Digital Transformation and Organisational Change

A Case Study Analysis

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MASTER'S THESIS

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Degree Programme and place of study: Master of Business Administration

Specialization: Digital Business and Management

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Title: Digital Transformation and Organisation Change Management (A Case Study Analysis)

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Date: 28.5.2024   Number of pages: 81   Appendices: 1

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Abstract

Digital Transformation is often about adopting new technologies to enhance operations and processes and improve performance. However, despite its many benefits, implementing a digital transformation can be challenging for different reasons, one of which is employees' resistance to change. This research investigates the role of stakeholder management in facilitating employee adoption of new technologies during digital transformation.

The research adopted a systematic literature review to analyze 4 case studies from different sectors, including banking, medicine, and government. A thematic analysis was conducted on the case studies, revealing inclusive vision and clear communication, active employee engagement, a culture of adaptability, and a focus on talent management and skills development as imperatives. These practices can help drive employee buy-in, reduce resistance to change, and ultimately lead to successful technology adoption. Findings from further analysis revealed critical practices across technology deployment, stakeholder management, and Organisational change are of the most importance for the successful implementation of a digital transformation initiative.

Challenges in the implementation of digital transformation were acknowledged. The research documented overcoming employee resistance, managing diverse stakeholders' needs, and measuring the impact of stakeholder management practices; areas change leaders may find challenging, and potential strategies to mitigate these challenges were suggested. Regardless of the challenges of implementing digital transformation, it holds good promise of optimizing operations and enhancing operational performance, as seen in the case studies.

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Language: English
Key Words: Digital Transformation, Stakeholder Management, Employee Engagement

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1. Introduction

1.1 Background of the Study

The methods people use to work, and the tools they rely on for productivity are evolving rapidly. Following the global pandemic that tested the capacities of healthcare systems, organizations learned about the benefits of introducing new technologies to improve efficiency and ensure competitive advantage. This digital revolution is only possible if people who they are procured and designed for adopt it for work. Thus, stakeholders' adoption of new technologies is crucial for digital transformation (DT), promising significant improvements in efficiency, productivity, and overall performance. However, realizing the full potential of these DT initiatives hinges on a critical factor: employee willingness and ability to embrace and effectively utilize these new tools.

In this academic research, the crucial role of stakeholder management in influencing employee adoption during DT was investigated. Specifically, we address the following question: How does stakeholder management influence employee adoption of new technologies during DT initiatives? High employee adoption rates are essential for maximizing the return on investment (ROI) associated with the design and development of new technologies DT efforts. Studies have shown that a lack of user buy-in can significantly hinder the financial benefits of these initiatives, leading to wasted resources and unrealized potential. Conversely, successful adoption can lead to numerous advantages, including increased productivity, enhanced customer satisfaction, and a more decisive competitive edge in the ever-evolving digital landscape (Hoang & Le Tan, 2023; Zhang et al., 2023).

By effectively managing stakeholders, particularly employees, organizations can create an environment that fosters understanding, reduces resistance to change, and ultimately facilitates the successful adoption of new technologies. This research systematically reviews literature and case studies on the topic. This research looks into the key themes and strategies that contribute to effective stakeholder management in this context. Through a case study analysis approach, we explore real-world examples of how organizations from diverse industries have implemented stakeholder management practices to drive employee adoption during DT initiatives. By

examining these case studies, we aim to identify successful strategies that can be applied across a variety of Organisational contexts to ensure a smooth and successful DT experience for all stakeholders.

1.2 The Problem Statement

Organizations often face different issues when successfully implementing the desired DT goals. One of these is employee buy-in to the transformation and adoption of this strategic goal.

This study will investigate the role of stakeholder management in the implementation of digital transformation.

1.3 Research Questions

The research adopts the following question to serve as a sort of direction for investigating the aforementioned areas of interest: How does stakeholder management influence employee adoption of new technologies during digital transformation initiatives?

1.4 The objective of the study

By focusing on employee adoption, a crucial factor in achieving digital transformation success and its benefits thereafter, this research aims to:

a. Identify the critical challenges associated with stakeholder management in a digital transformation.
b. Evaluate the role of stakeholder management in managing resistance to change during a digital transformation initiative.
c. Assess the effectiveness of stakeholder management strategies during a digital transformation.

Subsequently, in this review of literature, thematic topics that provide more knowledge on the research are reviewed and analyzed to find supporting arguments and unearth research gaps that need more attention. This literature is discussed in themes in the following sections.

2. Literature Review

2.1 Introduction

The digital revolution has fundamentally reshaped the 21st-century business environment, pushing organizations to embrace technology-driven business processes and operations. This newfound yearning for efficiency has seen businesses design and implement digital transformation (DT) initiatives to enhance their operations. It is a topic that has generated high interest among industry and academic professionals (Morakanyane, Grace & O'Reilly, 2017). DT encompasses a comprehensive shift in how businesses operate, involving the adoption of new technologies, the redesign of processes, and, often, the cultivation of a digital-first culture. This initiative, however promising or beneficial, can be challenging to implement without resistance. To successfully scale through a change-averse culture amid a DT, organizations need to effectively manage organizational change and secure the buy-in of all stakeholders. This paper looks at the critical intersection of organizational change management and stakeholder engagement in the success of DT initiatives.

2.2 Definition of Terms

2.2.1 Digital Transformation

As a very popular topic among research professionals (Mahmood, Khan & Khan, 2019), and in a bid to provide a simpler or more encompassing definition of what DT is, several scholars have provided different explanations for DT. DT is a process that involves fundamental changes in an organization's processes, strategies, and culture to leverage digital technologies and achieve competitive advantage (Morakanyane et al., 2017). Other scholars believe DT can also be referred to as 'digitalization' (Vaska, Massaro, Bagarotto, and Dal Mas, 2021), as it involves the integration of digital technologies into those processes that power a business. (Liu, Chen, & Chou, 2011). It has been suggested that DT can be the adaptation of business models to suit emerging trends in technological advancement, which influence the behavior of consumers (Kotarba,

2018). This notion was echoed by Verhoef et al. (2021), who maintained that DT profoundly "altered consumers' expectations and behaviors." While DT is not a novel topic or phenomenon among academics or industry experts, there seems to be a lack of a universally accepted definition for the term (Kotarba, 2018). The way an organization changes and applies its digital strategy to unlock more firm value through a revamped business model is DT. Thus, DT primarily affects the business model of organizations, often catalyzing value creation through new business models inspired by new technologies.

2.2.2 Process Innovation

The academic literature underscores the critical role of process innovation in achieving and sustaining a competitive advantage in today's digital landscape (Appio et al., 2021; Suwignjo et al., 2021). While product innovation receives significant attention, process innovation offers a distinct path to advancement by focusing on optimizing existing workflows and operations (Lugovoi et al., 2018). This section explores the concept of process innovation and its growing importance in the context of DT.

Innovation encompasses a broad spectrum of activities, and process innovation represents a specific focus on enhancing the efficiency and effectiveness of existing business processes (Suwignjo et al., 2021). It can involve a wide range of initiatives, from automating repetitive tasks using technologies like Robotic Process Automation (RPA) to leveraging data analytics for informed decision-making (Dasig, 2017). The ultimate goal of process innovation is to streamline operations, reduce waste, and ultimately improve organizational performance (Bauer & Leker, 2013). The digital revolution presents a unique opportunity to accelerate process innovation (Appio et al., 2021). Digital technologies like cloud computing and artificial intelligence offer powerful tools for streamlining workflows, automating tasks, and gaining deeper insights into operational performance.

2.3 Theoretical Background

In this section, the research reviews the theoretical underpinnings of a successful DT initiative. Through established theories, frameworks, and models, it aims to build on and further contribute to the theoretical knowledge for implementing or managing DT initiatives in organizations. In the subsequent sections, we will explore fundamental theories and frameworks that offer valuable insights into critical aspects of DT.

2.3.1 Digital Transformation

Technology Acceptance Model

The Technology Acceptance Model (TAM) stands as a critical theory in understanding and predicting user adoption behavior, particularly relevant in the context of DT initiatives. Developed by Fred Davis, TAM builds upon the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior – a psychological model that explores the factors influencing behavior (Sagnier et al., 2020). TAM posits that two beliefs drive a user's intention to adopt a new technology: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which an individual believes the new technology being introduced will enhance their job performance and improve their ability to achieve their goals (Salloum et al., 2019). In the context of DT, this translates as clear communication highlighting the benefits of new technologies that can significantly enhance perceived usefulness. For example, employees may be more likely to adopt a new project management tool if they understand how it can streamline workflows and improve collaboration. Sagnier et al. (2020) confirm that perceived usefulness is often the more robust predictor of user adoption. However, the influence of perceived ease of use on intention to use can vary (King & He, 2006; Yousafzai et al., 2007). This underscores the importance of addressing both factors within a comprehensive stakeholder management strategy.

While TAM offers a good foundation for understanding technology adoption, which is crucial for DT, it primarily focuses on individual user perceptions. The Diffusion of Innovation Theory Provides a holistic understanding of DT success by exploring the social and cultural factors influencing the adoption of new technologies within organizations.

Diffusion of Innovation Theory

The Diffusion of Innovation (DOI) theory, introduced by Rogers in 1962, helps in understanding how innovations, encompassing new ideas, practices, or technologies, spread through social systems over time (Sipahutar et al., 2020). DOI theory emphasizes communication as a critical driver of the diffusion process, stressing how information about innovations is shared among members of a social system – possibly an organization - in different ways. The DOI outlines the five stages individuals typically go through when considering an innovation (Yuen et al., 2021). The first stage is the knowledge stage, where individuals become aware of an innovation and gain basic information about its functionalities. Effective communication strategies during DT initiatives are crucial at this stage. By ensuring employees are exposed to the new technologies and understand their potential benefits, organizations can lay the groundwork for successful adoption. In the second stage, the persuasion stage, individuals form an opinion about the innovation based on the information they have gathered per Yuen et al. (2021). Social influence plays a significant role here.

The third stage is the decision stage, which is the point at which individuals decide to adopt or reject an innovation that could be the key technology for a DT initiative. The decision is often influenced by a combination of factors, including the perceived benefits (relative advantage) of the innovation, its compatibility with existing workflows, and its ease of use (Yuen et al., 2021). The implementation stage involves putting the innovation into practice. Providing ongoing support and addressing any challenges employees encounter during implementation is crucial for successful adoption. Furthermore, encouraging user feedback and allowing for adaptations to the technology can enhance its usability and user satisfaction (Frei-Landau et al., 2022). Finally,

in the confirmation stage, which is the fifth stage, individuals reflect on their decision and seek confirmation that they made the right choice (Frei-Landau et al., 2022). Positive experiences during the implementation stage can solidify user acceptance and encourage continued adoption of the innovation.

2.3.2 Stakeholder Management Theories

Stakeholder Theory

For an extended period, the stakeholder theory has remained prominent in business ethics and organisational management, providing a perspective that extends beyond traditional shareholder primacy. Its origins can be traced back to the 1960s when the concept of stakeholders first gained traction (Mahajan et al., 2023). This was further developed by Stanford Research Institute, showing the importance of considering not just shareholders but all groups who can affect or are affected by the organisation (Dmytriyev et al., 2021). This marked a significant shift from the prevailing view that focused solely on maximising shareholder returns. A seminal work by Freeman (1984) further solidified the foundation of stakeholder theory. He defined a stakeholder as "any group or individual who can affect or is affected by the achievement of the organisation's objectives" (Freeman, 1984, p. 46, as cited in Barney & Harrison, 2018). Freeman argued that traditional management theories were inadequate in addressing the complexities of the modern business environment and that a stakeholder approach was necessary (Kivits & Sawang, 2021).

