



The transition from waterfall and hybrid to agile project management in one large traditional bank in South Africa

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

1 November 2023

Abstract

An increase in the research literature on the digital economy in the traditional banking sector has led to the adoption of agile approaches and challenges faced by traditional and hybrid methods. However, scholars have focused on explaining the separate methods and models in other industries rather than the benefits or challenges in transitioning from waterfall and hybrid to agile project management. However, despite the limited literature on financial services, this study focused on examining the experiences of project managers during the transition from waterfall and hybrid to agile project management at a large traditional bank in South Africa. The research case study utilised a qualitative inductive approach as it allowed for understanding the experiences of project managers regarding the transition from waterfall and hybrid operation to agile methodology. Supporting the qualitative design, the interpretivist research paradigm guided the research journey and decisions. The researcher performed a descriptive analysis of the data collected. The research design helped the author assess detailed comments about project managers' different experiences and perceptions as they transitioned from waterfall and hybrid to agile methodology (Greening, 2019).

The study population comprised three divisions in one large traditional South African Bank: Corporate and Investment Bank, Retail and Business Bank, and Group divisions. From the population, the level of analysis was the one large traditional bank in South Africa and the embedded unit of analysis was the three divisions within the large traditional bank in South Africa. The unit of observation was project managers from each division. A small sample size of 12 project managers, consistent with qualitative research and arrived at when saturation was reached, was utilised for data collection. The data was collected using semi-structured interviews, transcribed and analysed using ATLAS.ti.

The principal findings revealed that agile adoption enhanced communication, collaboration and teamwork. In addition, it achieved a higher return on investment. However, the barriers to agile adoption included cultural and technological barriers. The findings revealed that the agile methodology works well with non-regulatory projects compared to regulatory projects. The researcher proposed enhanced communication,

training, development and collaboration as key strategies to enhance the transition and adoption of agile methodology. The research is expected to provide valuable insights and guidance into large traditional banks through a conceptual framework and through the theory of collaboration. By achieving the above the researcher contributes to the body of knowledge on project management by providing a conceptual framework for the transition from waterfall and hybrid to agile methodology in a large traditional bank.

Keywords

Waterfall, Hybrid, Agile, Scaled Agile Framework, Organisational agility, project management, Collaboration

Plagiarism declaration

I declare that this research project is my work. It is submitted in partial fulfilment of the Master of Business Administration degree requirements at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other University. I further declare that I have obtained the necessary authorization and consent to carry out this research.

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Chapter 1: Introduction to the Research Problem

1.1. Introduction

This research study focuses on transitioning from waterfall and hybrid to agile project management processes in a large traditional South African bank. Thesing et al. (2021) highlighted that the waterfall project management method followed and planned the entire project upfront, and the rest of the project was executed according to that plan for the project's duration. Ferreira and Nobre (2022) defined agile projects as an approach that involves incrementally delivering requirements towards a project while allowing for iterations during the project cycle.

Agile project management was introduced in 2001 by 17 professionals who congregated to create the "Manifesto for Agile software development" (Hohl et al., 2018). Due to rapid technological developments and innovation, waterfall and hybrid project management methods were no longer suitable for organisations focused on innovation and technology-driven projects (Balaban, 2021). The hybrid method was popularly adopted during the transition period to agile by combining "traditional and agile project management methodologies" (Cooper & Sommer, 2018).

The rapid pace of digital transformation globally has resulted in an innovative digital economy (Manurung & Kurniawan, 2022). In the digital economy, businesses utilise new technologies to gain a competitive advantage (Eslahchi, 2022; Dennehy & Conboy, 2018). Several aspects contribute to organisational competitiveness. Software and data, utilised to aid with choices for process improvement, are important components of an organisation's competitive edge (Thesing et al., 2021). These components are crucial for the development and expansion of organisations in order to achieve a competitive edge (Marnewick & Marnewick, 2023).

The software used in the banking sector to execute and control organisational activities was created by a team of software engineers who demanded precise outcomes every time (Lalmi et al., 2021). Many elements are examined before any real development or coding takes place for the team to perform efficiently and successfully create software. Software development starts with a concept, then translated into design and coding, bringing the idea to life (Khalid et al., 2020). A

process must be followed for this to function, as the task may be divided into portions brought together or worked on with a common aim in mind (Stray et al., 2016).

In light of the developments happening in the software engineering environment, there has been an increase in newly agile project management processes progressively replacing the waterfall and hybrid software development methodologies (Thesing et al., 2021). Organisations in the traditional banking sector saw the “introduction of agile project management as an opportunity” to introduce agile projects that maximised revenue in a changing business environment, improved project visibility, and enhanced project efficiency, and risk reduction (Loiro et al., 2019; Raj & Sinha, 2020). Most other organisations have adopted a better project management approach instead of an operational change to remain competitive in the market and create the most value by meeting business priorities (Baxter et al., 2023; Papadakis & Tsironis, 2020). Similarly, Mara and Madupe (2022) attested that financial services organisations had adopted waterfall, hybrid, or agile methodologies to derive the best value for strategic projects. With large traditional banks altering their banking procedures to keep up with the rate of digitalisation and taking advantage of smart devices to conduct business, there is a need for effective adoption and implementation of agile project management (Eslahchi, 2022; Dennehy & Conboy, 2018).

Although extant literature has explored the benefits of agile project management to the banking sector (Berkani et al., 2019; Burga et al., 2022), “the challenges and opportunities of adopting it in the traditional banking sector have not been widely explored”. Most South African traditional banks (Johnston & Gill, 2017; Khoza & Marnewick, 2020) have adopted the agile project management method. However, the lack of literature on implementation experiences negates its successful implementation. In addition, there is a scarcity of literature and frameworks that guide South African banks in assessing their agile readiness and the transition from waterfall to agile methodology. In light of this research gap, this study aimed to explore and understand the experiences of project managers in adopting and implementing agile project management methodology at a traditional South African bank.

Given the literature review findings and primary study, this study recommends the application of the “agile adoption framework”, thus contributing to project management practice. The “agile adoption framework” provides a roadmap to the traditional bank in deciding whether to adopt the agile methodology by identifying the potential benefits of the adoption, identifying challenges to adoption, and discussing organisational readiness for agile adoption. With this knowledge, the bank can eliminate the identified barriers to agile adoption. In addition, the agile adoption framework will provide a foundation for organisations to successfully embrace agile practices to boost the innovation potential of their “software development teams”.

In addition to the framework, the study contributes to the theory by enhancing the understanding of agile project management by applying the theory of collaboration (Gandomani & Nafchi, 2015). There is a scarcity of research that has applied the collaboration theory in research on agile adoption in the South African banking sector. To that end, the study provides valuable theoretical insight into the centrality of collaboration in agile adoption.

The study further provides valuable insights and guidance to this traditional bank as it aims towards transitioning from waterfall and hybrid project management approaches to agile methods. The study is unique as it highlights the traditional bank's tailormade project management framework. The findings contribute to the existing body of knowledge in project management and the large traditional bank in South Africa that is under review. In this way, they are enabling organisations to make informed business decisions and improve their project delivery processes.

Furthermore, emphasising the choice to continue with or modify project management approaches will contribute towards management. This study will provide direction for management that will enable project managers to comprehend how to change procedures and choices within the context of the project environment in the financial services sector. Furthermore, the study adds new knowledge to the body of knowledge on information systems development, thus allowing for future expansion. The evidence supplied by the study has added to the corpus of knowledge, given that currently, there is a paucity of research on the transition and adoption of agile methodology in the South African banking sector.

1.2. Description of the problem

Adopting agile project management methodology in the banking sector is well documented in the literature (Berkani et al., 2019; Brühl, 2022; Johnston & Gill, 2017; Khoza & Marnewick, 2020). The studies primarily focused on the drivers and barriers of adopting agile methodology while transitioning from traditional and hybrid methods (Azenha et al., 2021; Nicula & Ghimiși, 2019; Zasa et al., 2020). Although there is interest in adopting agile project management in the South African traditional banking sector (Khoza & Marnewick, 2020), most banks have not gone fully agile, suggesting that challenges limit the transition towards and adoption of agile methodology.

Currently, there is little empirical research that provides insights into the “experiences of project managers regarding the transition from waterfall and hybrid to the agile method”. Much of the research that informed this study came from international contexts. International studies on agile methodology conducted by Rahy and Bass. (2021) explored the technical efficacy of the method, which is vital to ensure the success and quality of projects. Berkani et al. (2019) explored the triggers for agile adoption by a French central bank. The researcher found support for projects that experimented with the agile method. Some studies that have explored agile adoption experience in the banking sector in international contexts identified barriers such as resistance to change (Azenha et al., 2021).

Munteanu and Dragos (2021) indicated that the move from “traditional methods to agile methods” revealed that using the agile method allowed the organisation to leverage changes at any point in the project to meet the project's demands. Despite the numerous benefits of agile methodology, there is a paucity of research on the migration from traditional methods to agile and the experiences of the banking sector during the transition. Drawing from the literature that commented on international contexts (Baxter et al., 2023; Cooper & Sommer, 2018; Hohl et al., 2018; Loiro et al., 2019; Raj & Sinha, 2020) sought to explore how a large traditional bank in South Africa is currently adapting its project management processes while transitioning from waterfall and hybrid to agile project management.

The slow pace of agile adoption in the traditional South African banking sector can also be attributed to the lack of guidelines (Khoza & Marnewick, 2020). In light of this knowledge gap, the study employed the theory of collaboration to provide a

theoretical guide on how the transition from waterfall and hybrid to agile methodology could be driven by collaboration. In addition, the study proposed the agile adoption framework to guide the transition and adoption processes for agile methodology.

1.3. Research objectives

The study's objective was to investigate the project managers' experiences in a large, traditional bank in South Africa as they moved from “waterfall and hybrid to agile project management”. The objectives that guided the study are:

- To explore strategies and best practices that a large traditional bank could utilise to enhance the transition from waterfall and hybrid to agile project management.
- To establish the influence of the regulatory environment on adopting and implementing agile project management methodology at a large traditional South African bank.
- To identify the benefits of adopting agile project management at a large traditional South African bank.
- To investigate the key challenges a large traditional South African bank faces when transitioning from waterfall and hybrid to agile project management.

1.4. Conclusion

This chapter concludes the discussion on the background of project management processes in a traditional bank, using waterfall and hybrid compared to agile processes. Due to the changing technology environment, traditional banks must change project management processes to ensure they are competitive in the market. If a bank does not align its project management processes to its values and goals, it will lose benefits and delay project end dates. There are many challenges in the business environment when it comes to changing project management processes, and the resistance to changes in project management processes arises from training, culture and mindset. Agile and hybrid processes provide more flexibility in project processes, and traditional processes are more flexible. However, a large traditional bank tends to tailor its project management processes to suit its regulatory environment.

The study is divided into seven chapters. The current Chapter 1 presents an introduction to the research problem. The chapter describes the aim of the study and the research objectives. In addition, the chapter motivates readers by reviewing studies on waterfall, hybrid and agile methodologies, pointing out the various gaps in the research. The chapter presents the research problem, followed by the academic and theoretical contributions derived from the study.

Chapter 2 presents the literature review. The literature review describes the four research objectives that guide the study. The thematic focus of the literature review are the benefits of adopting agile project management at a large traditional South African bank, the key challenges faced when transitioning from waterfall and hybrid to agile project management, the regulatory environment influencing the adoption of and implementation of agile project management methodology and the strategies and best practices that could be utilised by financial services organisations in the transition and adoption of agile project management methodology. In addition, the chapter analyses the collaboration of research studies through various theoretical lenses. The chapter also presents the conceptual framework compiled by the research based on the literature covered by this study.

Chapter 3 is dedicated to the research questions. The questions complement the research objectives presented in Chapter 1. The chapter presents the activities that will be done in order to address each of the research questions.

Chapter 4 provides the research methodology. The study's methodological pillar includes the research design, research strategy, philosophy, population, sampling, and sample size. In addition, the chapter identifies project managers as the unit of analysis. Thereafter, the measurement instrument is presented, justifying the choice of semi-structured interviews. For the data analysis, the chapter justifies the use of ATLAS.ti. Issues of trustworthiness and ethical issues are also discussed. The chapter also presents the limitations of the study.

Chapter 5 presents the findings, which are a product of the thematic analysis of the qualitative data. The themes presented answer each of the research questions.

Chapter 6 discusses the findings and links them with the literature findings from Chapter 2. In addition, the collaboration theory links the findings and agile project management practice.

Chapter 7 concludes the study by presenting the principal findings derived from the answers to the research questions. In addition, the chapter indicates the study's contribution, focusing on the managerial implications and implications for project management. A framework for agile adoption is presented to guide the transition and adoption of agile methodology. Finally, the chapter presents the study's limitations and suggests future research.

Chapter 2: The Literature Review

2.1. Introduction

The theoretical framework for the theory of collaboration is presented in this chapter, along with a review of prior research on the research construct of “agile management versus waterfall and hybrid project management decision models”, and how to choose the best approach for a given project. In addressing the research questions, the chapter provides definitions of waterfall, agile and hybrid methodologies. The advantages and disadvantages of each method are provided. The benefits of agile methodology are presented, justifying the transition from waterfall methodology. The challenges faced in adopting agile methodologies are discussed, followed by a review of the regulatory environment. Towards the end of the chapter, the organisational agility theory and conceptual framework are presented.

2.2. Theoretical framework

The theoretical framework that allows for the interpretation of this study is the theory of collaboration. The theory of collaboration developed by Egghe (1991) highlights that collaboration is important to maintain functionality and provide positive outcomes within organisations. Supporters of the collaboration theory emphasise that team members are not the only ones who should apply teamwork and collaboration, but all an organisation's departments should do so (Piccolo et al., 2022).

Collaboration is not only limited to the organisation but can also extend to customers and other stakeholders. For example, agile teams collaborate with clients in agile management projects in agile methodology (Eilers et al., 2022; Lee & Chen, 2023; Tam et al., 2020). Collaboration with customers helps agile teams to understand what the customers want and need (Cooper & Sommer, 2018).

Collaboration with customers in agile project methodology aligns with the Agile Manifesto, which emphasises collaboration's importance in promoting a consistent flow of information in their workflow. This causes the relationship between the project team and the customers to improve, including improving the organisations' products and services (Altuwaijri & Ferrario, 2022).

