion

The call for integrated digital skills training aligns with the view of Burke and Hutchins (2007), who advocate a blended approach to learning and support.

The emphasis on responsive support systems is consistent with the work of Fullan (2015:72), who identifies the critical role of continuous learning and support in organisational change.

The observations by P9 about the important role of managers in driving the change process resonates with the views of Kotter *et al.* (2021:180).

The experience of P6 highlights the need to establish effective communication channels and provide convenient access to technical specialists who are able to assist in addressing challenges arising from implementing new systems. The challenges outlined by Venkatesh *et al.* (2012:174) highlight the significance of post-implementation support in ensuring the operational continuity of a system.

The testimony provided by P10 indicates that, although communication was generally successful, there was an underlying requirement for proactive support systems. These support systems should include regular updates and designated contacts to address concerns. This notion aligns with the understanding that continuous support is essential for successfully implementing change, as proposed by Klein and Knight (2005:245).

Finally, P12 highlighted the importance of individual involvement in identifying training requirements and offering customised assistance after implementation. The observation made by P12 on the delay in response times suggests the need for an improved support system that can promptly address user requirements, as posited by Davenport (1993:4).

5.4.4 Support: Recommendations

In order to address these observations, it is recommended that the institution ensure adequate technical support to resolve technical difficulties, specifically during the first phases of implementing a new system, to mitigate operational disturbances (Trawick & Carraher, 2023). This requires direct communication channels with IT specialists to ensure prompt and efficient help in resolving operational challenges (Trawick & Carraher, 2023:62).

The institution should implement customised training sessions, designed to cater to different levels of user proficiency, and foster confidence in utilising the new system. Such efforts should be informed by personalised engagement (Ali *et al.*, 2021:486). The change implementers should interact with users individually to evaluate and meet their unique training requirements. Support and training should be personalised, including through face-to-face sessions, to cater to individual needs and enhance the adoption process (Ali *et al.*, 2021:771).

Incorporating these modifications is in line with Fullan's (2007:34) recommendations, which emphasise the significance of transparency, capacity development, and responsive assistance in effectively managing organisational change.

Institutions should develop a proactive learning culture where digital skills are built into the fabric of professional development. Leaders should be empowered to become support facilitators by actively engaging in the support process and using their influence to drive effective change management.

The category **Post-implementation** had three themes, namely Evaluation of sustainability, Remedial actions, and Overall experience.

5.5 Evaluation Feedback

This theme included various aspects, which are discussed below, followed by a discussion.

5.5.1 Evaluation feedback: Discussion

P1's and P4's experiences resonate with the concept of 'telepresence', where technology enables users to feel or appear present through telecommunications. This concept has been found to improve team dynamics and productivity by facilitating immediate and flexible communication (Kurkland & Bailey, 1999:54).

P6's feedback on workflow disruption aligns with the theory of 'technostress', where introducing new technology can cause stress due to changes in work routines and the need to acquire new skills (Camarena & Fusi, 2022:55).

The cognitive overload mentioned by P6 is consistent with 'information overload' research, which suggests that too much information can negatively affect decision-making and productivity (Camarena & Fusi, 2022:4).

P11's appreciation of new features like missed-call notifications aligns with the 'feature fatigue' literature, which highlights that, while additional features can initially be attractive to users, they may also increase complexity and decrease satisfaction (Thompson *et al.*, 2005).

The diverse viewpoints held by the different individuals involved in adopting the new technology offered a range of insights into the impact on productivity improvement. P1 held a favourable perspective on the technological transition, highlighting its ability to enhance communication efficiency. This aligns with the belief that technology can support adopting more flexible and efficient work methods (Orlikowski, 2000:417). In this regard, Webster (2014) notes that technology can empower individuals within the workforce by providing flexibility and mobility, which, in turn, have the potential to enhance productivity (Kraut *et al.*, 1998:438).

P4 highlighted the heightened accessibility to team members, a crucial element in improving productivity, as it facilitates prompt problem-solving and decision-making (Kitsantas *et al.*, 2019:387). This statement exemplifies the broader academic discussion surrounding the potential of communication technologies to dismantle conventional limitations on temporal and spatial boundaries (Caccamo *et al.*, 2023:102645).

In contrast, P6 raised apprehensions regarding the amalgamation of computer and telephony, highlighting the possibility of reduced effectiveness in specific job functions. This implies that technology may not uniformly advantage all individuals within an organisational context (Markus & Robey, 1988:585). In addition to the points mentioned above, P6 addressed the matter of

information overload, which has been extensively studied and is recognised as being a result of heightened connectedness. This phenomenon negatively impacts productivity (Webster, 2014:132).

Participant P11 offered a more nuanced perspective, acknowledging the enhancement of productivity resulting from improved follow-up on missed calls through e-mail notifications. This statement provides evidence to support the claim that implementing specific characteristics in emerging technologies can lead to immediate improvements in productivity (DeSanctis & Poole, 1994:122).

Overall, it was widely agreed that the introduction of new technology enhanced communication, which is a crucial factor in enhancing productivity (Ali *et al.*, 2021; Kotter, 2007:61). However, it is essential to note that experiences of using such technologies were not uniform. Certain participants reported enhanced efficiency and a sense of empowerment, whilst others encountered obstacles that could impede productivity, such as interruptions during tasks and the intricacies associated with managing many communication platforms. This highlights the importance of adopting a customised strategy for introducing technology, one that considers the varied requirements of various organisational roles (Chinniah *et al.*, 2023:100).

5.5.2 Evaluation feedback: Recommendations

The institution should first communicate and highlight the most beneficial features of new technologies, to encourage adoption and utilisation. This should be followed by implementation of training programmes that help staff adapt to new technologies, in order to address workflow disruptions. Such efforts could be enhanced by simplifying and consolidating communication platforms to reduce cognitive overload and streamline communication. The institution should also establish ongoing feedback mechanisms to continually assess the impact of a new technology on productivity and user satisfaction.