Stakeholder theory posits that organisations are embedded within a network of interrelated stakeholders, each with their interests and claims (Dmytriyev et al., 2021). These stakeholders can be broadly categorised as those who affect the organisation (e.g., employees, suppliers) and those who are affected by the organisation (e.g., customers, communities) (Dmytriyev et al., 2021). In the context of DT, stakeholder theory is particularly relevant. DT initiatives often involve the adoption of new technologies, which can have widespread impacts on stakeholders. Employees may require training and support to adapt to new workflows, while customers may

need to adjust to new ways of interacting with the organisation. By proactively considering the needs and concerns of all stakeholders throughout the DT process, organisations can increase the likelihood of successful implementation and minimise disruption.

Kotter's Change Management Theory

DT can be a complex process that requires significant change across an organisation. Successfully navigating this change requires a structured approach that considers the needs and concerns of all stakeholders. John Kotter's eight-step change management model (Wentworth et al., 2020) provides a valuable framework for organisations embarking on DT journeys while ensuring stakeholder management remains at the forefront (Kang et al., 2020). The initial steps of Kotter's model lay the groundwork for successful transformation. The first step, creating a sense of urgency, involves clearly communicating the compelling reasons for change to all stakeholders (Kang et al., 2020). The second step, building a guiding coalition, emphasises the importance of assembling a dedicated team with the necessary knowledge, skills, and influence to champion the change initiative (Kang et al., 2020). The third step in Kotter's model focuses on developing a clear vision, and the fourth is effectively communicating it to stakeholders. Forming a strategic vision for change involves outlining the desired future state of the organisation post-transformation (Kang et al., 2020). The theory requires this vision to be aspirational yet achievable. Removing obstacles the fifth step involves identifying and addressing any potential roadblocks that could hinder the implementation of the DT plan (Kang et al., 2020).

Create short-term wins as the sixth step focuses on celebrating early successes and milestones achieved during the DT journey. Kotter's model highlights the importance of consolidating

improvements as the seventh step to ensure the changes become embedded within the organisation's culture. The final step, anchoring the changes in corporate culture, emphasises the need to institutionalise the new practices and behaviours adopted during the DT process (Kang et al., 2020). Adopting this framework for a DT initiative will ensure that the implementation of the DT process is structured and that stakeholders are kept engaged and informed.

2.4 Key Characteristics of Digital Transformation

DT is not a standalone phenomenon. It is motivated by the evolution of different digital technologies, and the process of a DT involves the adoption of digital technologies (Iyanna et al., 2022). Iyanna et al., in assessing DT in the healthcare sector, identified a number of technologies that it suggested could be adopted to enhance a firm's performance since DT facilitates market differentiation through technology adoption (Jahanmir et al., 2020). Perhaps this is why technology adoption has been observed as a characteristic of DT (Antonizzi & Smuts, 2020). Therefore, when organisations adopt new digital technologies, they trigger DT and influence and improve competition (Cavalcanti, Oliveira & de Oliveira Santini, 2022). From the mid-1990s, when the advent of the internet created new business models, the adoption of new technologies provides organisations with the support they needed to succeed with DT initiatives (Zhang et al., 2023).

In their systematic review of the literature, Morakanyane et al. (2017) found that DT can be described based on behavioural characteristics that include "radical, disruptive, evolutionary, continuous, and complex." These characteristics mirrored the impact of DT on organisations.

2.5 Technology Adoption: Drivers, Impacts, and Challenges

Digital technologies play crucial roles in transforming organisations digitally. The adoption of digital platforms or technologies can catalyse the process of DT and ensure that a DT initiative is successful (Hoang & Le Tan, 2023), as it is vital to DT (Zhang et al., 2023). Many definitions have

been given to describe what technology adoption is, and one that is notably popular among them is the one given by Khasawneh (2008), where the author defined technology adoption as the first time a technology or product is used or accepted. It has also been defined as the extent to which an organisation or enterprise use technology (Abdallah, 2016, as cited in Saqer Saif Almehairbi, Jano, & Abo Mosali, 2022). The adoption of platforms, as Hoang and Le Tan (2023) note, is a notable option for businesses or organisations that seek to create more opportunities through their operations, even with lean resources. Thus, the scholars opined that "digital transformation has become a crucial undertaking for" businesses that depend on traditional or non-digital business operations for sales.

Even with the benefits that come with technology adoption, organisations sometimes grapple with resistance from employees (Robu & Lazar, 2020). This can be due to one or a number of reasons. Hoang and Le Tan, in their research 'Unveiling digital transformation: Investigating technology adoption in Vietnam's food delivery industry for enhanced customer experience', discussed some of these reasons using different models and theories. Firstly, the scholars acknowledged the Technology Acceptance Model (TAM) and identified 'perceived ease of use' as a critical factor for technology acceptance. Technology acceptance can be described as "the choice of an individual to accept new technology voluntarily is known as technology acceptance" (Kamal, Shafiq, & Kakria, 2020). TAM pins the adoption of technology on how much effort or existing knowledge and skills are required to use a particular technology. If adopting technology will see individuals experience a change in their workflows, they may be reluctant to give their buy-in (Iyanna, 2022). These translate to features starting from accessibility, intuitiveness, and convenience (Hoang & Le Tan, 2023) to product quality and usefulness (Rafique et al., 2020).

Understanding the drivers, impacts, and challenges associated with DT is crucial for organisations navigating this transformative journey. Several factors motivate organisations to embark on DT. Morakanyane et al. (2017) identify digital capabilities and maturity, digital technologies, strategies, and business models as key drivers. These factors are often interconnected, with digital technologies acting as the foundation for developing digital capabilities and implementing new strategies and business models. However, simply possessing advanced technologies is not

sufficient. Kane et al. (2015) emphasise the importance of combining digital technologies with digital leadership, a culture that embraces change, and a skilled workforce to achieve successful DT. However, the research by Jones et al. (2021) explicitly explores DT within the manufacturing sector. Their findings suggest that process improvement and customer demands are two of the most significant drivers for organisations and can be applied to different sectors.

The benefits of DT are multifaceted. Jones et al. (2021) highlight studies that identify value creation, operational efficiency, enhanced customer relationships, and the development of new business models as critical impacts. DT can streamline processes, reduce costs, and improve customer satisfaction through increased engagement (Mahmood et al., 2025). Furthermore, it Allows organisations to develop innovative business models that leverage digital technologies to create new value propositions for customers.

While the potential benefits of DT are significant, there are also substantial challenges to consider. Jones et al. (2021) acknowledge that research often simplifies the complexities involved. One of the critical challenges identified is the uncertainty surrounding "how" to transform rather than "if" transformation is necessary (De Carolis et al., 2020). Organisations may struggle with developing a clear vision and roadmap for DT, as well as identifying the specific areas that require the most significant changes (Morakanyane et al., 2017). These challenges can come in different ways. Jones et al. (2021) highlight the importance of addressing cognitive barriers to DT. These barriers can include resistance to change, a lack of understanding of digital technologies, or a fear of job displacement. Leaders play a critical role in fostering a culture of innovation and continuous learning while also addressing employee concerns and ensuring a smooth transition to new ways of working.

2.6 Theoretical Perspectives on Digital Transformation

2.6.1 Digital Transformation and Business Process Reengineering

Different scholars from different lenses have discussed DT, and it has been compared with similar but different concepts (see Tomičić Furjan, 2020). For one, Tomičić Furjan (2020) acknowledged

the similarities between DT and Business Process Reengineering (BPR). While BPR is primarily focused on reorganising the operating processes of an organisation (Harika et al., 2021), DT leverages digital technologies to improve products, structures and workflow (Clohessy, Acton & Morgan, 2017). Fundamentally, DT digitises operations where applied, and on the other hand, BPR is an effort to modify business processes to enhance organisational activities. Fetais et al. (2022) described BPR as an approach designed to improve the performance of an Organisation for competitive advantage.

2.6.2 Digital Transformation, Digitalisation, and Digitisation

It is not uncommon for DT to be used interchangeably with digitalisation or Digitisation. Although they may seem similar, they have different connotations. This mix-up has been identified by some scholars (see Elia et al., 2024 and Schallmo, Williams & Boardman, 2017). Vrana and Singh (2021) described Digitisation, digitalisation, and DT and different concepts. Per Elia et al. (2024), neither digitisation nor digitalisation has the same effects as DT. Digitalisation is a trend that empowers new or established businesses to create high-value digitally powered value propositions to pose an 'existential threat' to non-digitally powered business models. DT, on the other hand, allows businesses not 'born digital' to incorporate digital technologies into products, services, and organisational processes. (Lang, 2021).

In contrast to the description of digitisation provided by Elia et al. (2024), where digitisation is given as the creation of digital versions of physical artefacts, Gavrila Gavrila & De Lucas Ancillo (2022) suggested digitisation is the procurement of software and hardware tools to upgrade capacity by automating analogue processes. The two research studies also differ in their definitions or descriptions of DT. While the former sees DT as the combination of digitisation and digitalisation, the latter opined DT or digitalisation is simply the deployment of digital tools to enhance business models. In later research, De Lucas Ancillo and Gavrila Gavrila (2023) maintained a reasonably similar position that digitisation and DT can be used to 'improve the way business is done.'

2.7 Scope and Objective of Digital Transformation

Schallmo, Williams and Boardman (2017) suggested that the primary aim of DT is collecting data to reimagine 'old rule-based processes.' Schallmo et al. (2017) used Airbnb's business model of micro-leasing properties to create value for their customers. This thought process is not far from Chanias, Myers & Hess's (2019) opinion on DT as an effort with a long-term objective of DT. Chanias et al. (2019) further opined that the scope of DT includes transforming structural elements in an organisation and deploying digital technologies to either improve or create new business models.

Thought leadership Berman (2012), while discussing the opportunities presented by DT to create new business models, suggested that DT does not have to be holistic. Berman noted that organisations that operate primarily in physical industries can implement DT without having to start from scratch. The idea Berman shared was the possibility of transforming parts or select operations that could have a significant impact on operating capabilities, e.g. interactive websites and customer service channels. In a similar vein, it has been suggested that DT as a form of a business concept can be used for business improvement initiatives like developing new products or services, enhancing customer experience, and creating new business models (Tomičić Furjan, 2020). These opinions indicate DT is not only a technology-based solution for organisations.

2.8 Stakeholder Management in Digital Transformation

Implementing DT can be a challenging process despite its many benefits (Jadertrierveiler, Sell & Santos, 2019). These challenges can either be from the market, within the organisation or as a result of economic or social factors (Papavasiliou & Gorod, 2022). Papavasiliou and Gorod (2022) provided some examples of these challenges, such as supply chain changes, modification of services models, financial requirements, and environmental sustainability concerns, and the paper identified stakeholder management as an enabling factor of DT. A stakeholder has been defined as a person who can affect or is affected by an organisation or a process (Freeman, 1984: p. 46) or someone with a stake in a particular circumstance (Straus, 2002). Enabling factors in this

context are those elements organisations can leverage to facilitate the adoption or implementation of digital technologies for DT.

Stakeholder management is a building block for DT, and "the role of stakeholders needs to be prioritised and emphasised throughout transformation" (Papavasiliou & Gorod, 2022). Overcoming resistance from stakeholders during the implementation of a DT process can be a daunting task. This is because transitioning to new technologies and workflows can disrupt established routines and create resistance among employees (Robu & Lazar, 2020). Uncertainty, a lack of understanding of the new technologies, or simply discomfort with change can lead to employee pushback, hindering adoption and potentially derailing the transformation process, hence the need for adequate stakeholder engagement to build capacity and trust (Haar, 2024; Robu & Lazar, 2020).