In agile methodology, customers co-create value with the company, and consumers have a bigger role as the collaboration between consumers and the project teams should occur on an iterative basis (Gandomani & Nafchi, 2015; Ayed et al., 2017). Project teams in agile methodology rely on customer feedback to assess the project's quality. They use feedback to make iterations where necessary to make the product more to the customers' liking (Leong et al., 2023). The theory emphasises team collaboration (Urton & Murray, 2021). Collaboration in organisations is essential for a productive and effective working environment. The transition from the waterfall methodology to the agile method can be enhanced by collaborative activities such as team-building exercises and having different workshops (Buganová & Šimíčková, 2019). Collaborative teams can be put together relatively quickly but must be constructed systematically (Ghayyur et al., 2018).

2.3. Defining the project management methodologies

The project management methodologies addressed in this study are traditional, hybrid and agile (Conforto et al., 2016). The purpose of this section is to describe each of the methods and provide insights into the drivers for adopting agile methodology.

2.3.1. Waterfall methodology

The Waterfall project management (WPM) is a traditional method introduced by Winston W. Royce in 1979. The methodology is founded on the principle that comprehensive planning should come before any project implementation. The waterfall approach has been widely used for many years and offers certain benefits. It provides a structured and sequential approach to project execution, with well-defined phases and deliverables (Binci et al., 2023). It can provide clarity and predictability regarding project scope, timeline, and budget. The waterfall methodology is also more suitable for projects with stable and well-understood requirements (Alaidaros et al., 2020). Johnston and Gill (2017) indicated that the waterfall method could be considered the sequential application of the following six

steps: requirements and analysis, design, development, testing, implementation and maintenance, as indicated in Figure 2.1.

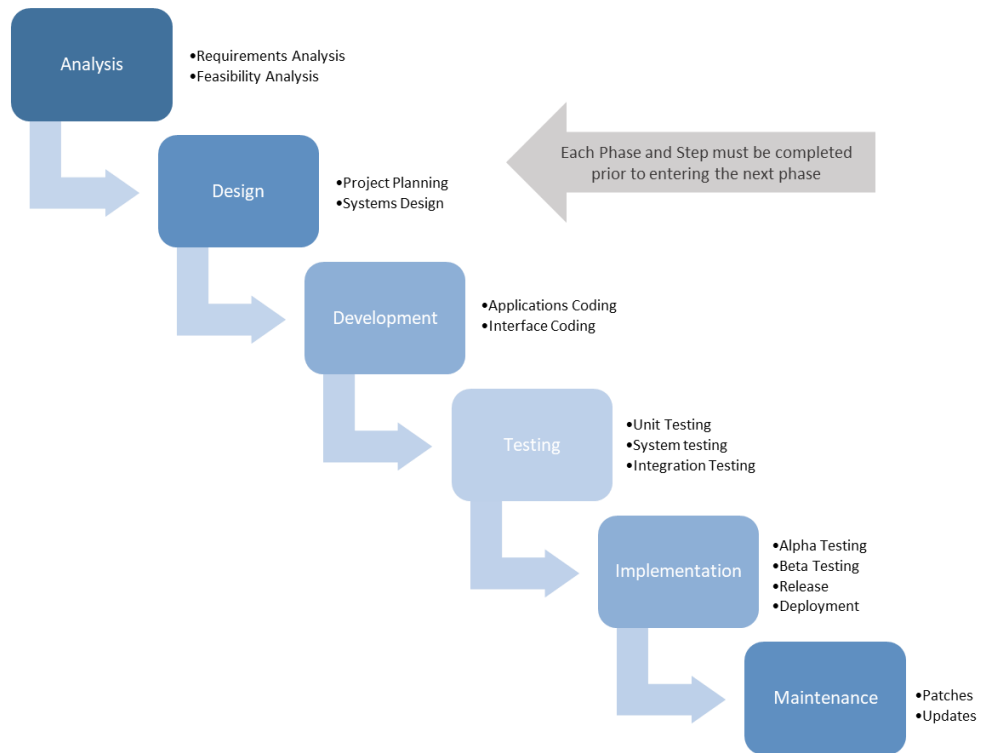


Figure 2.1: Waterfall model for project management (Source: Johnston & Gill, 2017)

The waterfall methodology allows for thorough planning and monitoring without requiring too much change because it is comparatively easy to use, predictable, linear, and has well-defined content (Khalid & Janjua, 2021). Additionally, the waterfall has a predetermined project budget, timeframe, and scope. These three components guarantee that a project is carried out according to plan and is finished on schedule (Lee & Chen, 2023). The project course, sequence, and specific tasks are drawn up in advance because the waterfall technique does not expect any changes to the project plan to occur (Lalmi et al., 2021; Thesing et al., 2021). The information systems function (ISF) largely oversees the outcome controls used extensively by waterfall approaches (Alaidaros et al., 2020).

Implementing changes in research and development has changed the shape of projects, which are unique and subject to a high level of risk and uncertainty, which

restricts the applicability of employing conventional WPM techniques (Ghayyur et al., 2018; Aguinis et al., 2017). Projects can take many different forms, depending on the kind of study, the innovation's focus, and the field of implementation, research, and development (Binci et al., 2023). Most studies contend that WPM, which combines numerous processes and completes them in order, best suits large businesses (Berkani et al., 2019; Ciric Lalic et al., 2022). According to Gandomani et al. (2020), traditional project managers matched needs with project specifications to determine the output.

Thesing et al. (2021) went into further detail about the advantages of the waterfall method, wherein the project manager communicates the anticipated outcomes fairly well at the beginning of the project. Then, the project can be planned with its targets already established. Lee and Chen (2023) contended that projects can be meticulously planned and carried out from start to finish while defining the tasks, roles, and due dates. The methodology allows for resource planning that is predictable, stable, and structured (Alaidaros et al., 2020; Thesing et al., 2021).

The waterfall methodology's proponents argue that it is a static methodology that allows project operations to be planned and scheduled in a precisely defined sequence, often with very limited interdependencies (Al Maamzi & Tawfik, 2022). The waterfall technique also underlines the interdependence of each project step on each other, but the first step is the most crucial one because it influences the phases that come after it (Ghayyur et al., 2018).

Despite being predictable, the waterfall technique is time-consuming since it necessitates significant documentation (Anthony Jnr, 2023). Another drawback is the waterfall methodology's presumption that a project plan can accommodate every stage of a project's life cycle (Eilers et al., 2022).

Regarding projects in the banking industry, it has been highlighted that there are complex interrelationships and many interfaces, which are not reflected by the linear linkages that serve as the foundation of the waterfall approach (Berkani et al., 2019; Cooper & Sommer, 2018). Since change is inevitable, as it is in the reality current construction projects due to unforeseen events and the quick development of technology, the waterfall technique is susceptible to isolating projects from a technology-driven world (Ghayyur et al., 2017).

Azenha et al. (2021) argue that the waterfall method is neither flexible nor adaptable to changing project requirements. Since traditional procedures are sequential, when using the waterfall method, it might prove difficult to incorporate modifications once a phase is finished, which could result in delays and higher costs (Eilers et al., 2022). The limited stakeholder involvement and communication that traditional techniques frequently entail can also lead to misalignment and misconceptions (Conforto & Amaral, 2016; Fernandes et al., 2018).

According to Alaidaros et al. (2020), the challenge with WPM stems from ambiguous and unclear initial needs, which lead to incorrect assumptions during the initial planning phase and have a significant influence on later project processes. Change requests that affect the product design must wait until later releases when using the waterfall method, as poorly functioning software is only revealed at the project's conclusion (Uhl-Bien & Arena, 2018).

Similarly, Thesing et al. (2021) referred to the drawback that clients are frequently overloaded with the necessity to identify all needs in great detail at the beginning of the project, resulting in planning that is weighed down with uncertainty. To address these limitations, organisations have started adopting agile methodologies (Zasa et al., 2020). The agile project management (APM) method is described in the following subsection.

2.3.2. Agile methodology

Agile project management (APM) methodologies are a group of software development techniques created to adapt to the rapidly changing environment during the project (Manurung & Kurniawan, 2022). Gemino et al. (2021) emphasised that agile methodologies can update project requirements based on changes in the environment. Extant literature shows that some of the main reasons for project failure were changing requirements for business, organisational, and project-related reasons (Eslahchi, 2022; Dennehy & Conboy, 2018).

The software requirements can vary throughout the SDLC's various phases, necessitating innovation in software development management techniques that can

better accommodate the constantly shifting nature of requirements (Alade et al., 2022; Bansal et al., 2018).

Agile methodologies ‘accept’ the reality of change and manage needs by ‘embracing’ rather than ‘controlling’ changes (Ghayyur et al., 2018). The principles behind the Agile Manifesto are presented in Table 2.1 below:

Table 2.1: Principles behind the agile manifesto

Principle (P)	Description
P1	To encourage through timely and reliable software delivery.
P2	To permit modifications throughout the entire development process. Agile methods leverage change to the advantage of the competitiveness of the client.
P3	To provide functional software regularly within a short period, preferably a few weeks.
P4	To promote collaboration between business professionals and developers throughout the project.
P5	To focus initiatives on driven individuals, have trust in their ability to finish the job, and give them the resources and support they require.
P6	To encourage in-person interaction as a productive and efficient means of communicating with a development team.
P7	To promote the focus on functional software as the important metric for progress.
P8	To promote and encourage sustainable growth through the use of agile methods.
P9	To constantly focus on technical perfection and intelligent design for increased agility.
P10	Stressing the value of simplicity is a skill that maximizes the amount of labour that can be avoided.
P11	The best architecture, requirements, and designs are created by self-organising teams.
P12	The team can adapt and change how it behaves in response to regular evaluations on how to work more efficiently.

(Source: Heimicke et al., 2021, pp. 197)

Table 2.1 shows the principles that the Agile Manifesto sought to follow. These principles reflect numerous benefits, which are discussed in section 2.4.

The agile family has various agile methodologies, but the popularly used ones are “Scrum, Extreme programming (XP), Lean software development (LSD) and Kanban Boards” (Lalmi et al., 2021; Heimicke et al., 2021; Conforto & Amaral, 2016). The characteristic features of each methodology are presented in Table 2.2.

Table 2.2: Types of agile methodology and their characteristics

Agile methodology	Characteristics
Scrum	<ul style="list-style-type: none">• Scrum is an agile development methodology that works in a collaborative environment. It assembles a collection of meetings, tools, and responsibilities that help teams collaborate on product development (Stray et al., 2016).• It is iterative, meaning changes can be made at any point in the project cycle (Lalmi et al., 2021).• It does not require a full project plan at the start of a project as it anticipates obtaining more refined and detailed product requirements and addressing these through incremental and iterative steps called sprints (Alade et al., 2022).• The three key ingredients in product development are the product owner, the agile team and the “Scrum Master”. A “Scrum Master” is a leader who teaches the team about Scrum and ensures that it is deployed to fit the organisation's culture while delivering the promised advantages (Gemino et al., 2021).
Extreme programming	<ul style="list-style-type: none">• Extreme methodology embraces the values of communication, feedback, simplicity, courage and respect for one another (Ghayyur et al., 2018).

	<ul style="list-style-type: none"> • XP practices include team meetings, paring, personal space, a weekly cycle, stories and continuous integration (Lalmi et al., 2021).
Lean software development	<ul style="list-style-type: none"> • LSD values avoid wasted time from when the team begins to address a customer's requirement(s) to when software is developed to satisfy those needs. • Defects found early in product development are more easily addressed than those found later. Therefore, LSD emphasises continuous testing (Heimicke et al., 2021). • Other LSD values include respect for people, quick delivery and maximising Return on Investment (ROI).
Kanban boards	<ul style="list-style-type: none"> • Agile techniques like Kanban are centred on controlling workloads by matching capacity to needs and enhancing the resolution of system-level bottlenecks. Participants can see the work items' progression and process from beginning to end thanks to their visualisation (Conforto & Amaral, 2016).

Despite its many benefits, the agile methodology has received valid criticism from some researchers. Thesing et al. (2021) said that the difficulty with agile methods is that they are inappropriate for projects with particular qualities, such as when the final product cannot be divided into discrete deliverables or when frequent adjustments or iterative approaches are prohibitively expensive or technically or legally impossible (Lalmi et al., 2021; Lee & Chen, 2023).

Marnewick and Marnewick (2023) reported similar difficulties with implementing agile procedures, such as worries about employee allocation, a lack of management commitment, and alignment issues. Real-time applications and safety-critical systems are examples of projects with high operational risk that do not lend themselves to an agile, iterative methodology (Manurung & Kurniawan, 2022).

This section describes the aspects of agile methodology which make it a preferred methodology in the current environment, characterised by rapid technological changes and customer expectations. However, in some situations, the agile method

alone may not be appropriate. Consequently, the hybrid method was introduced to address this in the following context.

2.4. Hybrid methodology

The hybrid project management (HPM) methodology combines WPM and APM methodologies (Reiff & Schlegel, 2022). The objective of HPM is to combine an agile method at the operational level and traditional methods at the level of decision-making in order to combine the advantages of both management systems (Prasetyaa & Pratama, 2021). To provide a more adaptable and flexible project management framework, “hybrid methodology” seeks to capitalise on the advantages of both waterfall and agile methodologies (Eilers et al., 2022; Gandomani et al., 2020; Prasetyaa & Pratama, 2021). Lalmi et al. (2021) stated that the “hybrid approach” eliminated the drawbacks of the waterfall and agile approaches while using their strengths. The “hybrid approach” retains the waterfall methodology’s predictability, but all functions should collaborate to become more agile (Azenha et al., 2021). Figure 2.2 illustrates the combined use of waterfall and agile methodologies in the hybrid methodology.