By integrating these recommendations, organisations can improve their change management strategies to better support employees in adapting to new technologies, thereby enhancing overall productivity and employee satisfaction (Kitsantas *et al.*, 2019:387).

5.6 Occupational Stress

This theme had two codes: Impact on daily work and overwhelmedness.

5.6.1 Impact on daily work: Discussion

The participants' experiences shed light on the challenges and rewards associated with the shift to new technologies and its subsequent impact on productivity.

P6 highlighted operational challenges, noting that the integration was ineffective in the context in an executive office setting. This phenomenon could be attributed to the limited capacity for prompt and effective intra-office message transmission, formerly facilitated by conventional telephony systems. The abovementioned matter is a paradigmatic illustration of how technology can disrupt existing work procedures, underscoring the significance of considering the distinct requirements of various positions within an organisation while implementing novel systems (D'Adderio, 2011:209).

The staff's experience of haste and pressure to implement the new technology, as indicated by P6, can result in resistance and errors, such as modifications to phone numbers, impacting external communication. This observation is consistent with the conclusions drawn by Bordia *et al.* (2004:511), who propose that time constraints and unexpected alterations can harm employees' ability to adjust to novel technology, leading to increased uncertainty and stress.

P7 emphasised the persistent technological obstacles and the reliance on network stability, which directly impact the dependability of the novel system. The experience of this particular participant highlights the crucial importance of IT infrastructure in effectively implementing technological innovations (Bala & Venkatesh, 2016:156).

P12 acknowledged the successful incorporation of the novel technology into pre-existing software applications such as Outlook. However, P12 highlighted concerns regarding the promptness of information updates, particularly concerning missed calls. This underscores the need to include seamless integration and real-time updates in communication technology to enhance productivity (Tarafdar *et al.*, 2015:112).

In brief, although the novel technology holds promise through enhanced software integration, the insights gleaned from the participants indicate that, in the absence of meticulous strategizing and assistance, the implementation of new systems can impede work procedures and interpersonal communication, with an adverse impact on productivity. In order to facilitate the integration of emerging technologies, organisations should consider customised training, comprehensive IT assistance, and gradual deployment approaches, aiming at minimising disruptions and enhancing user adaption.

5.6.2 Impact on daily work: Recommendations

Before implementing new technologies, the institution should assess how these will integrate with or alter existing workflows, and provide guidance on necessary changes. The institution should then ensure that transition plans, including time lines and changes, are communicated effectively to all relevant stakeholders.

The underlying technology infrastructure should be strengthened to support the implementation of new technologies, and also address operational disruptions. New software systems should be seamlessly integrated with the existing technological ecosystem, to enable efficient real-time updates and notifications. The institution should also provide continuous support and resources to effectively manage transitional challenges and system integration issues.

By implementing these recommendations, organisations can enhance the positive impact of new technology on daily operations, mitigate potential disruptions, and empower staff to maintain or increase productivity levels. The insights provided by the participants align with existing literature on change management, such as the work of Kotter (1996) and Armenakis and Harris (2009), who emphasise the importance of effective communication, training, and support in technology adoption and transition processes.

5.6.3 Overwhelmedness: Discussion

The experiences of 'overwhelmedness' reported by participants reflect the challenges associated with information overload, a concept well-documented in managerial science literature. Chen *et al.* (2012:328) note that the proliferation of communication channels can lead to confusion and stress. Jackson and Farzaneh (2012:4) highlight that the influx of electronic communications has increased the feeling of 'being busy' without necessarily being productive.

The stories offered by P1, P11, P12, and P13 provide insight into essential variables that impacted the achievements of the change and the difficulties encountered during the technological shift inside their respective departments. A constant motif observed in their narratives is the occurrence of information overload, also referred to 'overwhelmedness', which seems to have had a detrimental effect on the efficacy of the change process.

P1 highlighted numerous communication channels of communication mediums such as Skype, Teams, emails, and cell phones may lead to an overabundance of information. This aligns with the theory on cognitive overload in change management, with authors positing that excessive information can hinder individuals' ability to effectively digest and engage with this information (Beniger, 2009:159; Eppler & Mengis, 2004).

P11 concurred with this viewpoint, highlighting the overwhelming influx of e-mails from multiple departments within the institution, resulting in diminished interest and involvement in the conveyed information. This phenomenon aligns with communication fatigue, as elucidated by (Bawden & Robinson, 2020:12).

P12 highlighted a deficiency in prompt and engaging communication, further noting that vital information on the transfer was delivered suddenly and that it indicated a limited time frame. Such communication has the potential to result in resistance, since it fails to provide consumers with sufficient time to comprehend and make necessary preparations for the impending change (Grenway, 2021:93).

P13 believed that, while communication was available, the timing and approach were not conducive to participation, due to the high-pressure schedules of the recipients. As mentioned earlier, the statement underscores the imperative for change management techniques to incorporate an understanding of the specific circumstances and limitations of the target audience (Armenakis & Harris, 2009:139).

To summarise, the participants identified several key factors that impacted the transition process. These factors include the abundance and diversity of communication channels, which resulted in an overwhelming amount of information. Additionally, the timing and abruptness of critical communications played a role in shaping the transition experience. Lastly, there is a necessity for a more strategic approach to engaging stakeholders with limited time to process change-related information. Potential remedial measures may include optimising communication channels, strategically planning communication schedules, and utilising diverse communication techniques to enhance participation and facilitate efficient information processing.

5.6.4 Overwhelmedness: Recommendations

The institution should simplify and streamline communication channels, to prevent information overload (Mahdi *et al.*, 2020:119574; Mano & Mesch, 2010), and tailoring the timing of communications to recipients' schedules. The communications should provide summaries of critical information, as this may aid in preventing feelings of overwhelmedness (Forman, 2023:101). The institution should develop a structured communication plan that allows for the gradual dissemination of information and prepares employees for impending changes (Armenakis & Harris, 2009:135).