Banks et al. (2016) emphasise the importance of stakeholder management in creating sustainable value for organisations. They define stakeholder management as the practice of incorporating the goals and concerns of relevant stakeholders into organisational policies and strategies. Identifying key stakeholders and understanding their relative power, legitimacy, and urgency are crucial aspects of this process (Banks et al., 2016). The scholars argue for a strategic approach to stakeholder management, where stakeholder relationships are aligned with the organisation's overall strategic positioning. This perspective suggests that stakeholder engagement can be a source of competitive advantage when it contributes to either cost leadership or differentiation strategies. For instance, fostering a culture of employee engagement can enhance customer satisfaction and ultimately lead to higher customer willingness to pay, contributing to a differentiation advantage (Banks et al., 2016). Similarly, Papavasiliou and Gorod (2022) underscore the critical role of stakeholder engagement throughout the DT journey. They argue that successful transformation hinges on understanding and incorporating the needs, expectations, and requirements of a diverse range of stakeholders, both internal and external (Papavasiliou & Gorod, 2022). This necessitates a comprehensive stakeholder identification process, followed by ongoing communication and consultation mechanisms. Effective stakeholder management involves not just identifying stakeholders but also analysing their roles,

interests, constraints, and values. By employing stakeholder management theories and tools, organisations can ensure meaningful stakeholder participation, fostering collaboration and co-design opportunities during the DT process (Papavasiliou & Gorod, 2022).

While engagement is crucial, Brunetti et al. (2020) remind us of the importance of stakeholders' readiness for the significant changes that DT often entails. Organisations need to systematically address stakeholder concerns and anxieties associated with digitalisation, echoing a similar position as Papavasiliou and Gorod (2022). This can involve educational initiatives to enhance digital literacy and clear communication strategies that outline the rationale and potential benefits of DT initiatives. Building trust with stakeholders throughout the process is crucial for securing their buy-in and fostering a collaborative environment conducive to successful transformation (Brunetti et al., 2020). He et al. (2020) also highlight the transformative impact of DT on stakeholders and the new collaborative possibilities made possible by digital technologies. Managing these intricate relationships, often characterised by openness, multilateral interaction, and non-linearity, presents a significant challenge for leaders (He et al., 2020). He et al. (2020) also agree that building trust is essential, and achieving a win-win scenario within these extended ecosystems requires innovative stakeholder management strategies.

Regardless of the stakeholder management strategy employed, some challenges threaten the success of successful DT processes within the context of stakeholder management. For example, Ferrer et al. (2023) identify internal power dynamics as a significant hurdle in stakeholder management. Following their interview with human resources (HR) professionals, they found, for instance, professionals responsible for stakeholder management – HR in this case - grapple with the challenge of what they described as "managing up," which involves influencing senior managers who may hold different perspectives or resist change (Ferrer et al., 2023). This necessitates effective communication strategies that consider not just "what" needs to be communicated but also "how" to convey messages in a way that resonates with stakeholders at different levels of the organisational hierarchy (Ferrer et al., 2023).   Beyond effective communication, navigating power imbalances may require building solid relationships with senior leaders over time and establishing credibility and trust through consistent competence

and valuable contributions. Building trust with stakeholders requires acting as a trusted partner while also influencing and potentially challenging decisions made by senior management that, for example, may not be in the interest of a DT initiative.

Saron (2020) highlights the limitations of a "one-size-fits-all" approach to stakeholder management. While standardised processes can ensure consistency, Saron believes they may not adequately account for the unique context and needs of different stakeholders (Saron, 2020). For instance, the research adopted the analogue of a technical developer who may require in-depth information on the technical specifications of a new system. At the same time, a senior executive may be more interested in the broader implications for the organisation's strategic direction. Effective stakeholder management requires flexibility and the ability to tailor engagement strategies to meet the specific interests and priorities of diverse stakeholder groups. This may involve segmenting stakeholders based on shared characteristics and interests and developing targeted communication and engagement plans for each segment.

2.9 Change Management in Digital Transformation

In today's ever-evolving business environment, organisations are constantly seeking ways or opportunities to remain competitive by ensuring processes and operations are fully optimised. DT, as has been established in this research, is one of the ways an organisation can empower its people, processes, and operations to enhance performance. To achieve this, organisations have to go through a period of change, the difference between their current operational system and their preferred state. Managing that period in time is managing change or change management. Change management can be described as techniques leaders or managers of an organisation adopt to align the organisation to the external environment (Lauer, 2021). Describing change management as the adoption of processes to manage change and achieve set organisational objectives, Udofia and Stanley (2021) posited that the practical application of such processes or steps can help organisations achieve business solutions and long-term success. DT, as a business solution, can benefit from appropriate change management techniques.

However, going through a DT process and adopting new technologies can be challenging due to technical and human factors (Pulido & Taherdoost, 2023). Pulido and Taherdoost (2023) highlighted the critical role of change management during DT and the need to manage resistance to change, which it underscored as one of the most potent challenges organisations going through DT face. In studying how to manage change in the digital age, the scholars reviewed and compared six change management models against a total of 8 DT models in order to identify areas of similarities or differences. Pulido and Taherdoost discussed the Kotter eight-step model (Kotter, 1996), explaining the eight barriers hindering change success, which Kotter represented as eight steps for ensuring a successful change management initiative. They also reviewed the General Electric Change Acceleration Process (CAP), including William Joyce's MegaChange model, which prioritised the strengths of individuals over their weaknesses. Other change models reviewed were Kirkpatrick's model, ADKAR model and Kotter's dual system. These change management models were then evaluated against DT models proposed by eight different management consulting firms. Following the review and analysis of the six change management models and 8 DT models, Pulido and Taherdoost (2023) developed a 4-stage framework that consolidated the major activities captured in the 14 models they reviewed, and they are *getting ready, strategy, enable change, scale up* and *deliver value*. For each of these stages, the scholars provided activities essential for both change management and successful DT initiatives.

Kamdjoug (2024) and Hanelt et al. (2020) establish change management as a critical cornerstone for achieving successful DT. Kamdjoug (2024) argues that robust change management practices directly influence the success of IT projects, which act as fundamental building blocks for DT. This success hinges on various change management activities, including stakeholder management, communication, user training, and ongoing support (Ramzan & Ikram, 2006; Xiu et al., 2019). By implementing these practices, change management fosters a positive impact on human resources by enhancing capabilities through targeted training programs (Hee & Shanmugam, 2019). Hanelt et al. (2020) offer a distinct perspective, approaching DT from an organisational change lens. They acknowledge the ongoing debate surrounding a universally agreed-upon definition for DT. However, they highlight a common thread: the widespread adoption of digital technologies necessitates organisational adaptation. This adaptation compels organisations to

undergo a form of "organisational change triggered and shaped by the widespread diffusion of digital technologies." In essence, they posit that DT can be viewed as a specific type of organisational change fueled by technological advancements, requiring a shift in not just processes and technologies but also company culture and employee mindsets.

With resistance to change established, both Kamdjoug (2024) and Pulido & Taherdoost (2023) emphasise the importance of securing senior management support for successful change initiatives, particularly within the context of DT. Kamdjoug (2024) highlights that the early stages of DT projects benefit significantly from solid leadership backing. This translates into essential resource allocation and fosters a positive interpretation of change by employees (Avdeeva et al., 2021; Purna Sudhakar, 2012; Ifinedo, 2008). Pulido & Taherdoost (2023) acknowledge resistance to change as a significant hurdle in any transformation process, but one that can be effectively addressed through well-designed change management strategies.

This academic literature informs on the crucial role of change management in ensuring successful DT. By understanding the human aspects of change, effectively managing resistance, and strategically aligning change management frameworks with DT initiatives, organisations can navigate the complexities of DT and achieve their desired outcomes. A well-orchestrated marriage of change management practices with DT strategies is essential for organisational success in today's digital environment. Furthermore, this strategic union can help drive not just the successful implementation of new technologies but also sustainable cultural change within the organisation, ensuring its long-term adaptability and growth in the digital age.

2.10 Leadership in Digital Transformation

The disruptive nature of DT affects how organisations operate and function, fundamentally reshaping organisations and demanding a new breed of leader – the digital leader. With more organisations requiring DT to remain competitive, the need for solid and purposeful leadership is required (Imran et al., 2020). There are numerous academic investigations into leadership as an essential for the successful implementation of DT. This review explores the key themes

emerging from reviewed academic sources to identify the characteristics, competencies, and challenges associated with leading through DT.

Across reviewed sources, a resounding consensus emerges: effective leadership is an essential factor for successful DT initiatives (Imran et al., 2020; Kokot et al., 2021; Mwita & Jonathan, 2019; Sainger, 2018). Leaders play a pivotal role in setting the strategic vision, fostering a culture of innovation, and mobilising resources to drive change (Sainger, 2018). Studies by Larjovuori et al. (2018) further emphasise the importance of a multifaceted leadership focus that encompasses strategic direction, cultural transformation, harnessing new possibilities, and building strong networks. While the importance of digital leadership is undeniable, a universally agreed-upon definition remains elusive (Mwita & Jonathan, 2019; Klein, 2020). Mwita & Jonathan (2019) acknowledge the multifaceted nature of digital leadership, encompassing aspects of digital Vision, technological understanding, and the ability to make and implement agile decisions. Several leadership scholars offer working definitions, highlighting the leader's ability to leverage digital technologies to create value (El Sawy et al., 2016) and foster a culture conducive to DT (Mihardjo & Sasmoko, 2019).

Imran et al. (2020) identify five key areas that equip leaders to navigate the complexities of DT. First is *digital vision*, which is explained as the ability to articulate a clear and compelling vision for the organisation's digital future, inspiring and uniting employees around a shared purpose in the digital age. The second is *digital knowledge*, which represents a strong understanding of digital technologies and their potential applications within the organisation's specific context. The third among them is *failing fast,* and it is about embracing a culture of experimentation and learning from failures. Digital leaders understand that innovation often involves calculated risks and setbacks, so they should create a safe space for employees to experiment, iterate, and learn from mistakes, fostering agility and accelerating progress. *Empowerment*, which talks about empowering employees to take ownership and make decisions within defined parameters, is the fourth of the areas of importance. Imran et al. (2020) noted that micromanagement stifles creativity and innovation, which are essential for successful DT. Digital leaders trust their teams, delegate effectively, and provide the resources and support needed for employees to thrive.

Finally, *managing diverse teams* involves leading and fostering collaboration in teams with varying technological expertise. DT initiatives often necessitate cross-functional collaboration, bringing together individuals with diverse skill sets. Digital leaders excel at building inclusive teams, leveraging the strengths of each member, and fostering effective communication across technical and non-technical roles to push through barriers and challenges.

McCarthy et al. (2022) shed light on the specific leadership qualities crucial for success in DT. Their research identified eight key characteristics that define a DT leader. At the core lies the digital strategist, who possesses a keen understanding of how digital technologies can be leveraged to achieve strategic goals. The digital architect complements this vision by providing the technical expertise to select and implement the most suitable technologies for the Organisation's needs. A strong customer focus is also paramount, embodied by the customer centrist leader who ensures that DT initiatives prioritise and enhance the customer experience. Furthermore, Organisational agility fosters a culture of adaptability and rapid response, enabling the Organisation to keep pace with ever-evolving market conditions and technological advancements. Next is the digital culturalist who champions a culture of innovation and openness to change, fostering an environment conducive to embracing new technologies and digital workflows. Data-driven decision-making is championed by the data advocate leader who emphasises the importance of data insights in optimising operations and driving strategic direction. The business process optimiser identifies opportunities to streamline and improve existing processes through DT initiatives. Finally, the digital workplace landscaper plays a critical role in designing and implementing solutions that enhance collaboration and productivity within a potentially remote or hybrid work environment.

Digital leaders navigate a complex environment filled with challenges. Kokot et al. (2021) highlight the need to secure buy-in from top management for successful DT initiatives. Leaders must be adept at influencing stakeholders, effectively communicating the value proposition of DT, and advocating for resource allocation. Furthermore, digital leaders must navigate resistance to change and cultivate a culture that embraces new technologies and ways of working (Sainger, 2018). Porfírio et al. (2020) emphasise that successful DT leadership extends beyond merely

embracing technology. They advocate for fostering strong collaboration between information technology and business leaders to bridge the digital knowledge gap and ensure alignment between technological advancements and core business objectives. Leaders play a critical role in mobilising the entire Organisation for DT. This multifaceted task encompasses fostering a culture that embraces innovation and calculated risk-taking, encouraging employee participation in shaping the DT vision, and ensuring clear and consistent communication throughout the transformation process. Porfírio et al. (2020) highlight the importance of addressing resistance to change, a natural human response to disruption. Leaders must be equipped to navigate these challenges and effectively manage the complexities of coordinating different departments and functions during the transformation journey.