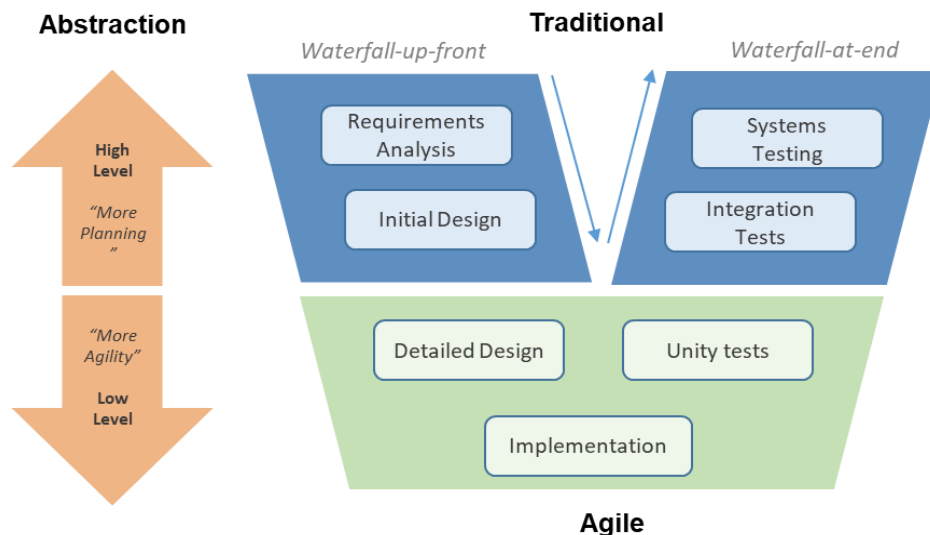


Figure 2.2: Hybrid methodology (Source: Azenha et al., 2021)

The hybrid approach is advised when it is important to reduce the number of low-value or unneeded functions or to expedite development (Ciric Lalic et al., 2022).

Conforto et al. (2016) stated that the hybrid method was beneficial when meeting a project's unique requirements. Using a hybrid approach has several benefits, including improved coordination and communication, increased team productivity, and a better fit between the work procedures and methods (Cooper & Sommer, 2018). Hybrid project management procedures make collaboration and stakeholder involvement possible, improving project outcomes and aligning expectations (Gemino et al., 2021). Hybrid approaches enable organisations to respond to changing requirements and deliver value incrementally by embracing agile principles, such as iterative development and constant feedback (Dennehy & Conboy, 2018). As a result, there may be an increase in project success rates and customer satisfaction (Hobbs & Petit, 2017; Gemino et al., 2021; Gandomani et al., 2020).

According to Thesing et al. (2021), a hybrid approach combined the benefits of agile and waterfall operations, enhancing the plan-driven process model. Khalid and Janjua (2021) also argued that WPM provides the advantage of having the 'big picture' planned and suitable subprojects managed agilely. Aguinis et al. (2017) challenges that hybrid project management is a great option for creative projects, projects with a lot of uncertainty, and projects that require a lot of planning to finish because of limitations in the workplace or weak business areas. Agile processes allow an entity to use 'high-frequency communication and short feedback cycles for subprojects that require transparency and adaptability, but that follow the structure of a higher-level WPM plan' (Thesing et al., 2021, p.747).

Extant literature has raised concerns about the efficacy of hybrid methodology (Alaidaros et al., 2020; Al Maamzi & Tawfik, 2022). According to Anthony Jnr (2023), the problem with hybrid approaches is that it can be challenging to understand how the techniques differ or are similar, as well as the advantages or disadvantages of the hybrid approach. This is typically because there are so many different hybrid approaches that have been used in the past. In addition, Berkani et al. (2019) indicated that conflicts in process, business, people, and a lack of standardisation are the primary challenges managers from organisations must overcome when using hybrid techniques.

When merging various approaches, integration problems can occur, necessitating careful planning and coordination (Fernandes et al., 2018; Gemino et al., 2021). Cultural transformation inside the organisation may also be required to adopt the hybrid approach and thereby overcome resistance to novel methods and procedures (Hobbs & Petit, 2017). Additionally, project managers must have a thorough understanding of both traditional and agile approaches in order to handle hybrid projects effectively (Buganová & Šimíčková, 2019; Azenha et al., 2021). Based on the literature reviewed above, it is acceptable to conclude that traditional project management techniques offer structure and predictability but may lack flexibility and adaptability. In addition to increasing flexibility, stakeholder involvement, and adaptation, hybrid project management techniques integrate the advantages of both traditional and agile methodologies (Bargenda, 2020; Lalmi et al., 2021). In attempting to reap the rewards of this strategy, however fully, businesses might initially experience integration difficulties, cultural shifts, and difficulty when attempting to manage hybrid projects.

2.5. The benefits of adopting agile project management

Since the early 21st century, when the “Manifesto for Agile software development” was published, agile project management has grown in popularity (Schneider, 2023). Similar opinions were held by Santos and Fernandes (2023), who claimed that agile project management is a method that is concerned with having the capacity to react quickly and effectively to change. Organisations that have embraced agile processes report that they are reportedly light, effective, and manoeuvrable (Basten & Haamann, 2018; Cooper & Sommer, 2018; Lee & Chen, 2023). In order to comprehend software practitioners' productivity and agile software development during the COVID-19 pandemic, Anthony Jnr (2023) reviewed the literature. He reported that using an agile approach gave engineers a platform for collaboration that increased productivity. According to Hobbs and Petit (2017), agile projects had one-third fewer failures and “four times more successes” than waterfall projects. The results supported their theory. This balance indicates why so many organisations are drawn to agile operation as a method. (Conforto et al., 2016).

Ciric Lalic et al. (2022) stated that most firms utilised IT projects to implement IT strategies, which helped them achieve their strategic objectives and aims. Instead of using conventional waterfall methodology, agile project management has been proposed as a feasible alternative to deliver effective IT projects (Aguinis et al., 2017). Due to its potential, organisations adopted agile project management to complete IT projects on schedule and reaped significant advantages (Alaidaros et al., 2017; Serrador & Pinto, 2015; Van Kelle et al., 2015). Additionally, Bansal et al. (2018) stated that an advantage of agile software approaches was that they provided a set of processes that allowed for quick adaptations to match the demands of modern product development. Alade et al. (2022) and Ghayyur et al. (2018) contended that when used on small, unrelated projects, agile methodologies were less burdensome and better suited to the software industry's expanding need for quick expansion and ability to react to frequent change. Agile methodologies benefitted large, scattered projects and small, centralised teams (Ciric Lalic et al., 2016; Piwowar-Surej, 2021). According to Ghayyur et al. (2018), applying agile methodologies in project portfolios such as Kanban, have many important advantages, including close management, accurate planning, client comprehension, and increased productivity.

Agile methodology allows for collaboration, teamwork, flexibility, simplicity, higher ROI, quick turnaround, respect for people, customer involvement and continuous iterations, as indicated in Table 2.2 (Anthony Jnr, 2023). Consequently, organisations that have embraced agile methodology have seen improvements in team dynamics, increased employee satisfaction due to better communication and collaboration, more frequent deliveries to stakeholders, improved project management, flexibility in making changes, and the incorporation of customer feedback for planned deliveries (Pardo-Calvache et al., 2019; Thesing et al., 2021). Flexibility means that changes can occur at any project cycle stage. Agile methodology can be utilised in organisational contexts (Lalmi et al., 2021).

In addition, agile methodology promotes communication through sprint reviews, agile ceremonies and daily stand-ups (Stray et al., 2016). Sprint reviews are meetings held at the end of each sprint (usually one or two weeks) to discuss progress, blockers and determine solutions (Schneider, 2023). Daily stand-ups are daily meetings that the agile team uses to review progress and identify blockers (Alade et al., 2022).

Agile ceremonies encompass “sprint planning” meetings, “sprint reviews and daily stand-ups” (Bansal et al., 2018). From a communication standpoint, the daily stand-ups keep developers, project leaders, and customers informed of project status and aid developers in resolving design challenges more quickly (Stray et al., 2016). Agile ceremonies are understood as communicative platforms where developers, project managers and stakeholders celebrate achievements of sprint goals (Khalid et al., 2020). The reviewed literature provided insights into the benefits of agile methodology to an organisation. Literature is scarce on the banking sector in South Africa. However, the few studies identified indicated that banks benefitted from various methodologies' availability (Lalmi et al., 2021). However, what is not yet known is how the traditional banking sector has transitioned from waterfall and hybrid to agile methodologies.

2.6. Barriers to the adoption of agile project management

Organizational culture, human resources, and technological aspects all impact the shift to agile project management (Gemino et al., 2021). However, only a small number of these studies concentrated on developing nations; the majority were carried out in developed nations, mainly in Europe and North America (Dennehy & Conboy, 2018).

2.6.1. Organisational culture factors

Research indicates that agile work environments are most effectively facilitated by a “collaborative culture”, an appropriate compensation scheme, and a well-designed workspace that strikes a happy medium between open and private office areas (Bukanová & Šimíčková, 2019; Gregory & Taylor, 2019). Indeed, it was demonstrated that a well-designed, socially conscious physical environment boosts team and project manager morale, improving performance (Binci et al., 2023). Al Maamzi and Tawfik (2022) stated that organisational culture is essential to agile software development and is a major driver of agile methodology's progress.

Agile adoption can be successful with the help of senior management support, effective communication, and teamwork (Altuwaijri & Ferrario, 2022). Getting the support and dedication of senior management was identified by Stray et al. (2016) as one of the biggest challenges faced by software developers in the software industry. Tam et al. (2020) asserted that groups and project managers were better able to understand what clients wanted as well as how much work was required when effectively collaborating and communicating.

Software experts accustomed to current development methodology act as impediments when an entity tries to convert from a traditional to an agile development process (Gandomani & Nafchi, 2015). Sonterre (2020) contended that making organisations more agile is random and is primarily influenced by several organisational elements, including but not limited to the organisational structure, the staff, culture, and management practices. These factors can negatively impact the effort at each stage of adopting agility (Tam et al., 2020).

The findings revealed five critical causes for this problem: inefficiencies in knowledge, cultural challenges, wrong mindset, lack of teamwork, and opposition to the change (Aelers et al., 2022; Šimícková et al., 2021). Additionally, Ram and Dolla (2023) argued that all stakeholders are affected by mindset change, mainly resulting from views and ideas about the development process, critical roles and responsibilities, and people's resistance to change. Focusing on and enhancing organisational behaviours is relevant in such circumstances as cultural challenges can result from organisational culture rather than people's culture (Fernandes et al., 2018; Gemino et al., 2021). Salinas et al. (2018) indicated that organisational factors were linked to social factors such as cultural background. The cultural background of practitioners influences their attitudes toward agile methodology. Thus, cultural differences have a significant role in determining whether an organisation will adopt a new technology and how, when, and what kind of technology will be adopted (Lee & Chen, 2023).

For instance, Altuwaijri and Ferrario (2022) found that organisations in Saudi Arabia shared a similar corporate culture that was impacted by the national culture, the organisation's vision, values, regulations, and the people hired. However, implementing agile approaches called for a cultural shift that required training

opportunities to raise staff members' knowledge and acceptance of innovation (Tam et al., 2020). Moses (2015) stated that firms with a hierarchical structure have a harder time adopting agile methods. Moses (2015) further highlighted that these types of organisations are not best suited for agile practices as they necessitate a transfer of authority and accountability from the management team to the development team and a vibrant, encouraging, and collaborative culture (Tam et al., 2020).

2.6.2. People factors

People factors also influence agile adoption. According to earlier research, individuals are thought to be the most important factors in the adoption and execution of agile practices in enterprises (Khalid et al., 2020). Organisations that struggle to utilise the advantages of agile methodology cited the inability of their staff to communicate effectively and a lack of knowledge and expertise (Gandomani & Nafchi, 2016; Hobb & Petit, 2017). Some of the implementation issues experienced by organisations include team members' inability to collaborate effectively and efficiently to complete agile software projects and to work with unknown objectives (Buganová & Šimíčková, 2019; Fernandes et al., 2018).

Studies primarily from the Americas and Europe indicated that a productive team is essential for implementing agile software development techniques (Aguinis et al., 2017). Customers are essential to the effective implementation of agile operations. Anthony Jnr (2023) argue that engaging, informing, and consulting with clients during the agile development process ensures the project is completed successfully and according to their specifications.

One of the concepts of agile operation is that clients should participate in the agile development team directly and indirectly, as mentioned by Binci et al. (2023). Additionally, empirical studies by Buganová and Šimíčková (2019) and Altuwaijri and Ferrario (2022) supported this client-developer interaction. In addition, Tam et al. (2020) contended that customer involvement in adopting the agile strategy is necessary for agile projects to succeed in the setting of industrialised nations. Based on findings from previous studies, it can be concluded that the people factor

significantly influences the adopting of an agile methodology for both employees and customers. The technical factors are presented in the next section.

2.6.3. Technical factors

A major obstacle to adopting agile methodology by practitioners, particularly early adopters, was the dearth of training and learning opportunities among software practitioners (Ciric Lalic et al., 2022). Gandomani and Nafchi (2016) stated that these training opportunities can raise awareness and knowledge of agile functioning, thus increasing the likelihood of adopting agile techniques.

The adoption of agile techniques is still in its early stages in the nation, according to a study by Altuwaijri and Ferrario (2022) done among mobile app developers to examine awareness, current usage, and attitudes towards agile operation. The study's conclusions showed that few practitioners were aware of agile methodology. According to the abovementioned studies, all stakeholders, including top managers, should participate in training and learning.

2.7. Summary of barriers to the adoption of agile project management

The previous literature reviewed above indicated that organisational, people and technical factors are the major barriers to adopting and implementing agile methodology in organisations. Table 2.3 below is a summary of the barriers.

Table 2.3: Barriers to the adoption of agile methodology

Dimension	Factors
Organisational	Organisational culture Communication and collaboration Top management support
People factors	Skills and competencies Customer involvement Training and development
Technical factors	Tools and technology

	Strategies for delivery Agile software skills
--	--

(Source: Altuwajri and Ferrario, 2022)

2.8. Policies and regulations in traditional banks in South Africa

Regulatory compliance projects pose challenges for implementing pure agile methodologies due to restrictions on beta implementation, non-completed development, and explicit compliance requirements to avoid audit issues and reputational risks (Beerbaum, 2021). Beerbaum (2021) further argued that while agile methodologies prioritise individual customer considerations and heterogeneous requirements, regulatory compliance requirements are typically few, are clearly defined, and do not require frequent refinements. Santhanam et al. (2022) argued that in regulatory compliance agile projects, there is a risk of applying agile methods without providing real added value, highlighting the need to carefully balance which cycles and tools deliver value in the context of compliance projects. Strict government regulations may be both a barrier and an enabler of quality service. Most governments, including the South African government, have introduced protection of information and privacy regulations to protect the privacy of citizens and customers (Collignon et al., 2022; Rindell et al., 2021). These regulations safeguard citizens while ensuring software developers focus on quality products (Bargenda, 2020; Lalmi et al., 2021).