By adopting these recommendations, the institution could mitigate the negative impacts of 'overwhelmedness' during technological transitions. The focus should be on enhancing

communications' clarity, timing, and reception, in order to foster a more receptive and less stressed workforce.

5.7 Overall Experience

This theme had two codes, namely Positives of transition and Negatives of transition.

5.7.1 Positives of transition: Discussion

The experiences shared by participants align with existing literature on the impact of technological advancements on workplace dynamics. For instance, the concept of 'technological affordances', which refers to the possibilities for action that technology provides its users (Conole & Dyke, 2004:301), was echoed in the participants' feedback on the flexibility and productivity gains from the new technology. Moreover, the transition to hybrid work is supported by the theoretical framework proposed by Ashkenas *et al.* (1995), which describes a boundaryless organisation where traditional barriers to practical work are removed.

The feedback provided by P1, P2, and P3 regarding the university's implementation of a hybrid work environment in response to the COVID-19 pandemic indicates a high level of satisfaction with the change management strategy and its effects.

P1 emphasised the imperative of technology adaptability, a crucial factor in enhancing productivity, particularly in response to the pandemic-induced transition to distant employment. This insight aligns with the research conducted by Kniffin *et al.* (2021:7), which delved into the significant impact of technology on sustaining organisational functions during the pandemic. Integrating remote and in-office operations, known as 'hybrid work', has significantly altered workplace dynamics, and ensuring its practical implementation is crucial in maintaining business continuity (Sokolic, 2022:17).

P2 emphasised the individual-level advantages of the hybrid work setting, such as the flexibility of completing activities without the constraints of physical office space. This phenomenon indicates the broader pattern of workplace flexibility, which has been empirically linked to heightened levels of job satisfaction (Golden & Gajendran, 2019:56). P2 further recognised the necessity of a shift in perspective when embracing novel communication technologies, as these can bring both obstacles and advantages.

P3 asserted that the fortuitous alignment of the technology project's time line with the advent of the pandemic effectively averted substantial disruptions to the university's operations. This observation is consistent with the view that organisations that possessed the ability to adjust to technological changes rapidly were in a more advantageous position during the pandemic (Bartik

et al., 2020:2). Furthermore, P3's observations regarding the possibility of excessive communication align with the importance of establishing boundaries in remote work, in order to mitigate the risk of burnout (Park *et al.*, 2011:457).

In general, the participants' observations indicate that the change management strategy implemented by the university successfully allowed the shift towards a hybrid work environment. This transition was not only timeous, but also crucial in ensuring the continuity of operations amidst an unparalleled global health catastrophe. The reflections suggest that the implemented change was welcomed and perceived as a facilitator of productivity. However, it is vital that individuals effectively manage their availability in order to uphold a healthy work–life balance.

5.7.2 Positives of transition: Recommendations

The institution should prioritise continuous training and support, help employees adapt to new technologies, and maximise their use for increased productivity. However, it is also necessary to ensure that policies and culture support employees in effectively managing their availability and work–life boundaries.

The institution should continue to leverage technology in crisis management. The institution should use the lessons learned from the pandemic, and strengthen its technological infrastructure to better prepare for future crises.

By integrating these findings and recommendations, organisations can reinforce their change management strategies, ensuring that technological transitions not only enhance productivity and flexibility, but also support the well-being of employees by providing the necessary structure and support.

5.7.3 Negatives of transition: Discussion

The participant feedback was aligned with the TAM (Davis, 1989:13), which posits that PU and PEOU are significant determinants of technology adoption. The reported challenges align with the concerns of user resistance and the slow adoption rate that can occur when new systems disrupt established routines (Karahanna *et al.*, 1999:189). Furthermore, the participants' experiences reflect the importance of system quality and information quality in user satisfaction and acceptance, as outlined in the updated DeLone and McLean (2003:11) IS Success Model.

The analysis of harmful elements related to adopting new communication technologies in a university context provides valuable qualitative data on the difficulties encountered throughout this transition. P2 acknowledged the advantages and disadvantages of the shift from conventional telephony to Skype for Business, highlighting that the positive aspects were the flexibility and

accessibility associated with responding to phone calls from any location. This aligns with Unified Communications as a Service (UCaaS) advantages, as elucidated by Alias *et al.* (2018:1882). Nevertheless, P2 also underscored the inherent difficulty of acclimating to a novel system in instances where individuals are habituated to the tangible and instantaneous nature of conventional telephones.

P3 and P5 reported a low utilisation rate for Skype for Business as a telephony tool. This observation suggests that implementing this new technology has not entirely replaced the previous functionality or established habits. This finding is consistent with the concerns regarding technology acceptance and frequency of usage discussed by Venkatesh *et al.* (2003:461) in their unified theory of acceptance and use of technology (UTAUT).

P10 criticized the efficacy of Skype for Business telephony purposes. This perspective aligns with the contention by Karahanna *et al.* (1999:185) that novel technological advancements must augment and not impede job procedures.

P12 expressed a significant aversion towards Skype, characterising it as an inefficient and non-user-friendly platform. This sentiment aligns with the widely acknowledged belief that user satisfaction is pivotal in adopting novel technological solutions (DeLone & McLean, 2003:11).

These collective insights indicate that digital transformation projects, such as the adoption of Skype for Business, might provide new benefits, but may also present substantial hurdles for users in terms of adaption. To enhance transitions, it is recommended that organisations prioritise the implementation of user-friendly interfaces, ensure the integration with pre-existing systems, and pay specific attention to training and support mechanisms, in line with the TAM (Davis (1989:320), which holds that a technology's PU and PEOU are significant factors in determining its acceptability.