The specific leadership style and approach required for successful DT can also be influenced by the characteristics of the organisation itself. Company size, leadership structure, employee digital literacy, and ownership structure can all play a role in shaping the DT process. For instance, leaders in large, hierarchical organisations may need to place a greater emphasis on communication and change management strategies compared to their counterparts in smaller, more agile organisations. This is highlighted by Mwita (2019), who identified three key challenges that digital leaders must confront. Firstly, leaders must integrate digital technologies within existing organisational structures, often with resource constraints. This necessitates strategic planning and the efficient allocation of resources to maximise the impact of digital initiatives. Secondly, leaders face the uphill battle of convincing stakeholders, including management and employees, of the value proposition of DT. This requires clear communication that demonstrates how digital integration aligns with the organisation's vision, mission, and overall objectives. Finally, Mwita (2019) emphasises the challenge of mobilising sufficient resources to support the transformation process. This aspect is intricately linked to stakeholder buy-in, as securing resources often hinges on demonstrating the potential return on investment associated with DT initiatives. These interconnected challenges highlight the complex nature of leading an Organisation through DT. Harbani et al. (2021) further emphasise how leadership styles must adapt to the digital age. They posit a shift from the directive leadership styles of the past to a more participatory approach. This collaborative approach is crucial for fostering

innovation and harnessing the diverse skillsets and perspectives of a multi-generational workforce. The authors highlight the potential generation gap between leaders (often from Generation X) and millennial and Gen Z employees. Bridging this gap requires a conscious effort from leaders to understand the unique experiences and strengths of younger generations. Effective leadership development programs focused on equipping leaders with the necessary technical and soft skills are vital for building a future-proof leadership pipeline within organisations (Harbani et al., 2021). Leaders must be prepared to nurture the talent within their organisations, not just in terms of technical expertise but also in terms of digital literacy, leadership abilities, and alignment with the Organisation's core values.

3. Research Methodology

3.1 Introduction

Digital transformation (DT) initiatives are reshaping organisations across all industries. To achieve success, these initiatives require not only robust and often expensive technological solutions but also the active participation and adoption of these technologies by key stakeholders whose adoption is crucial to the success of the DT process. Stakeholder management, which includes effective communication, training, and support, plays a critical role in this process. A systematic literature review (SLR) offers a valuable approach to understanding how stakeholder management influences employee adoption of new technologies during DT.

SLRs are a cornerstone of evidence-based research. They provide a rigorous and transparent methodology for identifying, evaluating, and synthesising existing research on a specific topic to inform existing knowledge further. By following a clearly defined protocol, SLRs minimise bias and ensure the comprehensiveness and replicability of the findings. In the context of DT and Organisational change, SLRs can offer valuable insights into the complex interplay between stakeholder management, employee adoption, and the success of new technologies. This SLR focuses on the following research question:

RQ: How does stakeholder management influence employee adoption of new technologies during digital transformation initiatives?

By examining existing research, the research aims to identify critical stakeholder management practices that promote employee buy-in for DT, address concerns, and ultimately lead to successful technology adoption through a period of Organizational change.

3.2 Overview of Methodology

This systematic literature review (SLR) investigates the critical question of how stakeholder management influences employee adoption of new technologies during DT initiatives. To ensure

The comprehensiveness, credibility, and replicability of our findings, we have adopted a multi-stage methodology. This section provides a detailed explanation of the activities in each stage:

1. Search Strategy

a. *Definition of search scope and timeframe:* This research established a well-defined timeframe for the literature search prior to commencing the actual search of related sources, focusing on the period between 2020 and 2024. This timeframe deliberately captures the most recent studies and findings in DT and stakeholder management practices. DT is an evolving practice, with new technologies emerging and stakeholder management practices adapting to keep pace with implementation efforts. By focusing on the most recent research, this research ensured findings reflect the latest developments and knowledge and provide the most up-to-date insights for organisations planning or in the process of a DT initiative.

b. *Identification of relevant academic databases:* We recognised the importance of selecting databases that adequately cover the areas of digital systems, management, and Organisational change, with the complete understanding that the validity of a study such as this is dependent upon the chosen database (Vieira and Gomes 2009). Search for the sources to be used for this research was commenced with Scopus, preferred over Web of Science (WoS) due to its large pool of existing multidisciplinary database, indexing over 40,000 peer-reviewed journals – a significantly larger repository compared to the WoS, which is below 30,000 (Carrera-Rivera et al., 2021). This comprehensiveness offered a strong foundation for the search for data. This search was furthered through IEEE Xplore, a database with a dedicated focus on digital technology, ensuring we captured relevant research from a domain at the forefront of DT initiatives. As a useful academic sources research tool, Google Scholar was included to complement the search strategy.

Databases: Scopus, IEEE Xplore, Google Scholar

- *Use of search terms and strings:* With full cognisance of the major themes of this research – digital transformation, Organisational change and stakeholder management, appropriate search keywords and strings were applied. The research adopted utilising Boolean operators (AND, OR, NOT) to strategically

Combine critical terms related to stakeholder management, employee adoption, DT, and new technologies. Our search strings incorporated a nuanced range of terms to capture the multifaceted aspects of these concepts. For stakeholder management, we included terms like stakeholder engagement and stakeholder adoption. To encompass the various aspects of employee adoption, the research considered utilising terms such as user adoption, technology acceptance, and change management. Recognising the depth of DT initiatives, the research considered incorporating terms like digital adoption and digital innovation. Likewise, to capture the range of new technologies that may be implemented, search terms including DT, stakeholder management, and case study were considered. Following thorough scrutiny of the aforementioned search terms, the search terms adopted and combined are Digital AND transformation (ST1), Stakeholder AND management AND in AND digital AND transformation (ST2), Digital AND transformation AND case AND study (ST3).

The search strings were applied across the titles, abstracts, and keywords of articles within the chosen databases (Scopus and IEEE Xplore) for the defined timeframe (2020-2024).

2. Transparent Selection Criteria

To ensure the retrieved studies directly addressed our research question, *How does stakeholder management influence employee adoption of new technologies during digital transformation initiatives?* We established explicit inclusion and exclusion criteria that were documented and consistently applied throughout the selection process.

a. Inclusion criteria

This research included studies based on specific criteria. First, only peer-reviewed academic publications, such as journal articles and conference proceedings, were considered. The publication date was another factor; studies had to be published between 2020 and 2024 to be included. English was the only language considered for the research.

More importantly, the studies had to meet specific subject matter criteria. DT and stakeholder management had to be keywords in the study, and the content had to discuss and evaluate a DT case study. This case study could focus on a specific place, region, or institution. Stakeholder management was a key focus, either explicitly discussed as a function within the DT or implicitly addressed through elements of stakeholder management. Finally, the study had to explore employee adoption of new technologies in the context of DT initiatives.

b. Exclusion criteria

Several criteria were used to exclude studies from this research. The first exclusion criterion was studies that solely focused on the technical aspects of new technologies without considering the human factors that influence employee adoption. Additionally, studies that did not explicitly discuss the role of stakeholder management or their impact on employee adoption were excluded. Case studies were also excluded if they lacked a clear description of the case, including the timeline of events and decision-making processes that led to the success or failure of a DT initiative. Studies written in languages other than English, as well as editorials, opinion pieces, and non-research articles, were also excluded from the analysis. Finally, studies for which the full text was unavailable, even with institutional access, were not considered.

The search for related publications, as shown in Tables 1 and 2, was performed between March 1st and April 20th, 2024.

The search for Digital Transformation (ST1) on IEEE Xplore found 19,629 results, of which 15,142 were conferences and 3,665 were journals. At the same time, the rest were other types of publications (books, magazines, early access articles, standards, and courses). The query was cut to 8,748 publications after the results were filtered by year of publication. Next was the search for stakeholder management in digital transformation (ST2) on IEEE Xplore, where 292 results were returned. After filtering for only publications released between 2020 and 2024, the number was reduced to 234.

On Scopus, 485,127 results were returned for ST1 and then filtered down to 260,843 documents published within the adopted timeframe for this research. The search for ST2 produced 26,901 documents but was reduced to 21,123 documents after the search was filtered for articles published between 2020 and 2024. The filtered result included 14,351 journals, 2,137 conferences and others (book chapters, reviews, books, editorials, notes, short surveys, conference reviews, retracted, data papers, and letters). 202,339 documents was found for ST3, then filtered to 132,965 documents.

After the extensive search performed on IEEE Xplore and Scopus, it was deemed necessary to check for the most relevant sources not published on both databases. The rationale was to allow some flexibility in the choice of the database if it would mean more quality or helpful literature could be found on a different database(s). ST2 was used to search Google Scholar for publications within the chosen timeframe. Still, after looking through 10 pages without finding useful literature, there was a need to apply search techniques. Since Google Scholar did not provide an option to sort the results by year of publication (only by date was available), the results were filtered by year published. This was achieved by restricting the timeframe to each year (e.g. 2020 - 2024), starting with the most recent publications, which are literature published in 2024. After reviewing the first page of the result for 2024, another search was performed for publications released in 2023. The first page of this search was literature that was deemed helpful and appropriate for this research, and so it was selected, and the search was ended.

Following the rigorous selection process, four sources were selected, including three academic papers with a case study approach and one non-case study piece of academic literature.

Table 1: Initial total number of papers/studies returned per database for each search term.

	Journals			Conferences			Others		
Database	ST1	ST2	ST3	ST1	ST2	ST3	ST1	ST2	ST3
Scopus	295,083	16,982	126,080	97,714	3,059	23,350	92,330	6,860	52,909
IEEE Xplore	3,665	38	175	15,142	235	840	822	19	40
Google Scholar	-	~16,900	-	-	-	-	-	-	-
Total	*298,748*	*33,920*	*126,255*	*112,856*	*3,294*	*24,190*	*93,152*	*6,879*	*52,949*

Table 2: Total number of papers/studies returned per database for each search term after filtering by timeframe.

	Journals			Conferences			Others		
Database	ST1	ST2	ST3	ST1	ST2	ST3	ST1	ST2	ST3
Scopus	169,670	14,351	89,355	40,222	2,137	14,099	50,951	2,719	28,941
IEEE Xplore	1,638	36	119	6,609	184	535	501	14	37
Google Scholar	-	~23,900	-	-	-	-	-	-	-
Total	*171,308*	*38,287*	*89,474*	*46,831*	*2,321*	*14,634*	*51,452*	*2,733*	*28,978*

3. Systematic data extraction

This research employed a standardised data extraction form, piloted and refined, to capture critical information from each relevant study identified through the search process. The data

extraction form focused on elements such as research database, journal, author(s), year of publication, keywords, main topic area, research question(s) or hypothesis (es), research methodology (quantitative, qualitative, or mixed methods), definition of critical terms (digital transformation, stakeholder management, or change management), context of transformation, and critical findings on digital transformation, stakeholder management, findings on organizational change management.