2.9. Conceptual framework of the Study

Based on the literature review revealed that the key factors influencing the adoption of agile methodology are organisational culture, people and technological factors. These factors and the theory of collaboration and organisational agility theory informed the conceptual framework for the study. The conceptual framework is presented in Figure 2.3 below.

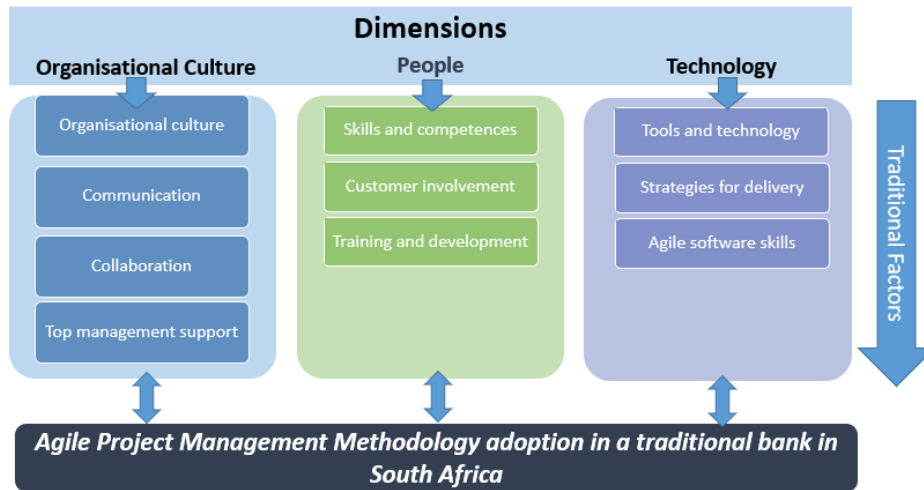


Figure 2.3: Conceptual framework for agile transition and adoption (Source: Author's compilation)

The theory behind WPM is based on the popular waterfall method, which is aligned with the System Development Life Cycle (SDLC) (Heriyanti & Ishak, 2020). Additionally, Heriyanti and Ishak (2020) argued that the waterfall method focused on completing each sequential phase of the waterfall before proceeding to the next step. The transition to APM for large organisations depends on the well-established Scaled Agile Framework (SAFe), where agile techniques and methods are employed at the inter-team and organisational level and inside single development teams (Gustavsson et al., 2022). The theory behind HPM is to modify the project management method to suit each project's unique characteristics and needs, using a combination of the waterfall method and SAFe. This study will be based on collaboration theory, which emphasises the centrality of collaboration between key stakeholders during the project life cycle (Castañer & Oliveira, 2020). Additionally, Cai et al. (2019) mention that organisational agility benefits companies when it responds to product innovation, which is vital in the project environment.

Santhanam et al. (2022) affirmed that APM offered advantages such as faster ROI, improved software quality, and enhanced customer satisfaction when fully implemented in strategic projects. However, Papadopoulos (2015) argued that project managers often prefer waterfall and hybrid approaches due to familiarity and reduced administrative work, while customer feedback and regulatory requirements tend to influence decisions to transition project management methodologies in financial services towards more agile operations.

2.10. Conclusion

This chapter reviewed previous studies on adopting agile methodology, focusing on international and local contexts. The main focus was to answer the research questions. Therefore, the chapter defined and explained waterfall, hybrid and agile methodologies and the advantages and disadvantages of each. Furthermore, the chapter explained the benefits of adopting agile methodology in project management. Lastly, it reviewed studies on the challenges of adopting agile methodology. The collaboration theory and the conceptual framework for the study were presented and explained, providing the theoretical and epistemological guide.

The next chapter presents the research questions which were answered in this study. In addition, the thematic focus of each of the questions is provided.

Chapter 3: Research Questions

3.1. Introduction

The purpose of this chapter is to present the research questions that informed the study. The questions were compiled to address the research problem (see Chapter 1, section 1.2). The research questions link with the research objectives presented in Chapter 1. They pose questions that the researcher will address in the findings. In addressing these questions, thematic aspects for each research question are provided. The consistency matrix in Annexure A also provides a link of the research question to some sources in literature that was covered in Chapter 2.

3.2. Research questions

Four research questions focused on the following key thematic areas:

- The large traditional bank could employ strategies and best practices to enhance the transition to APM.
- The influence of regulation on adopting and implementing APM methodology.
- The benefits of adopting an APM methodology.
- The challenges faced by the large traditional South African bank when transitioning from WPM and HPM to APM.

3.2.1. Research question 1 (RQ1)

What strategies and best practices could a large traditional bank employ to enhance the transition from waterfall and hybrid to agile project management?

This research question focused on analysing the other strategies in the market from other financial services companies that successfully transitioned from waterfall and hybrid to agile project management (Heriyanti & Ishak, 2020; Castañer & Oliveira, 2020; Santhanam et al. 2022). The solutions were sought from the project managers but also amplified by the literature (See Chapter 2).

3.2.2. Research question 2 (RQ2)

What is the influence of regulation on the adoption of and implementation of agile project management methodology at a large traditional South African bank?

The question sought to understand the regulatory environment governing project management, particularly, agile project management (Rindell et al., 2022; Bargenda, 2020). The aim of the question was to establish the influence of the regulatory environment on adoption and implementation of agile project management methodology at a large South African bank (Beerbaum, 2019; Lalmi et al., 2021). Therefore, the question built form the literature review on the regulatory environment governing waterfall, hybrid and agile project management methodologies.

3.3.3. Research question 3 (RQ3)

What are the benefits of adopting APM at a large traditional South African bank?

The question seeks to amplify the literature review that found APM methodology light, efficient and manoeuvrable (Reiff & Schlegel, 2022; Papadakis & Tsironis, 2020, Cooper & Sommer, 2018; Santos & Fernandes, 2022; Schneider, 2023). The question seeks to analyse the benefits of adopting APM at a large traditional South African bank in light of the experiences and perceptions of project managers.

3.3.4. Research question 4 (RQ4)

What are the key challenges a large traditional South African bank faces when transitioning from waterfall and hybrid to APM?

The question analyses the banking sector's challenges when transitioning from waterfall and hybrid approaches to APM, as indicated in the introduction (see section 1.2.). Analysing if employees' structure, hierarchy, roles, and responsibilities posed a challenge (Gemino et al., 2021; Dennehy & Conboy, 2018; Buganová & Šimíčková, (2019). Project managers were interviewed to record their perceptions and experiences with the transition to understand these challenges better.

3.4. Conclusion

The chapter provided the research's direction regarding what it sought to achieve. The research questions were carefully crafted to address the research problem. Therefore, the questions addressed a large traditional bank's challenges in transitioning from waterfall and hybrid to APM methodology. The second question explored the benefits of the adoption of APM. The third question sought to understand the regulatory environment governing waterfall, hybrid and APM methodologies and the influence of these regulations on adopting agile methodology at the traditional bank. The final research question sought solutions to enhance the transition from waterfall and hybrid operation to APM.

The following chapter presents the research methodology. The chapter presents the methodological choices and decisions made in the study. In addition, justification for these choices and decisions is provided.

Chapter 4: Research Methodology

4.1. Introduction

This study evaluates the movement from WPM and HPM to APM in a large traditional bank in South Africa. The chapter aims to explain the methodological processes and decisions in this study. Firstly, the chapter presents the research design used and the justification for its use. Secondly, the chapter explains and justifies using the interpretivist paradigm for this research case study.

A qualitative research approach further supports and aligns with the interpretivist paradigm chosen. Other key methodological procedures covered in the chapter are population, sample, unit of analysis, the measurement instrument, the data gathering process, trustworthiness and the ethical standards followed in the study.

4.2. Research methodology and design

To fully understand the transition from waterfall and hybrid to agile methodology in a large traditional bank in South Africa, the experiences of programme and project managers provide vital insights on the subject. The research case study employed a mono-method due to time constraints. The study provides a descriptive analysis of the data collected. Additionally, other approaches, like the quantitative technique, did not address the 'why' and 'how' of the transformation from waterfall and hybrid methodologies to agile methodology (Symon et al., 2018).

The study utilised interpretivist lenses to explore the subjective experiences of project managers who oversee project management methodologies (Creswell & Creswell, 2018; Ngulube & Ngulube, 2022). Sanchez et al. (2023) highlights that an interpretivist study asserts that there are many ways of interpreting reality. Therefore, by the varied perceptions of participants regarding the transition from waterfall and hybrid to agile methodology helped to obtain a holistic perspective of the phenomenon (Howard-Grenville et al., 2021). According to Creswell and Creswell, (2018), a descriptive analysis was used to investigate and comprehend the structures of subjective human experiences and consciousness within interpretive strategy. Due to its emphasis on uncovering the essence and meaning of

participants' lived experiences (Zahavi & Martiny, 2019), interpretive philosophy allowed for engaging with project leaders and project managers in the banking sector to interpret their perceptions on the transformation to agile methodology in project management.

Informed by the interpretivist paradigm, the researcher deemed a qualitative approach was appropriate for the study.

The importance of participants' perspectives and experiences in qualitative research is emphasised by Howard-Grenville et al. (2021) and Cerar et al. (2021). This study employed a qualitative approach to explore and understand the movement from WPM and HPM to APM in a large traditional bank in South Africa. The qualitative research approach was chosen as it was appropriate for interpreting the experiences of project management experts regarding the migration from waterfall and hybrid to APM in a large traditional bank in South Africa (Bargenda, 2020; Reuber & Fischer, 2022).

As migration to agile methodology is relatively new in the banking industry, it was essential to understand the experiences of experts relating to the migration. Jonsen et al. (2018) highlighted that qualitative research provided an understanding of organisational behaviour in organisations. Thus, the organisational responses to challenges and opportunities experienced during the migration to APM helped compare strategies to address challenges faced in adopting APM in various banking institutions (Bansal et al., 2018). The perspectives and experiences of the participants (project managers) provided an accurate picture of the migration to APM methodology (Reuber & Fischer, 2022).

An inductive approach was employed in making meaning of the data. Kim (2021) highlight that an inductive approach derives general facts from the perceptions and experiences of participants. In conducting the inductive approach, the initial step was to collect data through semi-structured interviews (Hejvani & Farahani, 2018). From the data, the researcher made empirical generalisation about the transition from waterfall methodology and hybrid to agile methodology (Ahmedzai et al., 2019). This helped to develop a framework that explained the patterns and ideas that emerged from the data.

Therefore, to learn more about the phenomenon of agile project management and its use in the banking industry, the study guided by the qualitative research design, the study used a single research case study design. A single research case study design focuses on one case as a focal point of data collection and analysis. The researcher's interest was to explore the transition from waterfall and hybrid to agile methodology in one traditional South African bank due to time and resource constraints (Takahashi & Araujo, 2020). Therefore, choosing a research case study allowed for focusing on a small geographical region or a small number of persons to investigate (Silverman, 2020). The choice of a research case study helped in exploring contemporary real-life phenomenon of agile project management adoption through an extensive contextual examination of the transition to and adoption of agile methodology (Wohlin & Rainer, 2022).

The research paradigm described in the next section served as the basis for the selected research design.

4.3. Population

The study population comprised three divisions in one large traditional bank in South Africa. They are Corporate and Investment Banking, Retail and Business Banking, and Group divisions in this large traditional South African bank. The one bank was chosen as the target population as its one of the largest traditional bank in South Africa according to its tier one capital rankings in 2022 (BUSINESSTECH, 2022). There are 104 project managers in this bank, equally divided number of project managers in each division, focusing on different strategic projects across the three divisions. The number of project managers was supported through discussions with the traditional banks human resource division. The target population limited to one traditional bank was chosen due to the limited time available for the study, which was five months.

4.4. Sampling method and size

The sampling method used for this study was non-probability, purposive sampling. Purposive sampling is based on the researcher's experience and judgment based on the elements' effects on this study (Sarstedt et al., 2018). Saunders and Lewis (2018) stated that non-probability sampling is employed due to the ease of use and lower cost associated with the application. Instead of extensive samples, qualitative research prefers smaller samples that can be used in different situations to back up the theory (Rohrer et al., 2017).

The study utilised purposive sampling to select the participants. Purposive sampling selected only people who matched the research aims (Hennink & Kaiser, 2021). Therefore, inclusion and exclusion criteria were developed to ensure that only suitable project managers were chosen.

The choice of project managers was based on the reasoning that they are experts and leaders in project management who oversee the transition from waterfall and hybrid operation to APM methodology. Therefore, as leaders and experts, their views and perceptions regarding the migration to agile methodology enriched the study's findings.

Purposive sampling entails carefully selecting organisations and participants based on their relevance to the study (Saunders & Townsend, 2018). Therefore, inclusion and exclusion criteria were developed as follows:

For the inclusion criteria, the following characteristics were used:

- Project managers working in a large traditional bank in South Africa.
- Project managers in one of the three divisions in that bank, either Corporate and Investment Bank, Retail and Business Bank or Group Division.
- The project managers should have worked for over five years at the bank in South Africa.
- Project managers who had experienced the transition from WPM and HPM to APM.

The exclusion criteria were:

- Project managers who were not working in a large traditional bank in South Africa.
- Project managers or employees work outside the three divisions in that bank, either Corporate and Investment Bank, Retail and Business Bank or Group Division.
- Project managers with less than five years at the bank in South Africa.
- Project managers who had not experienced the transition from WPM and HPM to APM.

After the considerations for inclusions and exclusion, the next critical procedure was determining the sample size.

4.5. Data saturation

The sample size for qualitative research is determined by the number of interviews, data collection, or cases required to reach saturation (Hennink & Kaiser, 2021). At saturation, additional data gathering is judged unnecessary because no substantial discoveries are disclosed (Boddy, 2016).