5.7.4 Negatives of transition: Recommendations

The institution should customise training and communication strategies to address various user groups' specific concerns and preferences. This should be underpinned by a focus on the user experience in deploying new technology, to ensure that it is intuitive, efficient, and aligned with users' expectations and needs. It is crucial to continuously monitor user feedback on new systems and be prepared to make iterative improvements to address any shortcomings in functionality or user experience.

By incorporating these insights into change management practices, organisations can foster a more receptive environment for new technology adoption, ensure smoother transitions, and ultimately enhance productivity and user satisfaction.

Overall, the current study found that universities often struggle with managing the human aspect of IT transitions. Resistance to change, deeply rooted in the fear of the unknown and comfort with established routines, emerged as a pivotal concern. The research corroborates the view of Basyal and Wan (2020:353) on addressing this resistance through comprehensive and strategic communication plans.

Communication stands out as a fundamental element in managing transitions. The findings suggest that, while universities may have strategies in place, there is a gap in ensuring these strategies reach and resonate across all organisational levels. The communication saturation experienced by participants underscores the need for a balance—ensuring that critical messages are conveyed without overwhelming the recipients.

5.8 Summary of the Chapter

This chapter reported the findings of the current study, together with recommendations, which were linked to extant literature. These recommendations are aimed at supporting South African public universities in leveraging IT services to enhance business functions and education delivery. Moreover, they offer a strategic underpinning of the considerations in navigating the complexities of technology adoption within the higher education sector, thereby contributing to advancing managerial practices in this domain. The implications for management are discussed in greater detail in the subsequent chapter, together with the study's limitations and recommendations for future research.

CHAPTER 6: CONCLUSIONS AND MANAGERIAL IMPLICATIONS

6.1 Introduction

This study was a comprehensive exploration of a technological transition in South African public university, whereby cloud-based unified communications replaced legacy PBX telephony systems. The primary aim was to delineate the environment and change management strategies during this transition. The subsequent sections provide a reconciliation of the study's aim, research question, and objectives, highlight the implications for management, and discusses the study's limitations, together with suggestions for future research.

6.2 Reconciliation of the Research Question and the Study Objectives

6.2.1 Answering the research question

In answering the research question: *How was the transition from legacy PBX telephony to a cloud-based unified communications platform managed in a South African public university, and what are the implications for change management in higher education?*, the study identifies that the transition was managed using a multifaceted approach, which was discussed in detail in the previous chapter.

The implications of the findings for change management in higher education are profound. A successful transition process requires robust technical planning and necessitates a cultural shift within the organisation. It demands strategies considering change's psychological and behavioural aspects in preparing, equipping, and supporting staff to embrace new work methods. Institutions should prioritise customised training and support to ensure smooth user adaptation to new technologies. Strategies have to be developed to avoid communication saturation and prevent information overload. Continuous monitoring and iterative improvements in response to stakeholder feedback are critical, and all these actions should be underpinned by consideration of the human element in technological transitions, which requires employing engaging and inclusive change management practices in order to manage resistance.

The study's findings suggest that the transition to unified communications platforms can be an enabler of innovation and a catalyst for organisational transformation if managed effectively. However, the findings also highlights the potential for such transitions to introduce significant challenges that could impede productivity and satisfaction if not handled with care and foresight. In conclusion, the transition to cloud-based unified communications in South African public universities presents both an opportunity and a challenge. The findings from this research

contribute to a deeper understanding of the factors influencing the success or failure of such technology projects and provide actionable insights for university administrators.

6.2.2 Meeting the study objectives

The main objective of the study was to provide a descriptive analysis of the environment and the change management strategies employed in a public university's technology transition. In meeting the primary objective, the study delineated the complexities inherent in moving to cloud-based unified communications, with particular attention to the challenges faced, such as inadequate IT infrastructure and resistance to change. The main objective was addressed through the attainment of several secondary objectives, listed below.

SRO1: To describe the process and challenges of transitioning to cloud-based unified communications in a public university

- The study described the transition process in detail, highlighting the infrastructural and human resource challenges and underscoring the importance of strategic planning and stakeholder engagement in overcoming these challenges.

SRO2: To explore change management strategies to navigate resistance during the transition

- Strategies to navigate resistance, such as enhanced training programmes, improved communication, and interactive methods, were explored. These strategies were found to be pivotal in managing resistance effectively.

SRO3: To understand the role and impact of communication in implementing new technology

- The study's findings illustrated communication's critical role in technology implementation, emphasising the need for clear, engaging, and continuous dialogue to ensure stakeholder buy-in and support for the transition.

SRO4: To develop an in-depth understanding of factors influencing the success or failure of technology implementation projects

- An in-depth understanding of factors influencing technology project success or failure was provided, particularly the need for robust IT infrastructure and consideration of the human element in managing change.

SRO5: To gain actionable insights and make recommendations for the implementation of technology in institutions of higher education

- Actionable insights and recommendations were generated for managers and administrators. These insights could be instrumental in guiding future technology implementations in higher education settings.

This study has answered the research question and linked the primary and secondary objectives to empirical findings. It provides a rich tapestry of insights that could inform change management in higher education IT services. The research contributes to the existing body of knowledge by offering a case study of a South African public university's journey towards embracing cloud-based unified communications. The study findings provide detailed information for managing technological transitions that could aid university administrators and managers steer their institutions through similar technology-induced changes.

The following section provides a summary of the main findings and conclusions.

6.3 Summary of Findings and Conclusions

This exploration of transitioning from legacy PBX systems to cloud-based unified communications in a South African public university has yielded several critical conclusions with implications for managing such change. The study found that such a change is strategically advantageous, as unified communications platforms offer substantial benefits, such as enhanced flexibility and the support of hybrid work models. However, such a shift is also fraught with infrastructural and human resource management challenges, including inadequate IT infrastructure and technical expertise, resistance to change, and communication deficiencies.