Table 3: Characteristics of case studies and research article

ID	Title	Database	Journal/Conference	Author(s)	Publication year	Keywords	Main topic area
C1	Organisational Enablers of Data-Driven Digital Transformation: A Case Study from the Banking Industry	IEEE Xplore	2022 IEEE Technology and Engineering Management Conference (TEMSCON EUROPE)	R. E. Arsal; H. T. Durdu; M. H. Tongarlak	2022	Digital transformation, data-driven decision-making, top management support, collaboration, data literacy, case study, banking industry	Digital transformation
C2	A Retrospective Analysis of the Role of Soft Factors in Digitalisation Projects: Based on a Case Study in a Public Health Organisation in Trondheim-Norway	IEEE Xplore	2020 IEEE European Technology and Engineering Management Summit (E-TEMS)	B. Ngereja; B. Hussein; K. H. J. Hafseld; C. Wolff	2020	Digitalization, case study, soft factors, lessons learned, public projects, digital transformation	Digital transformation
C3	Achieving stakeholder alignment in digital transformation: A frame transformation perspective	SagePub	Journal of Information Technology	Nizar Hoblos; M. S. Sandeep; S. L. Pan	2023	Digital transformation, stakeholder alignment, frame transformation, frames, case study, interpretive research	Digital transformation
C4	Empowering Employees for Digital Transformation in Manufacturing Enterprises: A Case Study	AOSIS	South African Journal of Business Management	Zhen, M., & Ding, W.	2024	Manufacturer enterprises; digital transformation; employee empowerment; AMO; Shangshang Cable.	Digital transformation

S1	Stakeholder Management in Digital Transformation: A System of Systems Approach	IEEE Xplore	2022 17th Annual System of Systems Engineering Conference (SOSE)	S. Papavasiliou; A. Gorod	2022	System of Systems, Digital Transformation, Stakeholders, Stakeholder Management, Collective Intelligence	Stakeholder management

3.3 Data Analysis Approach

This literature review employs thematic analysis, a qualitative research method (Braun & Clarke, 2023), to synthesise the findings extracted from the chosen case studies. This approach will help uncover recurring themes within the data (Clarke & Braun, 2017). It will be helpful for exploring the relationship between stakeholder management and successful DT during organizational change management. The thematic analysis will follow a six-step process developed by Braun and Clarke (2006). First, we will check if the case studies or data are thoroughly reviewed by repeatedly reading the extracted information from each study. This initial familiarisation stage lays the groundwork for the next steps. Next comes the coding stage, where thematic codes are assigned to meaningful segments of text related to the research question. This coding will be inductive, meaning themes will emerge organically from the data itself rather than being imposed upon it beforehand.

After coding, the codes will be reviewed and refined as necessary. This iterative process group codes into broader themes that capture the core concepts presented across the case studies. These themes will then be reviewed to ensure they reflect the data and address the adopted research question.

Each identified theme is then clearly defined and given a descriptive name that accurately reflects its content. Finally, in the results chapter, the identified themes are presented. By applying this rigorous thematic analysis approach, this research aims to extract valuable insights from the collected data and present a comprehensive understanding of how stakeholder management affects the success of DT initiatives during Organisational change management.

3.4 Ethical Considerations

Only peer-reviewed academic publications from 2020-2024 were included to ensure the reliability of this research. Ethical procedures remained uncompromised throughout the development of this research report.

3.4.1 Validity of the Research

Creswell & Creswell (2017) explain validity as the measure of the degree to which a research study shows accuracy or the credibility of the research findings. Multiple strategies were used to determine the validity of the research findings, which are based on rigorous research, data collection, and analysis.

Internal Validity

Internal validity addresses the credibility of the study. For this research, multiple methods were used to ensure the expected degree of accuracy. A thorough desk review was conducted, which comprised research materials across different sectors and industries, such as financial, healthcare, and public sectors. These extensive reviews were accurately documented and, thus, provided relevant and robust data. In addition, keywords used within this research were defined correctly, hence providing context and understanding, including consistent measurement. These words include "Digital Transformation," "Stakeholder Management," and "Employee Adoption". To further address the internal validity of this research, in-depth review sessions were conducted with peers, colleagues, and supervisors to provide feedback on the definitions.

External Validity

External validity, on the other hand, is the extent to which a research study's findings can be applied in a broader context. For this research, external validity was achieved through various strategies. The study adopted various case studies across diverse industries, sectors, and climes, thus ensuring the findings can be applied in a broader setting.

This design thus increases the likelihood of applying and replicating the findings in diverse business sectors. (Yin, 2018).

3.4.2 Reliability of the Research

While the validity of a research study drives to ensure the accuracy of its findings and overall conclusions, reliability refers to the generalization and consistency of these findings. Several measures were implemented to ensure the reliability of this research. Standardized data

collection procedures, including systematic analysis protocols, were employed to maintain consistency across the various case studies. Furthermore, all data sourced were from reputable and credible academic journals, ensuring the credibility of the information used in the analysis. The meticulous documentation of research procedures, including data collection and analysis steps, facilitates replication by other researchers and enables further verification (Miles, Huberman, & Saldana, 2014).

3.5 Limitation of Study

This research relied on an analysis of four case studies from various industries. While this sample size is often sufficient for a systematic literature review, a larger pool of case studies could have provided even richer insights and potentially identified additional themes beyond the four key themes identified here. Finding case studies that fit the specific selection criteria for this research, particularly those that provided detailed information on stakeholder management practices, proved to be a challenge. Future research efforts could benefit from expanding the scope of the case study analysis to include a broader range of industries and company sizes.

The initial coding process employed NVivo, a qualitative data analysis software program, to ensure consistency and reduce researcher bias. However, the later stages of the coding process, where themes were identified and refined, were conducted manually. Despite taking steps to mitigate bias, the manual coding stages may have introduced some subjectivity. Furthermore, the case studies analyzed in this research represent a diverse range of industries and company sizes. However, the generalizability of the findings to all contexts cannot be guaranteed. Factors such as Organisation size and the specific nature of the new technology being implemented can all influence the effectiveness of stakeholder management practices. This could be an area for further research, investigating how stakeholder management strategies need to be adapted to different Organisational contexts to ensure successful DT initiatives.

3.6 Case Study Materials

Case Study 1

This case study was extracted from Arsal et al. (2022).

The research site is a national bank in Turkey that embarked upon a data-driven DT initiative in January 2019. Two of the authors have been on-site periodically since the beginning of the process. Hence, the authors continually collected data via direct observations, interviews, and documents. The bank is headquartered in Istanbul and serves clients in retail, SME, and commercial banking segments. In 2017, the bank, led by a new CEO, began a significant transformation. Back then, the bank had over 80 branches and 1,600 employees and served 300,000 customers. However, due to its size, it could have been more competitive. The new CEO started shaking things up with significant investments in technology to handle the surge in customers, which grew to over 1 million! However, by the end of 2018, it became clear that a more fundamental change was needed for continued growth. They needed a fresh plan and a faster push towards becoming a digital bank.

The bank's leaders hired a consulting company to help them switch to a mobile-first approach. The consultants studied the bank's strengths and weaknesses and came up with five ways for the bank to be more successful. These included using customer data to make money, working with other businesses, and improving how the bank loaned money. However, the consultants found that the bank could have been better at using customer data, which was a big problem for their plan. This problem included:

- Availability of timely and high-quality data for decision making

- Excessive time spent on preparing data instead of extracting insights from data

- Lack of scalable data and analytics infrastructure

- Scarcity of analytical skills

- Missing data architecture and governance

Following the recommendation of the consultant, the bank launched a data-driven DT program ("Data Transformation Program") in April 2019. This program involved several initiatives, including branch closures (reduced to 40 by 2021), increased customer base (3.5 million by 2021), and a significant investment in data expertise (60-person data management group reporting directly to CEO, IT staff increased from 120 to 400). The program itself was implemented in phases. The first phase (April-June 2019) focused on establishing the groundwork for a successful transformation, including Organisational restructuring, data management function definition, roadmap creation, and technology selection.

Phase II, which kicked off the technology implementation and data platform development, lasted one year until the end of June 2020. During this phase, the firm completed all the necessary development activities, including data architecture design, platform installations, data model development, data integration interface development, and design and implementation of data governance processes.

The final phase, Phase III, aimed to achieve an accelerated adoption via a mass rollout to a power user base of around 250 people. This phase's success criteria were decommissioning existing datasets and reports and sunsetting old data platforms.

When he took leadership in 2017, the new CEO envisioned transforming the bank from a traditional brick-and-mortar model to a mobile-first neo-bank. He used a consulting firm to validate his strategy and secure board approval for a significant digital transformation investment. Recognizing the human aspect of change, the CEO anticipated resistance and established a dedicated digital transformation office to address change management challenges.

The head of the digital transformation office praised the CEO's determination: "His unwavering determination and support to transform the conventional bank into a mobile-first ecosystem bank are the major underlying reasons for this successful change management. He was the role model to the whole Organisation in making data-based discussions and decisions."

In the first phase, the CEO and consulting company worked together to convince the bank's board and get everyone on board with the new plan. Since the teams weren't involved in the initial planning, all the top managers at the bank still agreed with the idea. In the second phase, the outside partners and the bank's new data team focused on building the new data systems. At first, the different departments at the bank thought this was just the data team's job. The CEO had to step in and convince them to help develop and test the new systems.

The head of the data platforms development team explained the management support he witnessed: "I have not seen, heard or experienced such strong management support in my 20-year professional career. Without it, there was no chance that such a large transformation initiative could be successful."

In the final phase, some departments at the bank started using the new data systems and were really successful. The CEO highlighted these "early adopters" to encourage others. This helped him win over more support from other top managers. Overall, the CEO had strong backing from top management throughout the entire project (all three phases). This data transformation project was massive - the most prominent IT project the bank had ever done. It lasted two years and had a team of over 70 people at its peak. Because of the tight deadlines, some companies even decided not to work with the bank on the project. This showed how important it was for everyone involved (stakeholders) to work together closely to make it a success.

Tasked with a mandate to quickly mobilize all the necessary internal and external resources, management consultants, with the help of the digital transformation office, finalized Phase I in a concise time frame of three months. This was only possible through close collaboration between all the IT functions, the human resources team, and the procurement team.

In Phase II, there were multiple implementation partners, each with very tight deadlines and the need to manage dependencies among them. In parallel, the size of the internal data team grew from around 10 to more than 50 in a very short period. The development of data models, data integration interfaces, data governance processes, and platforms required constant collaboration between multiple internal and external teams. This was only possible through a

meticulous program management effort supported by regular alignment and committee meetings, as well as agile rituals such as scrum meetings.

The head of the data governance team summarised the positive impact of having regular meetings with business units:

"...in these meetings, business units had the chance to share the problems they faced and voice their concerns. Due to these open communication channels, business teams felt heard, and their involvement gradually increased during user acceptance testing. It was this collaboration that allowed quality outcomes."

As Phase II came to an end and business units took over the responsibility in Phase III to make use of new data platforms to create business value, tensions between the Data Management Office and business teams started to emerge. Once again, the data transformation team mended the relationships via regular follow-up sessions. A dedicated team of data analysts from the central data team met with a diverse set of business power users to help them transition to new data platforms.

One of the senior technical leads from the Data Management Office summarised the challenges and how they were overcome:

"Initially, due to different priorities, business units were reluctant to adopt new data platforms quickly. One-on-one close follow-up and numerous handholding sessions for every team slowly changed the dynamics of the collaboration. Helped by the encouragement coming from top management decommissioning of old platforms gained steamed later on."

The composition of the phases during the DT process is as follows:

Phase I:

- Stakeholders: Top management, consultants, and IT teams.
- Collaboration: Close collaboration was essential due to tight deadlines.
- Data Skills: Initial assessment identified limited data skills, leading to skill mapping and development program creation.

Phase II:

- Stakeholders: Increased complexity with more diverse stakeholders.
- Collaboration: Established collaboration discipline continued despite remote work due to COVID-19.
- Data Skills: Focus shifted to platform implementation with less time for data skills development. External partners helped bridge skill gaps.

Phase III:

- Stakeholders: Internal teams only (consultants departed).
- Collaboration: Internal teams continued collaboration with business units based on principles established earlier.

Data Skills: Existing data skills and self-service access tools have challenged some business units in extracting actionable insights.