Data saturation was utilised to calculate the sample size for this study because Hennink and Kaiser (2021) noted that the sample size used in qualitative research methods is often lower than that used in quantitative research methods. Small sample sizes are suggested by Creswell and Poth (2018) as a way to improve the richness of data. Hennink and Kaiser (2021) indicated that the smallest sample size could be five individuals. For this study, data saturation was achieved after conducting 12 interviews. The study utilised thematic saturation in determining if the adequate number of interviews. In that regard, thematic saturation was reached after interviewing 12 project managers. Since an inductive approach employed, the codes emerged naturally from the interviews. A total of 94 unique codes were identified from 12 interviews as indicated in Figure 4.1.

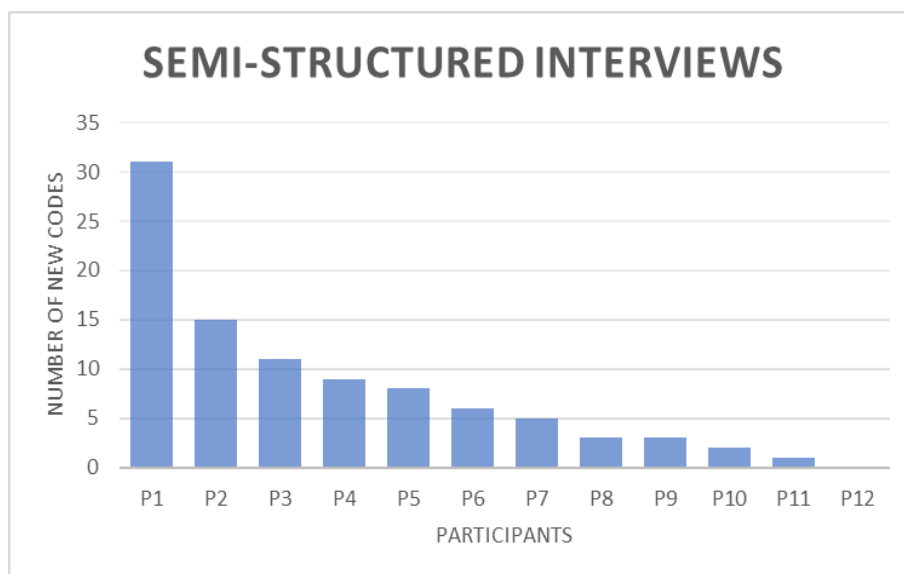


Figure 4.1: Data saturation

Before recruiting participants, ethical clearance from the University of Pretoria was obtained (See Appendix A). The letter granted permission for the researchers to collect data. The researcher approached each selected organisation in person for ethical clearance and engaged the management.

The ethical clearance and information letters were submitted during the engagement (See Appendix B and C). The large traditional bank approached granted permission for the research and their employees to be interviewed. The permission paved the way for data collection.

4.6. Unit of analysis

Individuals, organisations, divisions, departments, and general groups are the five different units of analysis frequently used in research (Kumar, 2018). This study chose one large traditional bank in South Africa as the level of analysis which comprise of three divisions. The divisions chosen as the embedded unit of analysis were the Corporate and Investment Bank, Retail and Business Bank, and Group divisions. In order to analyse the transition from WPM and HPM to APM in one traditional bank in South Africa, the project managers were observed within each of the three divisions so that the research questions could be answered as presented in Table 4. 1 below.

Table 4.1: Research questions, level of analysis, embedded unit of analysis and units of observation

Research question	Level of analysis	Embedded Unit of analysis	Unit of observation
RQ1: What strategies and best practices could a large traditional bank employ to enhance the transition from waterfall and hybrid to APM?	A large traditional bank in South Africa	Corporate and Investment Bank, Retail and Business Bank, and Group divisions	Project managers
RQ2: What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?	A large traditional bank in South Africa	Corporate and Investment Bank, Retail and Business Bank, and Group divisions	Project managers
RQ3: What are the benefits of adopting APM at a large traditional South African bank?	A large traditional bank in South Africa	Corporate and Investment Bank, Retail and Business Bank, and Group divisions	Project managers
RQ4: What are the key challenges a large traditional South African bank faces when transitioning from waterfall and hybrid operation to APM?	A large traditional bank in South Africa	Corporate and Investment Bank, Retail and Business Bank, and Group divisions	Project managers

Table 4.1 above shows the link between the research questions, the level of analysis, embedded unit of analysis and the unit of observation. The level of analysis was one large traditional bank in South Africa, the embedded unit of analysis was divisions in a traditional bank in South Africa, namely, Corporate and Investment Bank, Retail and Business Bank, and Group division. The unit of observation was project managers.

4.7. Measurement instrument

For the qualitative study, data was collected using semi-structured interviews. The interviews were gathered online using Microsoft Teams interviews. The use of semi-structured interviews allowed for the collection the viewpoints of project leaders and project managers regarding their experiences with the migration from waterfall and hybrid to the agile method (Muthukumar et al., 2022).

In addition, semi-structured interviews provided an understanding of their lived experiences through their responses (Oliveira, 2015). The semi-structured interviews consisted of predetermined yet open-ended questions in an interview guide (See Appendix C).

The interviews greatly assisted the researcher in determining participants' attitudes and perceptions about working from home and the effect it has on job satisfaction (Jones & Abdelfattah, 2020).

The research instrument comprised two sections that are detailed below:

Section A: Demographic profile of participants

This section promoted an understanding of the work experiences that the project managers had at the traditional bank and the division they were working in.

Section B: Empirical questions

This section asked questions relating to each of the research objectives. A total of 14 questions were asked. The questions solicited participants' perceptions and experiences regarding the benefits of transitioning from waterfall and hybrid to agile

methodology, the challenges of agile adoption, the regulatory environment's influence on agile adoption, and the agile practices, strategies, and best practices for agile adoption.

4.8. Pilot interview

A pilot study aims to test the feasibility of data collection tools and methods and ascertain how they function together in a particular context (Doody & Doody, 2015). A pilot study was conducted on three participants to ascertain design flaws in the semi-structured interviews and thematic analysis plans (Saunders & Lewis, 2018). The participants were project managers from a large traditional bank in South Africa, each from the Corporate and Investment Bank, Retail and Business Bank, and Group divisions. The data collection process was followed after the provision of permission to conduct research at the selected bank. The participants were identified using purposive sampling, with the assistance of the human resource managers who helped by introducing the researcher to project managers in the divisions. The participants were engaged in semi-structured interviews, which were done at a convenient time (Taquette & Souza, 2022). Following the recommendations of Gary (2020), the participants were informed about the purpose of the pilot study and its benefits to the organisation, and they were assured that their views would remain confidential throughout the process.

By ethical standards (Maldonado-Castellanos & Barrios, 2023), the participants were informed that they had a right to withdraw from the interview should they wish to do so. When satisfied with the explanation, the participants signed consent forms (see Appendix B). Thereafter, the interview, which lasted approximately 45 minutes, began. The responses to the interview were aligned with what the interview sought to gather. No changes were made to the interview guide, and the pilot study's findings were not included in the main study.

4.9. The data gathering process

Twelve semi-structured interviews were conducted online using Microsoft Teams (MS Teams). The researcher preferred online MS Teams interviews because they decrease non-responses (Hill et al., 2020). The researcher visited the large traditional bank in South Africa to engage with the human resources management from the Corporate and Investment Bank, the Retail and Business Bank, and the Group Divisions regarding data collection. After providing the ethical clearance and the information letter, permission to conduct research was granted, allowing the researcher to schedule interviews with participants at their convenience.

The researcher began the standardised interview by explaining the research aim and the ethical issues to be observed (Saunders & Lewis, 2018). Participants had been informed about the purpose of the research, and consent had been obtained before the data collection. On the interview day, each participant was informed that the interview would be recorded on MS Teams for quality purposes and that they had a right to withdraw without any consequences (Saunders & Lewis, 2018). Data was collected over two weeks, with six participants being interviewed weekly. Each interview (see Appendix B) was approximately 40 minutes long.

Throughout the interview, the researcher took notes on all important aspects. According to Tseng (2020), probing strategies can elicit more knowledge and information from respondents. The researcher thanked the participants after the interviews. The study's data analysis and findings used handwritten notes, transcriptions, and voice recordings (see Chapter 5).

4.10. Data analysis approach

Thematic analysis was chosen for the data analysis process. O'Kane et al. (2021) indicated that thematic analysis is a type of qualitative data analysis that involves analysing, verifying, exploring and coding research data. The transcribed interviews were analysed using a technology-based analysis tool, ATLAS.ti. The software helped to analyse visuals, lengthy texts, audio, and video data. ATLAS.ti is a dynamic workbench that organises, reassembles, and manages data analysis creatively and

methodically (ATLAS.ti, 2020). The thematic analysis process followed in this study was proposed by Braun and Clark (2019) as presented below:

Stage 1: Data organisation and preparation

First, the interview recording was transcribed to be displayed in Microsoft Word, making it simple to study. Braun and Clark (2019) state that transcription involves writing notes and creating transcripts. This process was concerned with checking the transcripts for accuracy and making sure that nothing was missed. The researcher's increased immersion in the process helped him become more familiar with the data. He could not examine the data during the interviews since he had to pay close attention to what was being said and ask follow-up questions. This phase gave the researcher deeper information that might have been missed during the interview. The data was analysed using ATLAS.ti following the inductive approach. In addition, the researcher identified the first order codes, then grouped them into categories or sub-themes, followed by themes and finally aligned to the collaboration theory as indicated in Figure 4.2 below.

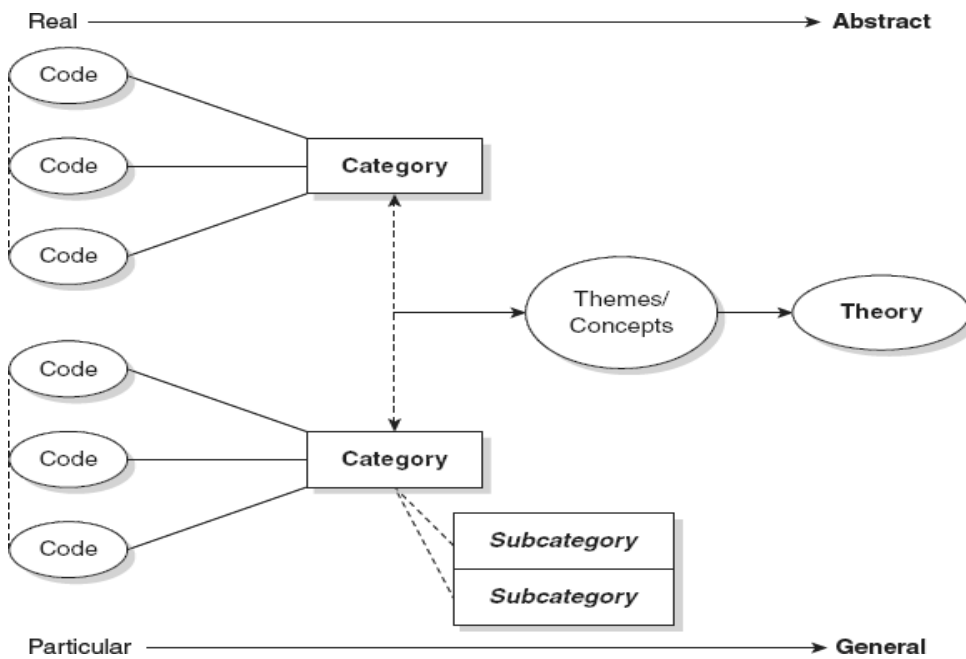


Figure 4.2: Initial codes, categories, themes and theory as the data analysis process

Stage 2: Identifying key quotations from the data

For the second phase, the researcher cleaned up the transcripts for any repetitive words and misspelt words from the MS Teams transcription feature. The researcher then utilised the MS Teams transcripts by identifying data which was important and transformed these into quotes. This step is essential in creating themes as it reduces the data to quotes.

Stage 3: Initial coding

Initial coding started in the third phase by uploading cleaned transcripts to ATLAS.ti. The transcripts were examined, and codes were created by giving the quotations, identifying labels and recording them on ATLAS.ti.

Step 4: Identifying emerging themes

This stage entailed searching through the codes produced in stage 3 for pertinent codes. Similar codes were then simpler to view and were grouped appropriately. The themes were then given new names by labels that matched the researcher's reading of the literature and interpretation of the data.

Stage 5: Findings

The data were represented by networks in this step, which enabled the visual output of themes and quotation extracts (See Chapter 5).

4.11. Quality controls

Credibility, dependability, confirmability, and transferability are four strategies that can be employed to raise the calibre of qualitative research, according to Miles and Jozefowicz-Simbeni (1985). Researchers may only obtain process-based, narrated, story-based data via qualitative research more closely tied to the human experience (Amin et al., 2020).

A good story and the experiences of others can teach us a lot (Riazi et al., 2023). However, how much trust is placed in the story's recounting depends greatly on how much one believes the person is telling it (Enworo, 2023). The same is true of studies

that use a qualitative research methodology. Miles and Jozefowicz-Simbeni (1985) highlighted that trustworthiness in qualitative research is achieved through ensuring credibility, dependability, confirmability and transferability.

4.11.1. Credibility

Credibility concerns the accuracy of the information supplied by study participants (Collingridge & Gantt, 2019). In this study, member-checking was used to ensure validity. Member-checking required comparing participants' understanding of the questions provided and validating their points of view. Additionally, the researcher thoroughly profiled each participant and specifically identified the concepts and standards employed in participant selection (Enworo, 2023).

4.11.2. Dependability

As an alternative to reliability, dependability aims to consider both changes in the phenomena being studied and modifications in design brought on by a more in-depth understanding of the environment (Cypress, 2017). To ensure dependability, familiarity with the cultural norms of participating organisations was established before the initial data collection conversations (Riazi et al., 2023). This was done by reviewing organisational reports and paying advance visits to the organisations. The researcher also performed member-checking to review the transcripts of the conversations they had participated in.

4.11.3. Confirmability

Confirmability aims to demonstrate that the data and interpretations of an inquiry are not the sole product of the inquirer's imagination (Cloutier & Ravasi, 2020). It promotes clear connections between claims, discoveries, interpretations, and other elements of analysis with the data itself (Mahlangu & Kgadima, 2021). The researcher ensured that the ideas supporting the choices and procedures were supported and justified to increase conformability.