The study's findings underscore the importance of a holistic approach to technology transition, based on a strategic framework that encompasses infrastructure readiness, stakeholder engagement, and continuous support.

The institution has to ensure readiness at all levels — infrastructure, personnel, and operational workflows — through adaptive planning and proactive communication. The communication has to be interactive, engaging, and timely. The transition's success hinges on the effectiveness of change management strategies that address the technical and human aspects of technology adoption. Resistance to change, a significant barrier, can be mitigated through proactive, clear, and continuous communication. Organisations should employ technologies and platforms that enable feedback and reciprocal conversation. These could encompass question-and-answer sessions, workshops, and interactive webinars that involve employees across various hierarchical levels. The organisation should establish and implement procedures to collect feedback, which could encompass ongoing surveys, focus group discussions, and suggestion boxes. The organisation should incorporate comprehensive monitoring of input, coupled with analyses, to

examine both favourable and unfavourable responses from participants, which should then inform remedial actions.

Managers in South African public universities must recognise that technology transitions are not solely IT projects, but that these are organisational change initiatives that require comprehensive planning and co-ordinated execution. Managers must ensure that an IT transition is aligned with the university's strategic objectives. It is imperative that they provide clear justification for the change, together with the anticipated outcomes. Given the infrastructural challenges faced by public universities in South Africa, there is a need for investment in robust IT infrastructure that can support new technologies and accommodate future growth. Managers should focus on developing IT talent within the university through continuous professional development and by establishing clear career pathways for IT professionals (Ali *et al.*, 2021:486)

University leaders must champion technology change and demonstrate their commitment by role-modelling adoption. Engagement with all stakeholders should be an ongoing process, from the inception of the technology transition to its post-implementation review.

Managers of such change initiatives could consider incorporating the following practical aspects as part of the change process. Establish a dedicated support team to provide uninterrupted assistance during and after the transition. Employ interactive communication techniques such as workshops, webinars, and forums to engage employees at all hierarchical levels in the transition. Encourage feedback and active participation to foster a sense of ownership amongst stakeholders. Regularly evaluate the effectiveness of communication strategies, using metrics such as engagement rates and feedback quality. Adapt communication strategies based on monitoring outcomes to address emerging challenges and resistance. Implement a communication hierarchy to prioritise messages, to avoid overwhelming recipients. Explore alternative communication platforms that can streamline information dissemination and reduce redundancy. Encourage a mindset that views technology transitions as ongoing rather than once-off projects. Implement mechanisms to continuously capture user feedback on technology solutions to enhance functionality and user experience. Develop contingency plans to ensure services are not interrupted by infrastructure downtimes or network issues.

This concludes the discussion of the main findings. The next section elaborates on the implications of the findings for management.

6.4 Implications for Managers of Change Initiatives

It is imperative that managers not disregard the importance of designing change initiatives and prioritising user needs, as doing so may lead to resistance to, lower acceptance of, and poor engagement with the new technology.

Managers should adopt a more user-centric approach by integrating the TAM (Davis, 1989:320) principles throughout the change management process. This involves understanding and addressing new technologies' perceived usefulness and ease of use. Emphasising the direct benefits and ease of use of new technologies in communications and training could significantly enhance user acceptance.

The potential of leaders to influence successful change is not fully harnessed when their roles in training and support are not clearly defined and integrated into the change management framework. Organisations should strengthen leadership's involvement by ensuring leadership roles are embedded throughout the change process. Leaders should actively train their staff and support and reinforce the desired changes. The role of leaders in the change process should be made explicit in the early stages of the process, illustrated in the *Unfreeze* stage of Lewin's (1947) model. This involves leadership taking proactive measures in training and preparation for change to facilitate a smoother transition and foster a supportive environment.

A communication strategy that fails to address all stakeholders' diverse needs and technology literacy levels may hinder effective engagement and readiness for change. Management could utilise Kotter's (1996) methodology, especially the steps focused on creating and communicating the vision of the change. A detailed, multi-faceted communication strategy should be developed to ensure that all stakeholders are effectively engaged and prepared for the changes ahead. Managers should develop a multi-faceted communication strategy by crafting a detailed plan that caters to stakeholders' varied needs and preferences, in order to ensure their effective engagement and readiness for change.

Post-implementation, organisations often face challenges that were not anticipated, including sustaining the change and optimising the benefits of the new technology. Managers should ensure post-implementation evaluation and support through robust mechanisms. This process includes adapting the technology to users' evolving needs and aligning its use with workflow enhancements. In this phase, managers should ensure that such support is continuous, and focus on alignment of the new technology with user needs. This involves establishing feedback loops and providing ongoing training and technical support.

By addressing these implications as part of the change strategy, managers could significantly improve the success rates of change initiatives. The integration of change management models

provides a structured approach to managing change. It emphasises the critical role of leadership, communication, and user-centric strategies in facilitating effective transitions. By acting as change advocates and embracing distributed leadership, managers can position themselves as pivotal change agents, driving successful implementation and adoption of new technologies within their organisations.

The study offers a holistic perspective on change management within the context of adopting new communication technologies in public universities. It demonstrates that transitioning from legacy systems to modern platforms is not merely an IT challenge but a strategic organisational change that requires comprehensive management, encompassing infrastructure, people, and processes.

The following section reviews the study's limitations and recommendations for future research.

6.5 Limitations of the Study and Avenues for Future Research

As with all research inquiries, this study is subject to certain constraints. Specifically, the investigation was confined to a solitary institution situated within a distinct economic sector and country, namely a public university in South Africa. Future studies could include additional public institutions and widen the examination to a comparison between public and private institutions, within and across countries.

The current study approach was mono-method qualitative. Future studies could incorporate quantitative data in a mixed-methods approach, in order to make the findings generalisable.

The current study was cross-sectional. Thus, additional research with a longitudinal time horizon could be conducted to explore the long-term effects of such changes on the operational efficiency of higher education institutions.