Case Study 2

This case study was extracted from Ngereja et al. (2020)

Regional Hospital H was facing significant economic challenges and had to reduce spending on salaries. Several initiatives were suggested. One of these initiatives was introducing speech recognition software. By using this type of software, a doctor can 'talk' to a computer, and their speech will be converted into written form in the electronic patient record (EPR) system. Previously, the doctors had audiotaped their notes relating to their patients, and then secretaries had transcribed the notes into the hospital's records. The objective was to introduce speech recognition software without increasing the doctors' time spent on documentation. It was assumed that doctors who used speech recognition software would spend longer on dictations but would not subsequently check and approve the records. With the speech recognition system, all activities were to be carried out there and then, and the record would be approved immediately. All doctors took a three-day course, and after that, in principle, all records that hitherto had been dictated by them and then transcribed by secretaries would immediately

become accessible in text format. The hospital's management had already estimated that a significant number of years of secretary work could be saved. A central typing service was created, and it was planned that the transcription of any remaining dictations was to be done there. This would streamline the typing process and simultaneously be an outcome measure of how well the speech recognition system had been implemented.

Dictation errors

Prior to the speech recognition system's introduction, doctors reportedly spent an average of 4.5 hours weekly managing paper records. Initial estimates during the pilot program suggested zero time would be required for record management tasks, including verification. However, this proved inaccurate. While secretaries occasionally identified errors in transcribed records by doctors that required correction, these mistakes were often easy to detect, and the intended meaning remained clear despite the inaccuracies.

The new system, however, introduced a different kind of error - one that could significantly alter the meaning of the text. These novel errors were particularly challenging to identify during proofreading, as the software produced grammatically correct sentences with accurate spelling. Doctors viewed these errors as concerning and potentially hazardous, leading them to dedicate a significant amount of extra time to checking patient records. Unfortunately, no additional time was allocated to accommodate the system's implementation, and doctors remained limited to 20 minutes per patient consultation, including record maintenance and note correction.

Many doctors subsequently abandoned the speech recognition software. However, staffing reductions among secretarial personnel continued, and doctors were primarily discouraged from returning to dictaphones. By the time doctors realized the system's functionality fell short of initial expectations, the secretarial support they relied upon had already been eliminated.

Earlier warnings from doctors regarding potential error risks associated with the software were disregarded. Project feedback citing these concerns was attributed to technical issues and inadequate training. Risk assessments were conducted, but their findings received minimal

attention. Improved communication with doctors could have facilitated earlier problem identification, allowing for corrective measures or even project reevaluation.

While the project achieved its staff reduction goals, an unforeseen consequence was the significant increase in typing tasks for doctors, who now entered over half of all patient records. This translated to a substantial rise in administrative duties related to patient care, an unintended negative outcome that ultimately hampered efficiency within the healthcare delivery process.

Case Study 3

This case study was extracted from Hoblos et al. (2023)

In the Australian context, local government areas (LGA) are governed and managed by city councils, which form one of the three administrative governing layers comprising Local, State, and Federal Governments. Councils face the pressure of providing customer-centric solutions to address the concerns of residents, business owners, and other stakeholders, including funding authorities. This competitive environment among councils encourages them to secure future funding from the federal government and improve their chances of re-election by delivering effective solutions. Implementing DT initiatives can help councils gain publicity, solve customer problems, and meet the expectations of their constituents.

In March 2017, the Australian Federal Government introduced the Smart Cities[1] and Suburbs Program with $50 million in funding. The program aimed to support urban projects that utilize technology to enhance decision-making based on real data, with a focus on people-centric design. Eligible organizations, including local governments, private industries, and research institutions, were invited to collaborate and deliver projects that enhance the productivity, sustainability, and livability of cities and suburbs.

It is in this context that we study the work of Delta City Council and how they embarked on a digital transformation journey by accessing federal grants through the smart city program. The council set two main objectives: first, to envision and create an extraordinary future for the city, and second, to break down silos and establish partnerships across the Organisation, fostering strategic collaboration with various business units. In April 2018, the council mayor supported transforming the city into a leading smart city, leveraging technology and data to shape a better future. The focus was on acknowledging the need to adopt alternative approaches, as they believed that the existing mindset that led to problems would not be sufficient to resolve them.

In July 2018, Delta City Council established a dedicated "Smart City" function within its Organisational structure, marking the official launch of the smart city roadmap. The endorsed draft roadmap was made available for public review between October and June 2019, with the final approval obtained in September 2019. As a result, the focus shifted from strategy development to the planning and implementation phase. The solution discovery process revolved around identifying the problems using a problem-centric approach. Among the identified projects, the Smart Waste Management System (SWMS, anonymized) was the first project to be implemented under the smart city program.

Delta City Council struggles with waste management due to a large, diverse population with high volumes of inquiries and a low recycling rate (25% contamination compared to the state average of 10%). This inefficiency costs the council significantly, accounting for 21% of their budget and 30% of customer service inquiries. The situation worsened with China's import restrictions on recyclables in 2017, highlighting the need for improved waste education and local waste management solutions.

To overcome these issues, the council embarked on a transformation of its waste management services via the development and implementation of SWMS. The SWMS project was led by the innovation management function of the Council. The innovation management team worked closely with the executive branch of the Council to shape the Smart City Roadmap for the council (hereafter referred to as "the leadership team"). The SWMS project team comprised representatives from waste operations, sustainability, customer service, and information technology teams (hereafter referred to as "the project team"). The council residents were also consulted at various junctures of the project's lifecycle. In this study, we consider the teams represented by each representative as a "stakeholder group.".

Case Study 4

This case study was extracted from Zhen and Ding (2024)

In 2012, Shangshang Cable became a leader in using a smart computer system to run their factories. This system tracked everything from getting materials to making finished products. Because of this new system, Shangshang Cable needed to teach their workers new skills. They offered classes and talks to teach workers about the system and how factories can succeed in the modern world. They also trained managers and regular workers on how to use the system and run the new machines. After the training, they gave the workers tests to make sure they learned everything.

Redesigning the performance appraisal system

The ultra-high-voltage CIMS provided a large amount of data and supported Shangshang Cable to redesign the performance appraisal and salary management system based on the data. Measurable performance appraisal: Data from the ultra-highvoltage CIMS system supported the measurable performance appraisal. Shangshang Cable had a four-level quality assessment system and set objectives for top management, directors of branch factories, team leaders, and front-line employees. For example, the directors of branch factories were evaluated monthly with more than ten indicators on crucial quality, process supervision, and quality improvement, among others. The front-level employees were assessed daily using the indicators of raw materials, working hours, costs, field management, and quality of products. In this mode of 'digitizing quantitative indicators and quantifying qualitative indicators,' employees could gain a clear understanding of their functional responsibilities.

Traceable salary: Through the ultra-high-voltage CIMS system, Shangshang Cable monitored the employees' operating procedures and the running state of the machines and equipment, among others, in real-time. Based on this scenario, Shangshang Cable established a performance database for jobs at different levels, and more than 230 indicators were directly related to employees' salaries. For example, performance-related salary for front-line employees was calculated according to working hours, raw material consumption, and outputs on the production

line. Shangshang Cable also implemented the 'daily wage on the wall' system. Employees' daily salary and specific basis were displayed on the 'wage wall.' Accordingly, the employees could manage their salary and stay positively motivated.

Participating in intelligent manufacturing

Shangshang Cable used data from their CIMS system to involve employees in intelligent manufacturing. They created quality databases for each worker, tracking things like production efficiency and following procedures. Managers had data on strengths and weaknesses to guide promotions. To make sure everyone benefited, Shangshang Cable linked performance to rewards. For example, workshop output contributed to the director's bonus. This system gave everyone a stake in the success of intelligent manufacturing.

In addition, to make employees share the results of intelligent manufacturing, Shangshang Cable has developed the 'Reward for Children of Employees Admitted to Universities'. The children of employees admitted to universities could receive rewards of 5000 yuan, 4000 yuan, and 3000 yuan. More than 100 children of employees have received the rewards until now. At this stage, the digital transformation of Shangshang Cable was a process of refinement and the realisation of intelligent manufacturing. It primarily aimed to let employees improve with higher quality based on an intelligent manufacturing system. Shangshang Cable empowered employees with specific knowledge and skills in intelligent manufacturing and motivated employees to redesign the data-based performance appraisal system. Meanwhile, Shangshang Cable established intelligent manufacturing data files for employees and shared the benefits of intelligent manufacturing, which enabled employees to participate deeply in intelligent manufacturing.

Shangshang Cable applied the Manufacturing Execution System (MES) 2017 to integrate ERP, CIMS, and Supervisory Control and Data Acquisition (SCADA) in 2021 to achieve total data management. On the production side, employees were required to control the whole production process and ensure coordination among the system, materials, and equipment. On the management side, all level managers must fully communicate and cooperate for the comprehensive coordination of men, machines, materials, methods, environments, and measurements (5M1E). At this stage, Shangshang Cable focussed on building employees' digital

collaborative abilities by improving collective abilities, building growth mechanisms, and total involvement in digitalisation to achieve 'doing their best in the long run'. Table 4 shows the employee empowerment code.

Improving collaboration abilities

To comprehensively improve the collaborative ability in production, management, and operation sections, Shangshang Cable established a learning ecology supported by the digital platform for employees. It cultivated a collaborative learning organisation for the enterprise's and employees' long-term development. Building a learning ecosystem: Shangshang Cable has built an enterprise digital learning ecosystem for employees. Shangshang Cable and Jiangsu Cloud Course Network Technology Co., Ltd. jointly constructed the digital learning platform called Shangshang Cloud Academy. Employees can learn with Shangshang Cloud Academy anytime and anywhere. Through online and offline learning project settings, expert counselling, and grinding courses, Shangshang Cable has developed a series of high-quality activities to improve work skills and collaboration abilities. Shangshang Cable used the digital learning platform to link the whole chain of pre-testing, training, practice, evaluation, and feedback to improve work efficiency and collaboration. Cultivating a learning organisation: In Shangshang Cable, all employees recognised the vision of 'not seeking the largest scale, but seeking the best quality' and attempted to achieve the best quality through collaboration or teamwork. In the digital context, Shangshang Cable focussed more on cooperation based on the digital process than individual contributions.

Construction of growth mechanism

Shangshang Cable paid attention to the growth and development of employees and built a comprehensive growth mechanism supported by MES and SCADA. Multiple paths for careers: Based on data from MES and SCADA, Shangshang Cable evaluated the skills, competencies, and collaborations of front-line employees, administrators, and R&D employees. Front-line employees evaluated as intermediate technicians, senior technicians, technologists, and chief technologists could have an additional monthly allowance of 300 yuan, 800 yuan, 1200 yuan, and 2000 yuan. Administrators and R&D employees could have a monthly title-based allowance of 500 yuan to 8000 yuan. Multiple types of commendation: Shangshang Cable provided employees

with excellent performance, various titles, and benefits. Shangshang Cable also developed the 'Shangshang Craftsman Developing Plan'. This plan conducted theoretical and practical skills training for front-line employees with senior technicians and above titles, which included theory learning, skill display, and experience sharing. The employee rated as 'Shangshang Craftsman' could have additional paid leave credits, annual bonuses, and individual parking spaces. In addition, many employees achieved provincial- and national-level honours, indicating they were approved and supported.

Involvement in digitalisation

Shangshang Cable knew employee involvement was critical to their digital makeover. They ran fun contests to teach digital skills and encouraged everyone to share ideas for improvement. Employees made short video lessons on new machines or online trade, and the best ideas even won awards. Shangshang Cable also created a system where any worker could suggest improvements in areas like equipment or quality control, with rewards up to 200,000 yuan! This system got everyone involved and helped Shangshang Cable's digital transformation move beyond primary smart machines to a whole new way of digital manufacturing.