4.11.4. Transferability

Transferability is the degree to which the findings can be applied to different people or contexts (Dougherty, 2021). Because every step of the data collection process

was rigorously followed in this study, the results can be applied to other people or situations (Aguinis et al., 2017). Additionally, enough specific information about the change from WPM methodology to hybrid and APM methodology was given for readers to comprehend the phenomenon fully. With this knowledge, the reader can contrast the experiences and viewpoints of participants in various locally held banks and insurance firms with those they have personally experienced. The researcher also provided the data so readers could come up with their conclusions.

4.12. Ethical considerations

Before, during and after the study, four key ethical standards were ensured. These are informed consent, anonymity and confidentiality, autonomy and not harm. The measures taken to ensure that ethical standards were upheld are presented below:

Informed consent: Informed consent refers to the agreement made by a participant to collect data for a research study (Cloutier & Ravasi, 2020). To ensure that participants voluntarily participated in the interviews, they were asked to sign consent forms (See Appendix B). The researcher initially informed the participants about the study's aim and benefits to the participants and their organisations (Cherry, 2020). In addition, participants were informed that they had a right to withdraw from the study without any consequences. Interviews were tape-recorded with the consent of the participants. After providing key information about the study, the participants signed the consent forms, which paved the way for data collection.

Anonymity and confidentiality: Anonymity is an ethical principle that calls upon researchers to ensure participants' identities are (Cloutier & Ravasi, 2020). Confidentiality refers to an agreement between the researcher and participants that their identity and identifiable information will be managed to ensure that it does not end up in other people's hands (Dougherty, 2021). To protect participants' privacy while gathering, processing, and reporting data, it is good ethical practice to ensure confidentiality and anonymity (Swedan et al., 2020). This study took necessary measures to ensure that the confidentiality and anonymity of participants were preserved. Firstly, the participants' real names were not used in any part of the study. Pseudonyms replaced them. Secondly, confidentiality was ensured by storing the

data in a laptop secured by a password. The data collected from interviews was not passed on to anyone else.

4.13. Limitations of the research

The unit of analysis used in the study was limited to project managers, from whose experiences and perceptions, the study was able to assess the transition from waterfall and hybrid to agile methodology. However, focusing on project managers overlooked other key areas of the agile environment such as product owners, architects, developers and agile teams, whose views could have enhanced our understanding of the benefits and challenges of the transition from waterfall and hybrid to agile methodology as well as the regulatory environment.

Another limitation was related to the demarcation of the study. The focus was only limited to one traditional bank in Gauteng province. This limited divergent views that could have been obtained had the study broadened to include several traditional banks and cover several provinces.

4.14. Conclusion

This chapter provided the methodological decisions and procedures undertaken in the research journey. These include justification for the explorative research design, the choice of phenomenology as the research design for the study, and the justification for using a qualitative research design. The population, sample and unit of analysis were explained. The chapter further described the data collection process using semi-structured interviews and thematic analysis. Issues of trustworthiness and ethical procedures followed in the study are presented.

The next chapter presents the findings from the interview data analysed using ATLAS.ti. The chapter describes the sample characteristics and the key findings with the support of illustrations such as columns.

Chapter 5: Findings

5.1. Introduction

This chapter aims to present the findings. The data was collected using semi-structure interviews using a virtual platform (MS Teams). The collected data was analysed using thematic analysis of semi-structured interviews. The research questions, literature review, interview questions and data analysis was aligned using the consistency matrix as per Annexure A. The chapter focuses on the benefits and barriers to agile adoption. Furthermore, it presents themes on the regulatory environment. Lastly, the chapter presents the strategies and best practices which can be used to enhance agile adoption.

5.2. Sample description

This section presents the description of the sample. The demographics, division the participant works, role in the division and years of project management experience in analysed. As highlight in Table 5.1 below is the participant, division works, role in the division, number of years' experience, interview date, the duration of the interview and the cleaned transcription length. Based on the information provided below in Table 5.1, it can be seen that an equal number of the participants (4) worked in Corporate and Investment Banking, Retail and Business Banking and Group Divisions.

Table 5.1: Sample description

Participant	Division works	Role in division	Years of experience	Interview date	Interview duration and cleaned transcription length
P1	Corporate and Investment Bank	Project Manager in Markets and Risk	23 Years	11 August 2023	45 to 60 minutes, 7 pages
P2	Retail and Business Banking	Project Manager in Retail	25 Years	11 August 2023	45 to 60 minutes, 9 pages

P3	Corporate and Investment Bank	Project Manager in Markets	30 Years	14 August 2023	45 to 60 minutes, 6 pages
P4	Group Division	Project Manager in Compliance	15 Years	14 August 2023	45 to 60 minutes, 6 pages
P5	Corporate and Investment Bank	Project Manager Investment Banking	14 Years	15 August 2023	45 to 60 minutes, 6 pages
P6	Retail and Business Banking	Project Manager in Everyday Banking	15 Years	15 August 2023	45 to 60 minutes, 6 pages
P7	Retail and Business Banking	Project Manager in Retail Projects	26 Years	16 August 2023	45 to 60 minutes, 6 pages
P8	Group Division	Project Manager in Group Projects	10 Years	16 August 2023	45 to 60 minutes, 5 pages
P9	Group Division	Project Manager in Compliance	7 Years	17 August 2023	45 to 60 minutes, 5 pages
P10	Corporate and Investment Bank	Project Manager in Payments	10 Years	17 August 2023	45 to 60 minutes, 6 pages
P11	Group Division	Project Manager in Compliance	12 Years	17 August 2023	45 to 60 minutes, 6 pages
P12	Retail and Business Banking	Project Manager in Retail Projects	20 Years	17 August 2023	45 to 60 minutes, 6 pages

5.2.1. Demographics of the participants

This section presents the demographic information of the participants. The relevant demographic information for the study was taken from the division where the participants worked, including their years of work experience.

5.2.2. Divisions where the participants worked for

The participants were asked to indicate the bank division they worked for. The bank has three divisions: the Corporate Investment Division, the Retail Business Banking Division and the Group Compliance Division. Table 5.2 indicates the responses from the participants.

5.2.3. Years of experience of participants

The participants were asked to indicate their years of experience working for the traditional bank. Table 5.1 below presents the responses.

The Table 5.1 indicates that all the project managers who participated in the study had vast experience. Four participants had 20 years or more work experience, while seven had ten to 20 years work experience. Only one participant had seven years of work experience. The data imply that the participants were well-versed in transitioning from waterfall and hybrid to agile methodology.

5.2.4. Analysis of each division

The analysis of the general theme that emerged from each division is summarised in Table 5.2 below.

Table 5.2: Analysis of general theme from each division

Division	General Analysis
Corporate and Investment Bank	All participants mentioned the same theme which is that non-regulatory projects followed a mixed project management process. Some projects followed the WPM process only and some followed a HPM process. They also mentioned that there was daily stand-ups and agile ceremonies and that training for agile was mostly on-the-job training. The regulatory projects

	<p>followed full WPM processes. The participants mentioned they needed more training and top management support. They also mentioned that there needs to be a mindset change. Most of the participants mentioned that the return on investment from the project is achieved.</p>
<p>Retail and Business Bank</p>	<p>Most of the participants leaned towards a combination of HPM and APM processes for the projects they manage. Some projects were fully agile but most of the projects for non-regulatory and regulatory followed WPM with some agile processes during the systems integration testing phases. They also mentioned that more agile training is required for all team members. The teams have the daily stand-up meetings and agile ceremonies. They also mentioned that processes are iterative before the product goes live into production. They mentioned that there needs to be a mindset change in the teams. Most of the participants mentioned that the return on investment from the project is achieved.</p>
<p>Group</p>	<p>All participants mentioned that the projects follow both WPM and HPM. There needs to be more agile training for all staff. There is daily stand-up meetings and agile ceremonies. Most projects are regulatory in nature and follow the WPM process because there is a regulatory date to meet. Most of the participants mentioned that the return on investment from the project is achieved.</p>

5.3. Findings from the empirical study

The study set out to examine the experiences of project managers during the transition from WPM and HPM to APM at a large traditional bank in South Africa. Twelve project managers from the bank’s Corporate and Investment Division, Retail and Business Banking Division and Group Compliance Division were interviewed using semi-structured interviews. The key themes that emerged are presented in Table 5.3 below.

Table 5.3: Research question link to the sub-themes and themes

Research question	Sub-themes	Themes
RQ1: What strategies and best practices could a large traditional bank employ to enhance the transition from waterfall and hybrid to APM?	<ul style="list-style-type: none"> • Collaboration • Coaching and training • Communication • Buy-in and mindset shift 	Strategies and best practices
RQ2: What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?	<ul style="list-style-type: none"> • Controls in the Fintech sector • Certification 	Regulatory requirements promote standards
RQ3: What are the benefits of adopting APM at a large traditional South African bank?	<ul style="list-style-type: none"> • Work in teams • Collaboration 	Teamwork
	<ul style="list-style-type: none"> • Daily stand-ups • Agile ceremonies • Sprint reviews 	Communication
	<ul style="list-style-type: none"> • Can be customised • Continuous iterations • Ease of operations 	Flexibility
	<ul style="list-style-type: none"> • Benefit hours • Increased revenue • Reputation 	Return on Investment (ROI)
	<ul style="list-style-type: none"> • Deadline driven • Quick to see results 	Quick turnaround
RQ4: What are the key challenges a large traditional South African	<ul style="list-style-type: none"> • Cultural barriers • Regulatory barriers 	Barriers to agile adoption

bank faces when transitioning from waterfall and hybrid operation to APM?	<ul style="list-style-type: none"> • Technological barriers 	
	Communication barriers <ul style="list-style-type: none"> • Scepticism • Traditional mindset 	Resistance to change

5.4. Research question 1

What strategies and best practices could a large traditional bank employ to enhance the transition from WPM and HPM to APM?

5.4.1. Theme 1: Strategies and best practices

Research objective 4 focused on strategies and best practices that financial services organisations could utilise to enhance the transition from WPM and HPM to APM. The participants raised several strategies they were practising or suggested would enhance the transition from waterfall, hybrid, to agile methodology. The indicated strategies and frequencies include collaboration (8), coaching and training (12), communication (6), buy-in (7) and mindset shift (5) (see Figure 5.1).

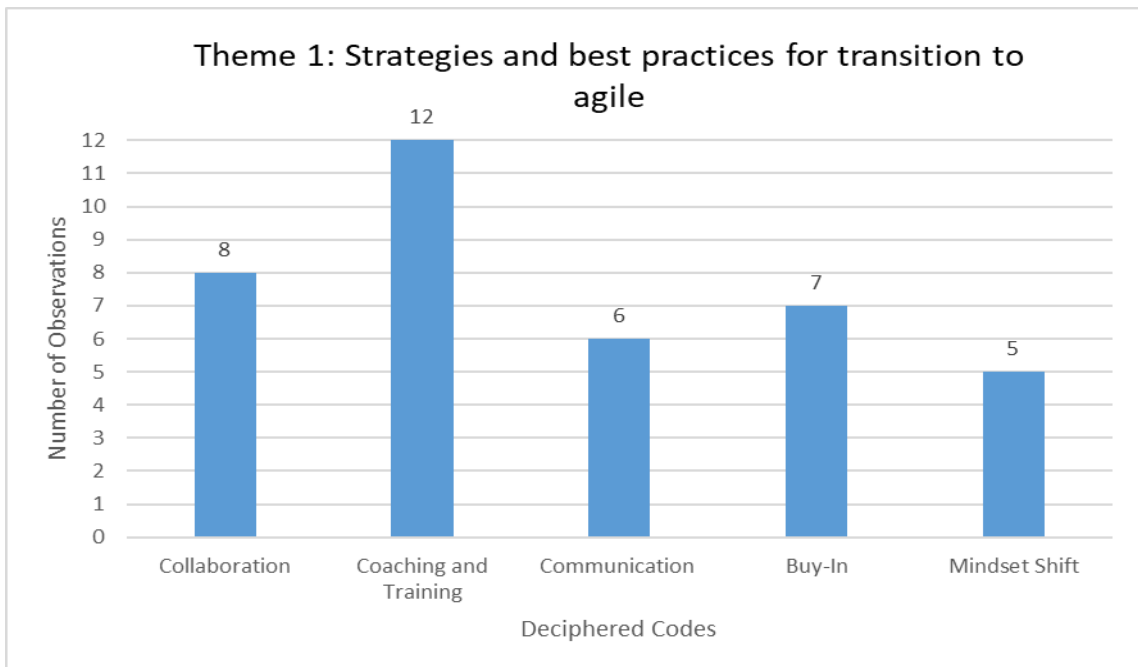


Figure 5.1: Sub-themes on strategies and best practices for transition to agile methodology

Collaboration

Firstly, the transition from waterfall and hybrid to agile methodology had challenges discussed earlier. In order to address these challenges, the participants found that collaboration helped to ensure that teams capitalise on each member's knowledge and skills. In addition, the participants indicated that agile methodology promoted a culture of collaboration.

We must get to a stage where we can run financing, and it's about again training them, understanding how we actually measure that piece of value, and if it doesn't bring you more, then you shouldn't be working on that now (5).

You know, what I also like about agile is the fact that it's more collaborative. You hold people accountable in these meetings. It's not about the PM micromanaging and saying, have you done this? There's a timeline. Did you meet that timeline? Everybody's accountable and professional; we are big people (P8).

Coaching and training

Apart from collaboration, some participants highlighted that transitioning from waterfall to agile required investment in coaching and training as it was new for many people. Coaching and training would help developers understand the agile culture, provide new skills and knowledge and help in a mindset shift. Participant 6 specifically identified the lack of design-thinking capability and analysis capability. To address these limitations, the participants indicated the following:

Scrum Master is technically the agile project manager. So, in terms of training education for you all, is it on-the-job training, or do you have specialists like agile specialists coming and training like the Scrum Master, the teams, the project managers? So, all of us grandmasters are at our training. If I'm not mistaken, all of our project managers are too (P2).

It's around education; I believe the CIB [PMO] has invested and is working hard to drive the agile work within CIB. And they've done quite well with that because they have invested in it (P3).