6.6 Summary of the Chapter

The transition to cloud-based unified communications is a complex yet necessary evolution if South African public universities are to keep pace with technological advancements and meet the dynamic needs of modern education. This research provides a foundation for understanding the multifaceted nature of such transitions, and offers practical guidance for university management to navigate future technology implementations successfully.

The findings of this study show the importance of all organisation leaders — and not only the IT department — in leading successful technology change. It is imperative that such change is holistically designed to prioritise user needs and that it is aligned with the organisation's strategy. It is also vital that leaders communicate the reasons for the need for change, together with the

new technology's perceived usefulness and ease of use, and then role-model acceptance and implementation of the new technology. These efforts should be underpinned by comprehensive training and readily available technical support. The implementation processes should be iteratively informed by feedback to ensure ongoing enhancement of acceptance and proficiency in using the new technology.

Post-implementation, organisational leaders have to play an active role in sustaining the change and optimising the benefits of the new technology by addressing negative feedback and making the necessary adjustments to enhance workflow and address users' needs. The successful integration of unified communications platforms can catalyse a transformative shift in how higher education institutions operate, ultimately enhancing their ability to deliver quality education and services in an increasingly digital world, thereby gaining a competitive edge and ensuring their sustainability.

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APPENDIX A: ETHICAL CLEARANCE



Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
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Senate Committee for Research Ethics
Tel: 018 299-484
Feziwe.Mseleni@nwu.ac.za

28 August 2023

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Economic and Management Sciences Research Ethics Committee (EMS-REC)** on, 25/08/2023 the Economic and Management Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-REC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Exploring the challenges of implementing new technology in a public university from a managerial perspective

Study Leader/Supervisor (Principal Investigator)/Researcher: Prof L Grobler

Student: R Labuschagne (12612944)

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Institution				Study Number						Year		Status		

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type:

Commencement date: 28/08/2023

Expiry date: 28/08/2024

Risk:

Minimal

Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

•

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- *The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the EMS-REC:*
 - *annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and*
 - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*
- *The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the EMS-REC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.*
- *Annually a number of studies may be randomly selected for an external audit.*
- *The date of approval indicates the first date that the study may be started.*

In the interest of ethical responsibility, the NWU-SCRE and EMS-REC reserves the right to:

- *request access to any information or data at any time during the course or after completion of the study;*
- *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;*
- *withdraw or postpone approval if:*
 - *any unethical principles or practices of the study are revealed or suspected;*
 - *it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented;*
 - *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
 - *new institutional rules, national legislation or international conventions deem it necessary.*

The EMS-REC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the EMS-REC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely,

Mark

Rathbone

Digitally signed by Mark
Rathbone
DN: cn=Mark Rathbone, o=North-
West University, ou=Business
management,
email=mark.rathbone@nwu.ac.za
, c=ZA
Date: 2023.08.30 09:35:04 +02'00'

Prof Mark Rathbone

Chairperson: NWU Economic and Management Sciences Research Ethics Committee

APPENDIX B: LETTER OF INFORMED CONSENT



NWU Business School
North-West University
Private Bag x6001
Potchefstroom, 2520
<http://commerce.nwu.ac.za/business-school>

10 October 2023

DEAR PARTICIPANT

INFORMED CONSENT TO PARTICIPATE IN INTERVIEW

You are invited to participate in a research study that aims to explore the change management process involved in transitioning from legacy PBX telephony to a cloud-based digital Unified Communications platform in South African public universities. The study seeks to gain insights into the challenges, strategies, and impacts of such technological transitions. Your participation in this study will contribute valuable perspectives to this research. Please carefully read the following information before deciding whether to participate.

The purpose of this study is to provide a detailed description of the transition process and change management strategies used during the implementation of a digital telephony project. By understanding your experiences and insights, the study aims to offer practical recommendations and best practices for university managers and decision-makers dealing with similar technology-induced changes.

This study has been approved by the NWU Economic and Management Sciences Research Ethics Committee (EMS-REC) and will be conducted according to the ethical guidelines and principles of the North-West University and other international ethical guidelines applicable to this study.

Title of the project: *Exploring the change management process for the implementation of a digital telephony project in a Higher Education environment*

Institution: NWU Business School

Ethics Reference Number: NWU-00738-23-S4

Names and contact details of project staff

	Supervisor	Researcher
Title, name & surname	Prof MJ Grobler	Mr R Labuschagne
Full Names	Leenta	Riaan
Function in Project	Principal Investigator	Researcher
Telephone	+27 828785894	+27 826628489

Participant's Role:

If you agree to participate, you will be requested to engage in a 45 – 60-minute semi-structured interview with the researcher. The interview will be conducted via an online platform, at a mutually agreed-upon time and private location to ensure no interruptions.



If you agree to participate, you will be requested to engage in a 45 – 60-minute semi-structured interview with the researcher. The interview will be conducted via an online platform, at a mutually agreed-upon time and private location to ensure no interruptions.

Benefits of Participation:

Participation in this study will not yield monetary rewards. However, it will give you the opportunity to share your valuable insights and perspectives on the change management process, contributing to the advancement of knowledge in this field. You will also receive a two-page communicate outlining the outcomes of the study, which may help you prepare for the interview.

Risks and Protection:

Participation in this study poses no physical risks, as it does not involve any physical activities or experiments. Ethical principles will be rigorously maintained to protect your dignity and confidentiality. Your identity will be anonymized by assigning a unique participant ID, and your responses will be treated as confidential information.

Protection of Personal Information Act (POPIA):

This study adheres to the principles outlined in the Protection of Personal Information Act (POPIA) to ensure the privacy and security of your personal data. All data collected from interviews will be coded and stored securely. Your personal details will be kept confidential, and your direct input will not be made public. Data will be accessible only to the research team involved in the project. The findings presented in the study will not include any raw data that could identify individuals.