4. Discussion of Findings

4.1 Introduction

Digital transformation (DT) initiatives are running riot across organisations of all sizes and industries. These initiatives often involve the adoption of new technologies, which hold the potential to significantly improve efficiency, productivity, and overall performance, as seen in CA, C2, C3, C4 and C5. However, the success of any DT hinges on the willingness and ability of employees to embrace and effectively utilise these new technologies. This chapter looks at the critical role of stakeholder management in influencing employee adoption of new technologies based on the findings from the thematic analysis of 4 case studies in the review. We will address the following question: How does stakeholder management influence employee adoption of new technologies during digital transformation initiatives?

Employee adoption is a crucial factor in the success of digital transformation. Studies show that a lack of user adoption can significantly hinder the return on investment (ROI) of these initiatives (Gomathi, 2024; Bharathi et al., 2012). Conversely, high employee adoption rates can lead to increased productivity, improved customer satisfaction, and a more competitive advantage. By effectively managing stakeholders, particularly employees, organisations can create an environment that fosters understanding, reduces resistance to change, and ultimately leads to the successful adoption of new technologies.

4.2 Result of Analysis

Sometimes, getting a full grasp of the complexities of DT requires a nuanced approach. The detailed systematic literature review (SLR) of various case studies helped identify recurring themes and practices that contribute to successful transformations. This section outlines the coding framework adopted for the thematic analysis of the case studies reviewed.

4.2.1 Coding Framework

The analysis framework utilises a set of codes to categorise critical elements within each case study, as advised by the activities of the reviewed case studies. These codes encompass various aspects of DT, including stakeholder management (SM), employee adoption (EA), collaboration (COLL), inclusive vision and communication (IVC), talent management (TM), agile management (AM), user-centricity (UC), data-driven decision making (DDM), and agile transformation (AT).

Stakeholder management captures activities related to identifying, engaging, and managing the expectations of all those impacted by the transformation. Employee adoption focuses on strategies to encourage and support employee buy-in and participation. Collaboration identifies practices that foster teamwork, knowledge sharing, and collective problem-solving. Inclusive vision and communication encompass strategies for developing a shared understanding of the transformation's goals and effectively communicating them to all stakeholders. Talent management highlights initiatives related to developing the workforce's skills and capabilities to navigate the transformed digital landscape. Agile management identifies practices associated with adapting to changing circumstances, embracing iterative development cycles, and fostering a culture of continuous improvement. User-centricity focuses on approaches that prioritise understanding and meeting the evolving needs and expectations of users throughout the transformation. Data-driven decision-making captures the use of data analytics and insights to inform strategic choices and guide the transformation process. Finally, agile transformation encompasses the overall shift towards an agile Organisational culture that emphasises flexibility, adaptability, and continuous learning.

This framework supported the identification of valuable insights into the different implementation strategies organisations adopt to implement DT initiatives successfully. The codes formed the foundation for identifying the recurring themes as subsequently described.

Table 5: Coding Framework for Case 1 (National Turkish Bank)

Codes	Matching elements of the case study

IVC	CEO's vision for a mobile-first neobank with mass retail ambitions drove transformation (throughout). Management consultants helped validate the strategy and garner board support (Phase I).
SM	CEO championed data-driven digital transformation and rallied support (all phases). Consultants facilitated collaboration between internal teams (IT, HR, Procurement) (Phase I). Tensions emerged between the Data Management Office and business units, which were mitigated through follow-up sessions (Phase III).
EA	The focus on technical implementation in Phase II may have overshadowed user needs and skill gaps. |
COLL	Due to urgency and tight deadlines, close collaboration between stakeholders is essential in Phase I. Collaboration among internal and external teams is crucial for complex implementation in Phase II. Collaboration continued with business teams after consultants left (Phase III).
TM	Phase I included activities around technical skill mapping and capability development programs. Focus on data platform implementation in Phase II limited data upskilling efforts. Recruitment for Data Management Office roles addressed skill gaps (Phase II).
AM	Agile practices (scrum meetings) supported program management in Phase II.
UC	Not explicitly referenced in the case study
DDM	CEO-based decisions on data and challenged recommendations based on the bank's context (Phase I). Data dashboards provided information, but actionable insights were lacking (Phase III).
AT	Agile practices (scrum meetings) supported program management in Phase II.

The bank's CEO championed a bold vision of transforming the organisation into a mobile-first bank, targeting the mass retail market (IVC). This vision served as the driving force throughout the transformation process. To solidify this vision and secure buy-in from key stakeholders, the bank engaged a management consulting firm, and their role proved instrumental in validating the strategy and garnering support from the board (SM). During the initial phase (Phase I) with tight deadlines, close collaboration between internal teams (IT, HR, Procurement) facilitated by the consultants was essential (COLL). This collaborative spirit continued into Phase II, where the complexity of the data platform implementation necessitated seamless cooperation among internal and external teams, including the use of agile practices like scrum meetings (AM, AT). While the focus on technical implementation in Phase II yielded significant progress, it potentially

overshadowed user needs and skill gaps (EA). Investing in talent management was another critical aspect of the bank's success. Phase I included activities to map technical skills and develop capability programs (TM). The CEO's commitment to data-driven decision-making (DDM) stands out as another success factor.

Table 6: Coding Framework for Case 2 (Regional Hospital)

Codes	Matching elements of the case study
IVC	Need to cut huge salary bills from administrative roles, that could be automated.
SM	Neglected early warnings from the doctors that the use of speech recognition software could result in error risks.
EA	Doctors adopted the speech recognition system. Consequently, many doctors stopped using the software.
COLL	Lack of collaboration between doctors and hospital management leading to failure in implementing the DT initiative
TM	Doctors were provided training on using speech recognition technology.
AM	Not explicitly referenced in the reviewed part of the case study
UC	Not explicitly referenced in the reviewed part of the case study
DDM	Neglected early warnings from the doctors that the use of speech recognition software could result in error risks.
AT	Not explicitly referenced in the reviewed part of the case study

As shown above, Early warnings from medical professionals (SM) regarding potential error risks associated with the speech recognition software were disregarded by hospital management (IVC). This highlights a critical gap in communication and collaboration (COLL) between doctors and administration. While doctors did receive training on the new speech recognition system (TM), the case study doesn't explicitly mention agile transformation (AT), agile management (AM) or concerns about perceived complexity (UC). This suggests a potential focus solely on technical aspects without considering the human element of user adoption (EA). Similar to the issue with stakeholder management, the decision to implement the speech recognition software appears

to have neglected the doctors' early warnings regarding error risks (DDM). This lack of consideration for potential downsides likely contributed to user resistance.

Table 7: Coding Framework for Case 3 (Delta City Council)

Codes	Matching elements of the case study
IVC	The mayor supported transforming Delta City into a leading smart city Focus on resident education and improved waste management experience (throughout).
SM	Collaboration between innovation management, executive branch, and project team. Resident consultation at various stages of the project
EA	Not explicitly referenced in the reviewed part of the case study
COLL	A dedicated "Smart City" function was established, collaboration between innovation management, the leadership team, and the project team.
TM	Not explicitly referenced in the reviewed part of the case study
AM	Not explicitly referenced in the reviewed part of the case study
UC	Focus on resident experience and education throughout the project.
DDM	Focus on using data to improve waste management efficiency.
AT	Not explicitly referenced in the reviewed part of the case study

The Smart Waste Management System (SWMS) project was driven by a clear vision from the Mayor to position Delta City as a leader in innovative city initiatives. Improving the waste management experience for residents stood as a central theme throughout the project (IVC, UC). Collaboration played a vital role in the initiative's success (SM). The council's "Smart City" function spearheaded the project. It fostered collaboration between the innovation management team, the executive branch (leadership team), and the project team, which comprised representatives from waste operations, sustainability, customer service, and information technology (COLL). Resident consultation was also emphasised, ensuring their voices were heard at various stages of the project (SM). While the case study doesn't explicitly mention specific strategies for employee adoption (EA) or talent management (TM), the focus on resident education suggests a user-centric approach (UC). Data-driven decision-making (DDM) was also

an implicit aspect, as the project aimed to leverage data to enhance waste management efficiency. Agile management (AM) and agile transformation (AT) are not explicitly referenced either.

Table 8: Coding Framework for Case 4 (Shangshang Cable)

Codes	Matching elements of the case study
IVC	Daily wage on the wall system for transparent salary information.
	Shangshang Cloud Academy is an online learning platform (potentially for sharing vision and updates).
SM	The primary focus is on internal stakeholders, i.e., the workforce/employees.
EA	Comprehensive training programs on intelligent manufacturing and digital skills.
	Reward for Children of Employees Admitted to Universities (motivational aspect).
COLL	Building a learning ecology supported by the digital platform for employees. *Encouragement of innovation through contests and all-involved innovation mechanisms.*
TM	Intelligent manufacturing skills on-site training to equip employees with new skills.
	Multiple paths for careers" with promotions and allowances based on skill development (MES data). *Shangshang Craftsman is developing a plan for skilled front-line employees.*
AM	Not explicitly referenced in the reviewed part of the case study
UC	Not explicitly referenced in the reviewed part of the case study
DDM	Performance appraisal system redesign based on employee feedback (MES data).
AT	Learning ecology is supported by the digital platform for continuous learning. * Encouragement of innovation through contests.

Transparency plays a crucial role in Shangshang's strategy. The daily wage on the wall system provides transparent information about employee compensation (IVC). At the same time, the Shangshang Cloud Academy online learning platform serves as a potential channel for sharing the company's vision and updates with the workforce (SM). Shangshang offered comprehensive training programs (TM) to equip employees with the skills and knowledge of intelligent manufacturing processes. Furthermore, the "Reward for Children of Employees Admitted to Universities" program adds a motivational element for adoption (EA). Collaboration (COLL) and Agile Transformation (AT): The Shangshang digital platform facilitated the creation of a learning

ecology (COLL), encouraging knowledge sharing and continuous learning (AT). Shangshang also leveraged data from their Manufacturing Execution System (MES) to inform critical decisions, including the redesign of their performance appraisal system based on employee feedback (DDM).

Table 9: Summary of coding results

Code	Case 1	Case 2	Case 3	Case 4
IVC	✓	✓	✓	✓
SM	✓	✓	✓	✓
EA	✓	✓	✓	✓
COLL	✓	✓	✓	✓
DDM	✓	✓	✕	✓
AM	✓	✕	✕	✕
UC	✕	✕	✓	✕
TM	✓	✓	✓	✓
AT	✓	✕	✕	✓

The nine initial codes were grouped into four thematic areas to capture the essential dynamics influencing the research project. The first theme, Inclusive Vision and Communication, remains distinct as it focuses on effectively communicating a transparent and inclusive vision for a DT project. The second theme, Stakeholder Engagement, encompasses a broader range of considerations, including collaboration (COLL), User Centricity (UC), Employee Adoption (EA), and Stakeholder Management (SM). This theme emphasises the importance of actively engaging all relevant stakeholders in a DT initiative. The third theme, Adaptability, merges Data-Driven

Decision Making (DDM), Agile Management (AM), and Agile Transformation (AT). It highlights the need for flexibility and continuous improvement throughout the project lifecycle. By leveraging data insights and embracing agile methodologies, organisations can adapt to changing circumstances and optimise their approach. Finally, the fourth theme, Talent Management and Skills Development (TM), stands alone, emphasising the importance of investing in human resources to ensure the project has the necessary skills and expertise for successful implementation.

4.3 Recurring Themes

Following the thematic analysis of case studies, four key themes that highlight the importance of stakeholder management in driving employee adoption of new technologies during DT were identified. These themes underscore how stakeholder management plays a vital role in facilitating the adoption of new technology for DT.