Many questions will likely be asked. But to my earlier point, it is about ensuring there's education around it, the hybrid or what more waterfall is, what is known, and what people are comfortable with (P9)

So, I would need the executives to train themselves in safety, reporting, and managing portfolios in a safe or agile environment (P12).

Based on the above transcripts, coaching and training are necessary for transitioning from the traditional methodology to agile. Participant 3 highlighted the benefits of investing in training and development initiatives, pointing out that investment in coaching and training resulted in efficiency and successful implementation of agile methodology.

Communication

Other participants believed poor communication often impeded the transition from waterfall to agile. Therefore, they indicated that communication is key in driving the adoption of agile methodology.

To communicate and to perform demos and walkthroughs, and all of these sorts of things so that they could start to see the benefits of what was being done and how we were going to deliver it, so that was how that was navigated (P4).

If we communicate that appropriately to this cycle involved in all of these things. So yes, planning requires all of these things (P5).

It's just training people up; he communicates new processes and gets people on board. When apps change their colours, it's like, OK, yeah, we've changed our colours (P7).

Mindset shift

Apart from the need to improve communication, the participants highlighted the importance of a mindset shift. This sub-theme is associated with coaching and training because the goal is empowering the trainees and changing their culture from traditional to agile. Participant 12 said,

It's that top-down mindset change that is needed." Concurring with this view.

Participants 4 and 11 echoed:

Yeah, there were mindset shifts that did happen. But these were addressed primarily through communication, and there was a very deliberate attempt to (P4).

So, I think how we get that concept, that's that mindset of change and going (P11).

From the sentiments expressed above, the study established that a mindset change is important in addressing most challenges to adopting agile methodology. Mindset change ensures that participants have a different view of agile than they currently have.

Buy-in

In addition, mindset shift addresses the challenges, such as resistance to change, discussed earlier. Lastly, the participants indicated that some of the challenges related to the slow pace of adopting agile methodology were related to the strategies used to introduce the technology. They emphasised that when transitioning from waterfall to agile, there is a need for management to ensure they get the buy-in of team members and other key stakeholders. By trying to get the buy-in of team members, they would understand the value of agile methodology.

Don't force people. Get things to buy-in. Get them to see that there's value in it. And I, and plotting them where they are in their support for agile, like what you would typically do with a little stakeholder. What are the things that you need to do to gain support? It would be best if you had buy-in from the top (P7).

Summary of Theme 1 for RQ1

In concluding this section, it is important to indicate that the strategies and best practices to enhance adoption from waterfall to agile methodology provided by the participants combined what they practised, recommendations and what they have witnessed in other areas.

5.5. Research question 2

What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?

5.5.1. Theme 1: Regulatory requirements promote standards

The second research objective was to understand the influence of the internal regulatory environment on adopting and implementing APM methodology at a large traditional South African bank. The main theme that emerged was the regulatory requirements to promote standards. Under this theme, the sub-themes and frequencies were 'controls in the fintech sector' (5) and certification (4) (see Figure 5.2 below).

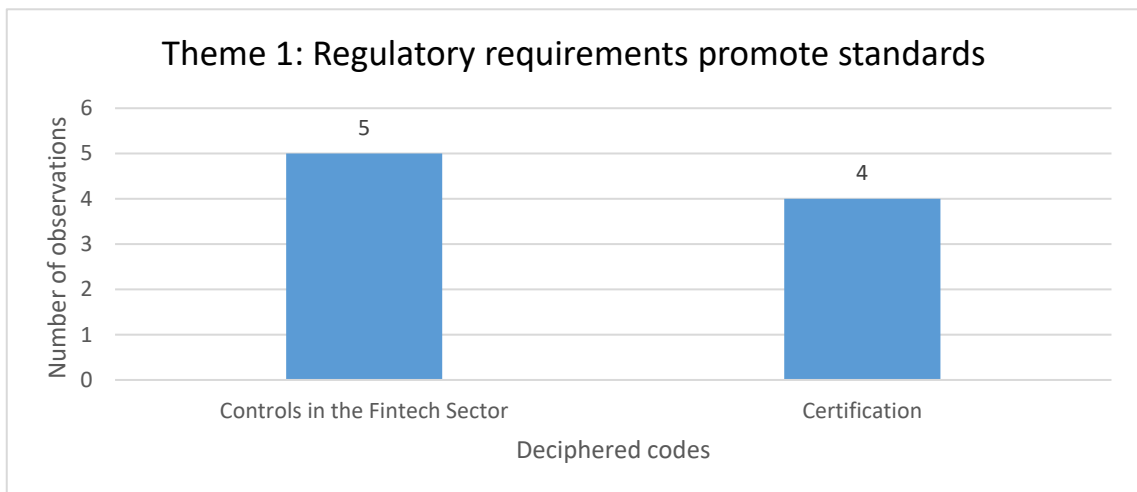


Figure 5.2: The theme 'regulatory requirements promote standards' and sub-themes

Controls in fintech sector

The participants indicated that the controls in the Fintech sector were necessary to provide checks and balances to ensure that sensitive information is handled safely. The participants believed that the strict regulations in the sector were necessary. They said:

So, we are highly regulated; there's compliance, and internal compliance is external compliance. This external regulator is local and global, so that global regulators will be stuff like the Basel banking framework; the Basel Code in

local ones will be the regulations that the saw has to adopt both in terms of Basel and times of the localised regulations (P1).

The group regulatory standards and governance standards need to be adhered to as other regulatory standards, prudential—many, many, —many different lines I can't. So, there are many different ones from different bodies that you have to follow—and of course, including things like POIA, etcetera. (P2).

It makes working purely agile in regulatory programmes a bit more challenging. Still, there are usually always steps that you have to take to meet a regulatory or compliance objective (P12).

Certifications

The perceptions presented by Participant 1 indicate that the banking industry is highly regulated. Therefore, the adoption of agile methodology has to be in strict compliance with international and local regulatory parameters. The other positive role of regulations was to provide certification. Certification ensures that only accredited players provide service. In light of the benefit of certification, Participants 5, 9 and 10 stated:

There's value in getting a certification and someone. Yes, yes, you're right. Project managers should own the training that they train for. Project managers need to pay more attention to the value of having a good certification behind your name. There should be more, but they should be related to certification where you walk out (P5).

So, I mean, I'm busy with the project right now, which has required submission to the sub, and that's put us in a space where we can kick off some of our project activity because we need to notify the SARB first of what we're doing (P9).

The more comprehensive, you know, controls that are in place in our space have played a role in how we deliver, but again, that comes with the territory (P10).

Summary of Theme 1 for RQ2

Based on the transcripts presented above, it can be concluded that regulations in the fintech industry, which also guide project management methodologies, are strict to ensure the quality and protection of critical information. New regulations such as Protection of Personal Information Act (POPIA) are meant to protect customers' privacy. Therefore, the strict regulatory environment was seen in a positive light despite being cumbersome.

5.6. Research question 3

What are the benefits of adopting APM at a large traditional South African bank?

5.6.1. Theme 1: Teamwork

Teamwork emerged as one of the major themes and a major characteristic of agile methodology. The teamwork theme was developed from the sub-themes with frequencies, 'work in teams' (12) and 'collaboration' (8), as indicated in Figure 5.3 below.

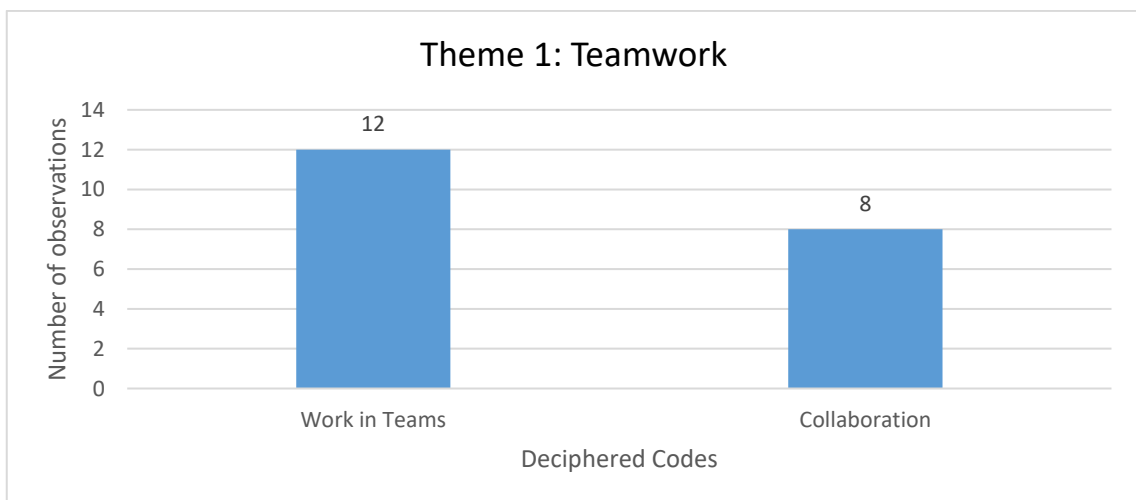


Figure 5.3: Sub-theme of teamwork

Work in Teams

Firstly, the participants indicated that agile adoption helped project managers in the traditional bank to work in teams. All the participants echoed the same view that agile adoption improved teamwork in the organisation. It could be argued that agile methodology transforms the mindset of project managers from an individual mindset to a team-based mindset. The participants made the following selected statements:

What Kanban also does is that it works very well in teams. Your peers will not hold you accountable to a certain standard (P1).

We eventually became such a high-performing team that we would put our items into production three weeks to a month ahead of them. And we were already on to the next piece because the team was functioning so well, purely because we relied on ourselves (P2)

We said we were going to work differently as a team. We're going to collaborate more (P5).

Collaboration

In addition to teamwork, the participants indicated that they collaborated with other teams or partners, which ensured the transition from traditional to agile methodology was more effective. In particular, the participants highlighted that each team had scrum masters and project managers.

These two expert teams collaborated on projects. In addition, partners collaborated in sprints. The participants expressed the following sentiments:

...although we work in sprints ourselves, many of our partners work in sprints, and we're aligning that on that perspective; there's no delivery into production (P2).

So what we have is, I refer to the Scrum Masters, so within tech, we have the Scrum Masters, who manage the tech process within the business. We have project managers, so the two work in hand (P7).

Summary of Theme1 for RQ3

Based on the views presented above, it is reasonable to conclude that teamwork and collaboration are essential skills for transitioning from traditional and hybrid to agile methodology. Hence, they are essential skills that are facilitated by agile methodology. Project managers realise that an individual mindset is a barrier to project success, so they unite.

5.6.2. Theme 2: Communication

The theme of communication was dominant in the responses, as most participants mentioned its importance in the transition from waterfall to agile methodology. The sub-themes and frequencies related to communication that emerged were the use of daily stand-ups (12), agile ceremonies (10) and sprint reviews (9). Looking at the number of observations, it can be concluded that most participants were more familiar with the role of communication in agile adoption than previously. Figure 5.3 indicates the theme and sub-themes of communication.

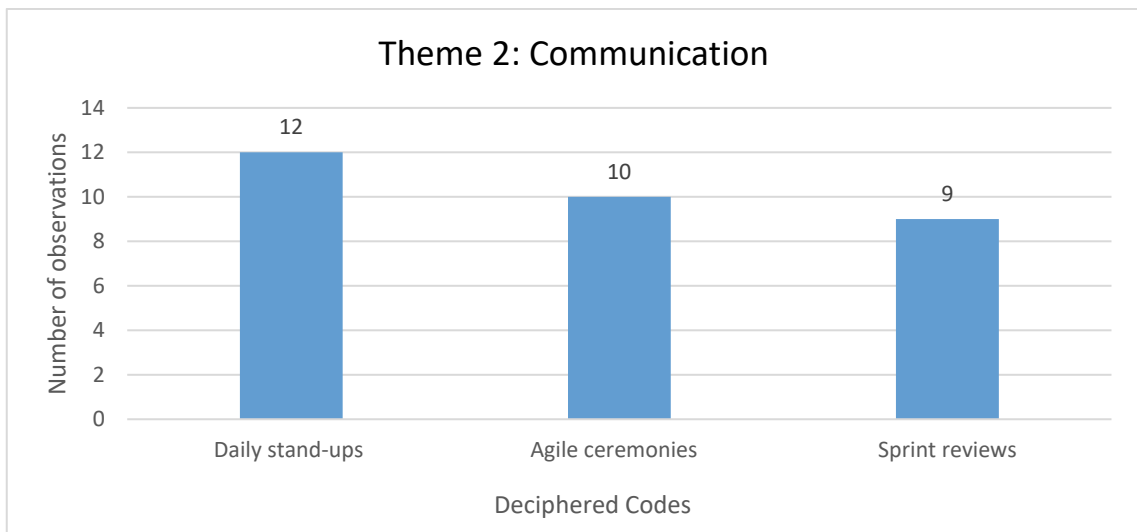


Figure 5.4: Theme of communication and sub-themes

Daily stand-ups

The first communicative platform presented in Figure 5.4 is daily stand-ups. All the participants made positive recommendations about agile methodology. They highlighted that they held daily stand-ups to provide feedback, review the project and make decisions. Another purpose of the daily stand-ups indicated by the participants

was to retrospect on assigned tasks and targets. The participants express the following:

... every morning in your stand-ups, types of settlement are that you have in terms of agile, your daily stand-ups, your retrospect blocks (P1)

So, there are concise daily stand-up meetings, but it helps to unblock anything. There are sprint reviews where the business gets to see the results of the work done during the sprint. Then there's retros. There's a refinement for the next sprint and planning, sprint planning, etcetera, etcetera. (P3).

I have daily stand-ups with my technical resources to project, manage, or get feedback regarding the development happening within the project. So, it's not sure, but daily stand-ups. It's just my way of getting information on a regular (P7).

The above statements show that daily stand-ups allowed development teams to meet to update each other on their work status about the sprint goal. These meetings ensured that every team member had a solid picture of progress, queries, and potential hurdles and was aware of what the others were working on.