Dissemination of Findings:

The findings of this study will be used for academic purposes and will contribute to the existing body of knowledge. If you are interested, you will be provided with a communicate summarizing the results of the study through electronic mail. Additionally, you can request the electronic final version of the dissertation for your reference.

Voluntary Participation:

Your participation in this study is entirely voluntary. You have the right to refuse or withdraw from the study at any time without any negative consequences. If you decide not to participate or withdraw, it will not affect your relationship with [University Name] or anyone else involved.

Contact Information:



If you have any questions or concerns about this study, you can contact the supervisor, Prof Leenta Grobler, at leenta.grobler@nwu.ac.za.

By proceeding with the interview, you are indicating your voluntary agreement to participate in this research study.

Participant ID: _____

Participant's Signature: _____ Date: _____

Researcher's Signature: _____ Date: _____



APPENDIX C: PERMISSION TO CONDUCT THE STUDY

PERMISSION GRANTED LETTER

Based on the documentation provided by the researcher specified below, on 06-October-2023 the _____ hereby grants permission for the specific project (as indicated below) to be conducted at the _____

Project title: Exploring the change management process for the implementation of a digital telephony project in a Higher Education environment.

Project leader: Prof Leenta Grobler

Researcher/Project Team: Mr Riaan Labuschagne

Ethics reference no: _____0738-23-A4

Specific Conditions:

1. Please clearly outline the exact process to be followed on the recruitment process and consenting process. Specifically, the researcher states that as the initial contact to participants, they will send the email to prospective participants detailing the aim of the study. It is unclear on where they will get these email address and whether these email addresses are on public domain. Will the consenting process be electronic or onsite and who will be handling the process.

Approval date: 06-October- 2023

Expiry date: 06-October- 2024

General Conditions of Approval:

- The _____ will not take the responsibility to recruit research participants or to gather data on behalf of the researcher. This committee can therefore not guarantee the participation of our relevant stakeholders.
- Any changes to the research protocol within the permission period (for a maximum of 1 year) must be communicated to the _____. Failure to do so will lead to withdrawal of the permission.
- The _____ should be provided with a report or document in which the results of said project are disseminated.

- Due to the COVID-19 pandemics the Committee would like to advice the researcher to practice the necessary caution and adhere to the National Covid-19 Guidelines when conducting research with participants.

Please note that under no circumstances will any personal information of possible research subjects be provided to the researcher by the [REDACTED]. The [REDACTED] complies with the Promotion of Access to Information Act 2 of 2000 (PAIA) as well as the Protection of Personal Information Act 4 of 2013 (POPI). For an application to access such information please contact [REDACTED] for the relevant enquiry form or more information on how the [REDACTED] complies with PAIA and POPI.

The [REDACTED] would like to remain at your service as scientist and researcher and wishes you well with your project. Please do not hesitate to contact the [REDACTED] for any further enquiries or requests for assistance.

[REDACTED]

[REDACTED]

Chairperson [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

APPENDIX D: TURNITIN REPORT

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APPENDIX E: CERTIFICATE OF LANGUAGE EDITING

TERESA KAPP

Phone:
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This serves to certify that I duly edited:

Exploring the change management process for the implementation of a digital telephony project in a higher education environment

by

R Labuschagne

12612944

I am an accredited editor with the University of Johannesburg, University of Stellenbosch Business School, NWU, UP, UCT, and GIBS, and my clients include the United Nations Global Compact, Absa, FNB, Takealot, and various other universities and organisations in South Africa and Namibia.

Please note that all editing is done in *Track Changes*, and I therefore have no control over what is accepted or rejected by the author. Furthermore, I have no control over text added at a later stage.

Should there be any queries, please contact me on the number provided above.



Teresa Kapp

APPENDIX F: INTERVIEW GUIDE

Introduction and warm-up:

1. Begin by introducing yourself and explaining the purpose of the study. Clarify that the interview aims to explore the change management process in transitioning from legacy PBX telephony to a cloud-based Unified Communications platform in South African public universities.
2. Express gratitude for the participant's willingness to take part in the interview.
3. Assure the participant that their responses will be treated confidentially and that their identity will be protected.
4. Offer the participant an opportunity to ask any questions or voice concerns before proceeding.

Participant Background:

5. Initiate by asking the participant to provide an overview of their role, responsibilities, and involvement within the university.
6. Delve into their direct engagement in the technological transition process, with a specific focus on their experiences during the shift from legacy PBX telephony to the cloud-based Unified Communications platform.

Technological transition process:

7. Elicit the participant's description of their personal experience throughout the technological transition process.
8. Probe for details regarding the various phases and stages of the transition, encompassing planning, execution, and post-implementation.
9. Inquire about challenges faced during the transition and the methods employed to overcome them. a. Request specific examples of how resistance to change was managed and resolved during the transition. b. Explore strategies or tactics used to effectively communicate the vision of the technological shift to stakeholders.
10. Seek insights into any unforeseen obstacles that emerged during the process.

Change management strategies:

11. Engage the participant in discussing the change management strategies utilised in the context of the technological transition.
12. Probe into the strategies implemented to mitigate resistance to change among various stakeholders.

- a. Inquire about how awareness was generated among employees regarding the necessity and potential benefits of the technological transition.
 - b. Discuss efforts made to instil desire and motivation among individuals to actively participate in the transition.
 - c. Explore methods employed for enhancing employees' knowledge and competencies concerning the new technology. Inquire about the provision of training and support.
 - d. Discuss the assessment and addressing of individuals' capability to enact and sustain the changes
 - e. Seek examples illustrating the impact of the transition on reinforcing employees' efforts and recognising their contributions.
13. Explore the participation of different departments or units within the university in executing the change management process.