1. *Inclusive Vision and Communication*

Successful DTs require a clear and well-communicated vision that goes beyond just technical goals. Effective leadership sets a vision that considers user needs, fosters a sense of ownership among employees, and emphasises the positive impact the new technologies will have on the Organisation and their work. This was evident in the national Turkish bank case, where executives established a vision for core banking replacement that emphasised improved customer experience and increased efficiency for bank tellers. Clear and consistent communication throughout the process, as emphasised by the lack thereof in the Delta City case, is essential for managing expectations, addressing concerns, and ensuring employee buy-in. Leaders can leverage multiple communication channels to keep employees informed, answer questions, and address anxieties where there are any. Effective communication is an essential factor for a successful change management process (Harikkala-Laihinen, 2022); it also builds trust and transparency, which are critical for successful change management (Kähkönen, 2021).

2. *Stakeholder Engagement*

Beyond simply informing employees about changes, successful stakeholder management involves active engagement. This includes involving employees in the decision-making process, addressing their concerns, and building trust. In the Turkish bank's case, successfully navigating this challenge likely involved effective communication strategies and a focus on user needs within the vision. By addressing potential anxieties about job security or increased workload through clear communication and training programs, the bank could have mitigated resistance and fostered employee buy-in.

Conversely, a lack of engagement, as seen in case 2 - where doctor feedback was disregarded, can lead to resistance and ultimately hinder adoption. Stakeholder engagement can take many forms. Involving employees in pilot programs or usability testing sessions allows them to experience the new technology firsthand and provide valuable feedback. Additionally, creating feedback mechanisms such as surveys, suggestion boxes, or open forums encourages employees to voice their concerns and ideas. By actively listening to and addressing employee concerns, organisations can build trust and demonstrate their commitment to a smooth and successful DT.

3. *Adaptability*

The case studies demonstrate the crucial role of adaptability in managing the uncertainties that come with DT projects. The Regional Hospital case study is a good example. The hospital did not show strong adaptability skills or ability to iterate critical processes or functions. The speech recognition project spotlighted the failure of the management to improve the software in a timely manner through user experience and feedback, ultimately leading to the project's failure. Shangshang cables, on the other hand, demonstrated strong, agile competencies. As the company matured its digital systems, it recognised the need to shift its focus from individual efficiency towards collaborative capabilities. This strategic shift demonstrates adaptability in talent management strategies. By fostering a culture of continuous learning through the Shangshang Cloud Academy and establishing mechanisms like "all-involved innovation" that encourage employee ideas, Shangshang Cable ensured its

workforce possessed the skills and mindset necessary to thrive in a more collaborative digital environment.

This culture could create some psychological safety among teams or individuals, assuage the fear of failure, and "change-oriented Organisational citizenship behaviour" (Iqbal et al., 2022). Furthermore, agile teams are typically cross-functional, bringing together diverse perspectives and skill sets. This collaboration can help to identify and address potential challenges early on, facilitating a smoother digital transition for employees.

4. *Talent Management and Skills Development*

Talent management is a critical stakeholder management function (Moss and Osborne, 2022). A skilled and knowledgeable workforce is essential for a successful technology adoption. According to Gupta and Goyal (2021), "enhancing the capabilities of the workforce through employee training, empowering people to work in creative and innovative ways, and technological upgrading" are effective change management practices that increase the chances of a transformation initiative being successful. Organisations need to invest in talent management strategies that go beyond one-time training sessions. Effective strategies include targeted recruitment to fill skill gaps, as identified by Gupta and Goyal (2021), comprehensive upskilling programs to equip existing employees with the necessary skills to use the new technologies, and perhaps even mentorship programs to provide ongoing support and guidance. The national Turkish bank's success likely hinged on its investment in employee training programs. By equipping their workforce with the necessary skills to operate the new banking system, the bank ensured a smoother transition and maximised the potential benefits of the new technology. Similarly, Shangshang Cable's approach to talent management stands out. Their investment in training programs, the creation of career paths with skill development incentives, and the "Shangshang Craftsman Developing Plan" all demonstrate a commitment to fostering a skilled and adaptable workforce.

4.4 Summary of Key Findings

The summary of findings following a rigorous review of the case study is provided below, and these findings show consistency in the codes and recurring themes of the thematic analysis.

Digital transformation

While a clear vision and a strong leadership are important throughout a DT process, the specific enablers needed for success can vary depending on the stage of the journey. Upskilling the workforce is critical for employee adoption of new technologies, and a user-centric approach is vital for ensuring successful implementation. Furthermore, a rigid, one-size-fits-all strategy is unlikely to yield optimal results. Organisations must remain adaptable, evolving their DT initiatives as their needs and the surrounding environment change.

Stakeholder management

Stakeholder management plays a very important role in ensuring the success of a DT initiative. Actively engaging employees throughout the process is crucial. This includes providing training programs to equip employees with the necessary skills to operate new technologies effectively. However, simply equipping employees with skills isn't enough. Effective stakeholder management goes beyond training. It's vital to prioritize collaboration among stakeholders and actively solicit feedback throughout the process. Employees need to understand not only how to use the new technology, but also how the DT initiative benefits them personally. Ignoring stakeholder concerns, particularly those of employees who will be directly impacted by the new technology, can significantly hinder employee adoption and ultimately lead to the failure of the entire initiative.

Organisational change management

For DT initiatives or regimes to be successful or effective, they need to be guided by a well-defined change management strategy. A phased approach that breaks down the transformation into manageable stages fosters clarity and allows for adjustments as needed. Throughout this process, clear communication of the change vision is non-negotiable. Employees need to

understand the purpose behind the transformation and how it will ultimately benefit them. DT should strive to make employees more efficient, not overburden them with additional work. A successful transformation fosters inclusivity, breaking down silos and encouraging collaboration across the Organisation. Employees should be empowered to contribute ideas and participate in the change process according to their strengths. Finally, addressing potential anxieties and resistance through clear communication and training programs is crucial for navigating the change effectively. By employing these strategies, organisations can create a more positive and supportive environment for a successful.

4.5 Challenges and Considerations in Stakeholder Management

Successfully managing stakeholders during DT initiatives presents a unique set of challenges. These challenges can stem from employee resistance to change, the need to manage diverse stakeholder needs with sometimes conflicting priorities, and the difficulty of measuring the impact of stakeholder management practices. While the thematic analysis of the case studies revealed the most potent themes in the case studies reviewed, in this section this research draws upon the reviewed case studies to identify stakeholder management challenges and considerations business managers or people in leadership roles should be aware of.

1. *Employee Resistance to Change*

One of the most significant challenges in stakeholder management is overcoming employee resistance to change. Employees may be apprehensive about the impact of new technologies on their jobs, or their workloads. This resistance can manifest in several ways, such as fear of job displacement, a lack of trust in the new technology, or concerns about the disruption that the change will cause to their work routines. The introduction of a speech recognition technology in case study 3 exemplifies this challenge, where doctors were worried about increased workload and potential errors resulting from the new system.

To effectively address employee resistance to change, clear communication is Important. Organisations must clearly communicate the benefits of the new technology and how it will improve employees' work lives. This communication should address employee concerns head-on and provide reassurance about job security and ongoing support. Additionally, involving employees in the design and testing phases of the new technology can help them understand it better and feel more invested in its success. Developing a well-defined change management process that outlines the transition plan and provides training and support resources can help employees adapt to the new technologies can also benefit the process.

2. *Managing the Diverse Needs of Stakeholders*

DT initiatives often involve a wide range of stakeholders with diverse needs and perspectives. Balancing these needs and ensuring everyone feels heard can be a challenge. For instance, in the Delta City *(COLL2)* case, there was a disconnect between the priorities of city officials focused on cost savings and budgetary constraints, and the needs of the firefighters on the ground who required a user-friendly and reliable system for emergency response. The Shangshang case study also depicted elements of managing the diverse needs of stakeholders. The company recognised the need to equip employees with the skills necessary for the successful implementation of DT, and they achived this with the cloud academy. Through its transparent payment policy, benevolent program for the children of employees admitted to universities, the company addressed the needs of job security, financial and psycholoigical support among others. These initiatives supported the successful implementation of the DT in Shangshang.

3. Measuring the Impact of Stakeholder Management

Sometimes, it can be challenging to represent with numbers the impact or effect stakeholder management had on a project or an initiative. Achieving this is challenging because many of the benefits are intangible. However, case study 5 offers valuable insights into the potential positive impact of effective stakeholder management. The project fostered a culture of data-driven decision making, which resulted in improved production processes and increased copper production. Additionally, the collaboration between data scientists, engineers, and metallurgists during the AI model development process likely led to a more user-centric solution that addressed the specific needs of the mine users. This in turn, could have contributed to higher employee satisfaction and a smoother adoption process.

One way this can be achieved is through monitoring and evaluation of relevant key performance indicators (KPI). By identifying relevant KPIs that align with stakeholder management objectives, metrics such as participation in feedback sessions, satisfaction surveys, or training completion rates could be effectively tracked. Additionally, a more direct approach could be conducting phased surveys to solicit stakeholders' level of

interest in adopting a new technology. This could help inform whether resistance to change is increasing or decreasing as DT initiatives progress.

These challenges spotlight three considerations for mitigation. As seen in the Delta City Council case (case study 3), where a disconnect existed between different stakeholder groups, conducting stakeholder mapping can be helpful. This involves identifying all key stakeholders who will be impacted by the DT initiative, as well as their interests, needs, and potential influence on the project. By understanding the stakeholder dynamics, organisations can develop targeted communication strategies and create opportunities for collaboration to ensure everyone feels heard and their needs are considered.

Stakeholder management is key for any DT initiative, especially for one that could have significant impact on jobs, skills, routines, or workload. However, effective stakeholder management is not without its challenges. Overcoming employee resistance to change, managing diverse stakeholder needs, and measuring the impact of stakeholder management practices are some of these challenges. While these challenges require careful consideration and mitigation strategies, the potential benefits of effective stakeholder management are substantial. Increased employee adoption of new technologies can lead to improved productivity, enhanced innovation, and a stronger competitive advantage.

5. Conclusion

This research has investigated the critical role of stakeholder management in driving employee adoption of new technologies during DT initiatives. To help answer this this question this research adopted a systematic literature review approach, analysing five case studies from various industries, and conducting a thematic analysis that identified four key themes that underscore the importance of effective stakeholder management. These themes include inclusive vision and communication, stakeholder engagement, adaptability, and talent management.

These themes align with the opinion of Morakanyane et al., (2017) who opined that DT requires a significant shift in strategy, and most importantly organisational culture. This change in direction can only be posibble as when there is a comprehensive vision by management or the leadership to take a new direction powered by technology. This vision may be "radical, disruptive, evolutionary, continuous and complex," but could help organisations create new business models they need to not just survive but thrive, even in the face of competition as seen in the review of literature on DT and its key chracterisitcs (see Cavalcanti, Oliveira & de Oliveira Santini, 2022 and Berman, 2012). Kane et al. (2015) also talked about digital leadership, a culmination of a change culture and skilled workforce – prerequisites of adaptibility, highlighting the significance of a vision-driven leadership in DT, and why adaptibiilty is critical. In the review of literature on stakeholder management, Papavasiliou & Gorod (2022) finding on the need to incorporate the needs of stakeholders, comunicate and consult with them, adds credence to stakeholder and talent management as recurring themes in this research. The research also acknowledged the challenges associated with stakeholder management, including overcoming employee resistance to change, managing diverse stakeholder needs, and measuring the impact of these practices. Despite these challenges, the case studies provided evidence that effective stakeholder management strategies can lead to significant benefits, such as increased employee adoption, improved productivity, and a stronger competitive advantage in this new era of digitally-powered business models.

Looking ahead, it is worth noting that the importance of stakeholder management will only continue to grow as the future of work continues to evolve. Future research can explore the

impact of emerging technologies like artificial intelligence (AI) on stakeholder Management practices. Additionally, investigating the long-term effects of stakeholder management on employee engagement, well-being, and overall Organisational culture can provide valuable insights for organisations navigating the complexities of DT.

In conclusion, this research has highlighted that successful DT hinges on effective stakeholder management. By prioritising clear communication, fostering collaboration, and investing in talent development, organisations can create an environment that empowers employees to embrace change and ensures the successful adoption of new technologies.

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