Communication practices:

- 14. Transition the conversation towards the role of communication in the technological transition process.
- 15. Ask about the effectiveness of communication channels and tools employed for disseminating information.
- 16. Probe for any instances of communication challenges or gaps encountered during the transition.
- 17. Discuss strategies employed to ensure efficient communication among diverse stakeholders.
 - a. Seek insights into strategies or initiatives focused on enhancing employees' perception of the new technology's usefulness and ease of use.
 - b. Inquire about the evolution of employees' attitudes and intentions regarding the adoption and utilisation of the new technology
 - c. Explore external factors or social influences that might have impacted employees' acceptance and adoption of the technology.
 - d. Request examples of methods used to measure and evaluate the actual usage and effectiveness of the technology.

Success factors and lessons learned:

18. Ask the participant to share their perspective on the key factors influencing the success or challenges of the technology transition process.
19. Inquire about valuable lessons learned from this transition that could be applicable to future technology shifts within higher education institutions.
20. Discuss the broader implications of the transition on the university's operational efficiency and stakeholder satisfaction.
21. Explore the participant's insights into the potential implications of the transition for higher education institutions as a whole.

Conclusion:

22. Express gratitude for the participant's time and valuable input.
23. Offer an opportunity for the participant to ask any final questions or provide additional comments.
24. Reiterate the confidentiality of their responses and emphasise that their input will contribute to valuable insights for the study.

Interview questions:

Introduction and consent

- Welcome
- The purpose of this study is to:

Explore the change management process for the implementation of a digital telephony project in a higher education environment

- We'll ask you questions to dig deep and gather valuable insights. These questions will focus on change management, tech transitions, and communication practices to better understand your experiences.
- Did you comprehend the rules of this interview and what you are consenting to?
- Do you consent to voluntarily participating in this study?
- Do you have any questions or concerns before we start the interview and its recording?

Participant background

Briefly introduce yourself and your role within the university.

Technology transition

1. How did the shift from old-school telephony to a digital telephony platform like Skype for Business fit into your department's goals at the university?
2. Can you give real-life examples of how this change affected your team? And, as both a manager and user, what parts of the transition were a big deal or a bit tricky in your day-to-day duties?
3. When you think about those challenges, can you share some examples of how they impacted your team's productivity and efficiency?

Change management strategies

4. Did the change management approach used in this project work well for your team? If so, what parts were most helpful? If not, what could have been done better to make it more effective?
5. In what way did the change management approach help your department adapt and contribute to the project's success? Did it also help overcome any specific challenges or problems?
6. Did you experience any resistance to change in your department to the implementation of the project, and if so, how was it addressed and resolved?

Communication practices

7. How important was communication during the technology shift to Skype for Business, and were there any specific communication channels or technologies that were particularly effective or inefficient in reaching stakeholders?
8. How well did the communication between the project team and end-users keep you in the loop and address any concerns during the transition?

Successful transition

9. To what extent have you noticed any significant changes in work, productivity, or collaboration in your department due to technological change?
10. Can you give any examples of how your role as a manager altered throughout that time, including any new challenges you faced? Finally, what does this transformation signify for the management of higher education institutions?

Success factors and lessons learned

11. Can you tell us what you think were the main factors that made the tech transition work well or caused some issues?

12. Should the system be re-implemented within a public university setting, what amendments to the project framework would you advocate for to empower management to effectively guide their teams through the comprehension and adaptation of the changes?
13. How did you perceive the move to the new technology, and does this empower your colleagues to be more productive?
14. Finally, in your opinion, how did the transition to new technology affect a public university?

Conclusion

Do you have any final questions or additional comments on the specific transitional change?

Thank you for your valuable time and contributions. Your input is vital for this research.

APPENDIX G: RECRUITMENT MATERIAL

Subject: Invitation to Participate in a Research Study Exploring the change management process for the implementation of a digital telephony project in a Higher Education environment

Dear [Participant's Name],

I am writing to extend a personal invitation for you to participate in an important research study titled "*Exploring the change management process in for implementation of a digital telephony project.*" As an MBA Student at the NWU Business School, I am undertaking this study to delve into the challenges and strategies associated with the transition from legacy telephony systems to advanced cloud-based digital communication platforms within our university. Given your role as [role/position] at the NWU, your insights and experiences are particularly valuable to this study.

I want to assure you that this research endeavor has undergone meticulous ethical scrutiny and has been granted approval by the EMSREC committee. Furthermore, I have meticulously followed the appropriate protocols to access university staff and data, with guidance from the Research Data Gatekeeper Committee (RDGC) under the supervision of the university registrar. These steps are taken to ensure that your participation and any data handling are conducted in a conscientious and ethical manner.

Your participation in this research is entirely voluntary, and I want to emphasize that all information shared will be treated with the utmost confidentiality. Any data collected will be anonymized during analysis and reporting. Your rights and privacy as a participant will be upheld throughout the study.

Should you choose to participate, you will be invited to engage in a semi-structured interview with my supervisor, Prof Leenta Grobler. During this interview, we will discuss your unique perspectives on the technological transition process, strategies for managing change, and communication practices within the context of this digital transformation initiative. The interview is expected to take approximately 45 minutes and can be arranged at a time and location convenient for you. If preferred, a virtual interview via MS Teams can also be facilitated.

I want to emphasize that your involvement in this study is pivotal in providing insights that could shape best practices and recommendations for managing similar technological transitions within higher education institutions. The knowledge generated from this study has the potential to benefit both our university and the broader higher education sector.

If you are interested in participating or if you would like to acquire more information about the study, please feel free to contact me directly at +27 826628489. Your contribution would not only be highly appreciated but also acknowledged in the final research report.

I extend my gratitude for considering this invitation. I eagerly anticipate your response and sincerely hope that you will consider participating. Your involvement will undoubtedly contribute to the advancement of knowledge in the realm of higher education technology transitions.

Warm regards,

Gatekeeper

Yvette Labuschagne

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Mobile: +27 824825220

Email: Yvette.labuschagne@nwu.ac.za