Agile ceremonies

In addition to daily stand-ups, the participants indicated that they held agile ceremonies, which, in essence, are meetings not done daily. The participants indicated that agile ceremonies were done at the end of each sprint to review and chat about the next stage. They regarded agile ceremonies as moments of celebration for a completed sprint. Participant 3 commented thus, "So, the agile teams follow all the agile ceremonies and the other meetings we generally have."

Sprint reviews

Aside from agile ceremonies, the participants indicated attending other meetings, such as sprint reviews. The participants highlighted that the sprint reviews showcased the development team's work. Reading between the lines, the statements provided by the participants show that they regarded sprint reviews as a

presentation of employees' hard work to stakeholders. They echoed the following views:

There's Sprint reviews business, then get involved in the Sprint reviews, and they continuous feedback and reprioritisation as part of those sprints and refinements (P3).

We have a weekly meeting over and above the stand-ups, status meetings, and steering committees. So, steering committee meetings so that all sorts of breaches are on the programme (P4).

We're going to talk daily. We're going to have a Sprint review (P5)

Summary of Theme 2 for RQ3

Daily stand-ups, agile ceremonies and sprint reviews are presented as communicative spaces provided as part of agile methodology. Based on the participants' views, it can be seen that they were satisfied with the transition to agile methodology because it offered several communicative advantages, thus allowing them to review the progress and success of a project incrementally.

5.6.3. Theme 3: Flexibility

Another benefit of transitioning from waterfall and hybrid methodology to agile was the flexibility it afforded project developers. The sub-themes that emerged on flexibility showed that the agile method can be customised (3), allows for continuous iterations (12) and ease of operations (4). The sub-themes are presented in Figure 5.5 below.

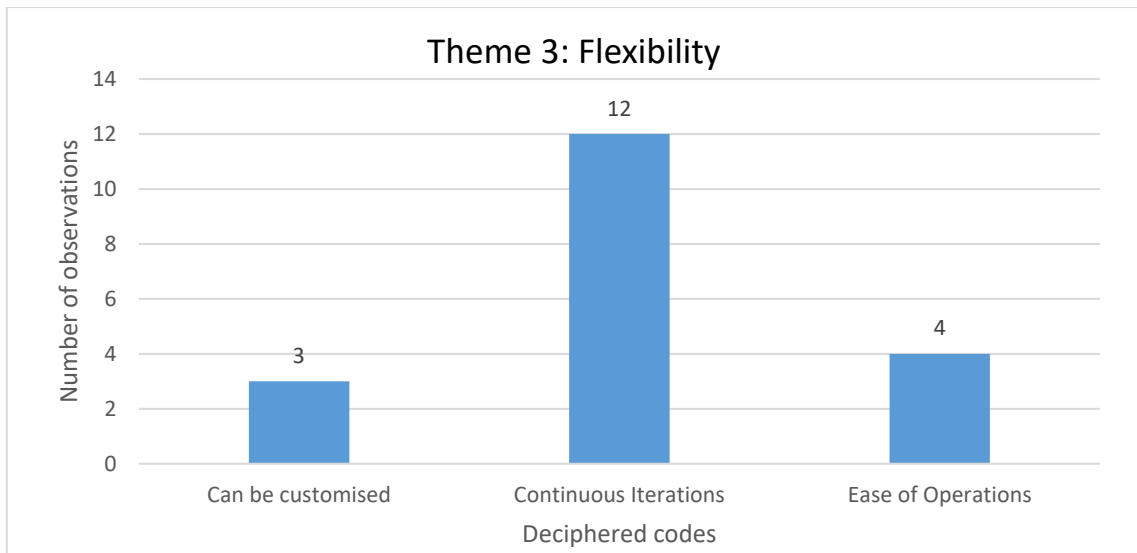


Figure 5.5: Sub-themes for flexibility theme

Customised

Most participants believed the transition from waterfall methodology to hybrid and agile methodology could not be easily achieved. Therefore, regarding transition, they highlighted the importance of customising the methodology to suit the organisation's capacity and needs. Participant 1 commented thus;

You can change your course and change your direction very quickly. Happens on a bio every two weeks. In terms of your Sprint planning and quarterly in terms of Pi planning (P1)

Some watered-down version of it. And excuse my language to be given a bastardised version of it. Even within teams, how I would do it in my team would be very different to someone from another project. (P3)

Our project management methodology prescribes taking the good, applying it, and making it work for you (P11).

Continuous iterations

Another aspect related to flexibility is that agility allows for continuous iterations. All the participants expressed that they could change the project during the project. These changes were products of sprint reviews, daily stand-ups, feedback and other review platforms. The participants said,

The flexibility happens because of the changing environment. It's like a constant journey. That's just churning on and on and on. Think of it like Microsoft Office. When it first started and where it is now (P4)

However, there are constant backward and forwards, so we will do something where iterate iterations come in. I've got nine user stories effect. As part of this thing so effectively, what will happen is as one develops, it will feed into the next, then the next one will come back and say we need to take this and that into consideration, and then that means (P7)

Many iterations and loops are done when you're doing the build, and then yeah. Yes, that they precisely that. Many iterations come into it as we're going through the building development (P9)

So you will learn from what's wrong. You'll probably stop that. Try something else and then plan to replan. That's trying to get to. Is flexible (P11)

Based on the views expressed by participants above, it is reasonable to conclude that unlike its predecessors, waterfall and hybrid methods, the agile methodology was flexible, allowing developers to test, identify weaknesses and make changes during the project. This allowed them to stay on the right course or to establish if a project had failed quickly.

Ease of operations

Agile flexibility was also linked to ease of operations as it gave participants greater independence, compared to when using waterfall methodology, which is restrictive. One of the benefits of the transformation from traditional to agile methodology was the ease of operations that APM methodology brought to project managers.

The participants indicated that agile adoption had resulted in a smoother follow-up of operations compared to the traditional and hybrid methodologies. They indicated that the agile methodology differed from the traditional and hybrid methodology in that a project manager had fewer tasks. In particular, Participants 1 and 3 indicated the following;

So, instead of juggling 27 things, a person needs to focus more on two or three things Max. So, you can drive that from start to finish and get it done. (P1)

So they look at the stories [related to agile methodology] along with a flow methodology. Kanban flow, so they look at the flow of work and try to keep the job moving through efficiently because when you have got teams and lots of groups of people that gives you the best. (P3)

Both participants indicated that introducing agile methodology had improved operational flow, resulting in efficiency. It can be concluded that the agile methodology gave project managers more independence to focus on a few tasks.

Summary of Theme 3 for RQ 3

Based on the above, the participants indicated that agile allowed for more flexibility as the project methodology can be customised easily, allows for continuous iterations and allowed for ease of operations.

5.6.4. Theme 4: Return on investment (ROI)

There was no consensus on the ROI when using agile methodology. However, the participants provided different views of what they thought would improve ROI. Some participants felt that ROI was non-monetary but instead offered them what they termed 'benefit hours' (3) as indicated in Figure 5.6. The other sub-themes were increased revenue (5) and reputation (1) as per Figure 5.6.

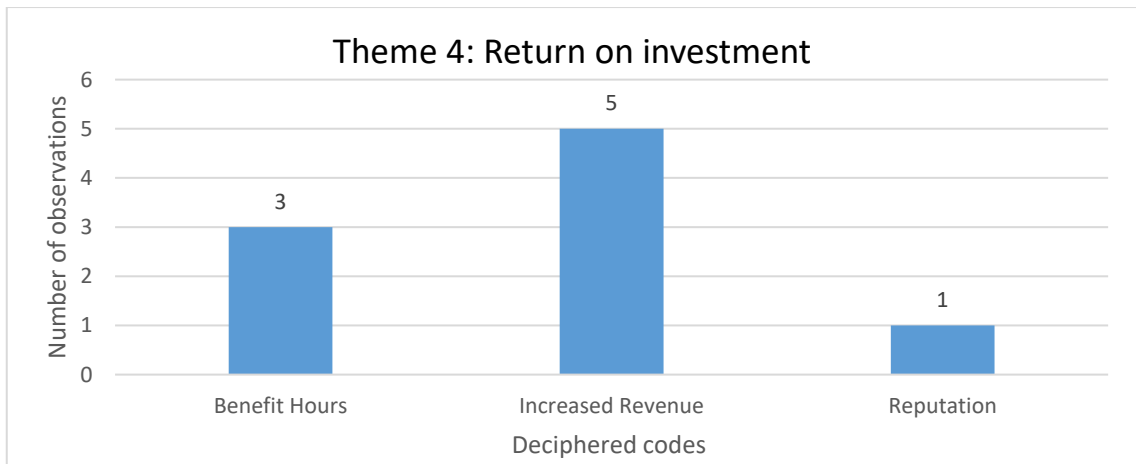


Figure 5.6: Theme for return on investment

Benefit hours

The participants who viewed ROI in terms of benefit hours said:

Well, no, not market share; it's actually. Let's call it benefit hours because we're talking about automation here, right? So, it's robots. it's primarily about benefit hours in our instance and what that equates to knowing in terms of efficiency and broader audit coverage that ultimately are the outputs (P4).

If the business can get through a stage where they can understand that out of all the things they want, what's the thing that's going to give the most financial benefit and prioritise stuff based on use? Not because they think they might use it clearly by phone benefit (P5).

The participants understanding of ROI was not limited to financial benefits for the organisation but also benefit hours which could eventually be converted to a financial benefit for from the project.

Increased revenue

Another group of participants indicated that agile methodology helped the organisation to generate profits.

The benefits will be revenue generation or cost efficiencies in 2024 (P2).

So, all of our integration layers then became open source. And so, there's that's a much lower cost, and we then took that on and built that one by having a team myself (P2)

You look at the cost of achieving the change and make sure there is a way to link the outcome of that change to some financial benefit for the business. And if you can see that the business is growing, either the revenue is increasing or the costs are declining, all of those traditional benefits metrics are import (P3).

There's a revenue generation uptick. They could even be cost avoidance from a risk perspective with step downs. And those are some of the benefits (P10).

Although the participants did not allude to their own experiences relating to the profitability of the agile methodology, they understood that the transition from waterfall and hybrid to agile method enhanced ROI through cost efficiency.

Reputation

Another group of participants understood ROI as the reputation that the organisation can achieve at the completion of a project. This highlighted that a bank with successful project management would earn a better reputation ahead of its competitors. Therefore, that reputation would eventually result in ROI. The participants said:

It's about reputation; if you compete with so many other banks and are number one in the market, what does it do for your reputation as a bank? You are well known (P7)

Summary of Theme 4 for RQ 3

Based on the sub-themes presented above, the researcher established that the transition from waterfall to hybrid and agile methodology is easily understood in terms of the advantages that agile methodology offers as compared to its predecessors. Since the main goal of traditional banks is to make profit, the adoption of agile method provided opportunities for ROI.

5.6.5. Theme 5: Quick turnaround

Due to the competitive nature of the modern business, more attention being paid to turnaround time for projects is essential. The participants indicated that agile methodology offered a quicker turnaround time. Two sub-themes that facilitated quick turnaround were that it is deadline-driven (9) and that one can see results more quickly (11). These sub-themes and frequencies are presented in Figure 5.7 below.

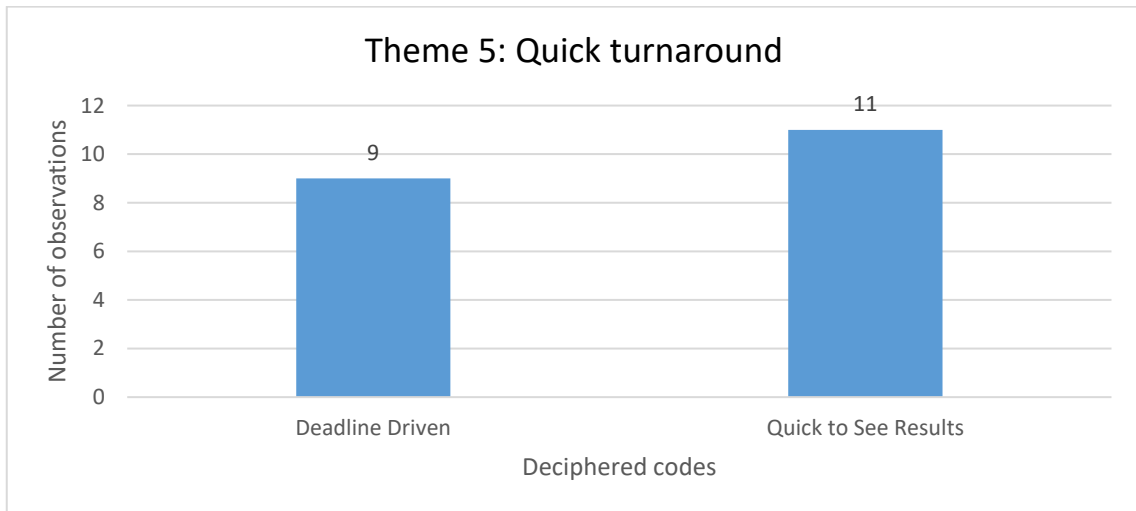


Figure 5.7: Sub-themes for the theme ‘quick turnaround’

Deadline driven

Two sub-themes emerged under quick turnaround. In the first sub-theme, the participants emphasised that agile methodology was deadline-driven. As a result, it pushed the developers to achieve results in less time, which was a sprint. The perceptions expressed by the project managers were that ...

When you're developing bots or in software development, right. You, of course, well know. You want to spend only a little time developing something you know doesn't work. So, in a nutshell, if you want me to size, it enables you to fail fast (P4).

So, there's a deadline-driven by the industry right now. When we kick off the project, you may find the deadline or delivery date is 6-7 months (P10)

Quick to see results

In addition, the participants indicated that short deadlines ensured they could complete a task sooner and see the results earlier. They felt that it was better to establish project failure earlier than at the end of the project cycle, which is a contrary view to that held by traditional methodology. The participants said,

That quick turn of anything that results into a result earlier is an improvement in investment ROI. So, if we can get more deliveries done quicker than that, it is a big win for me. Definitely, yeah, I can improve (P6).

If I look at agile, it's a fantastic methodology. If you look at competitiveness, everybody wants to get things out to the market as quickly as possible for consumption. And the quicker you deliver, the quicker there's an uptick in product revenue generation and also from a risk perspective (P10).

Summary of Theme 5 for RQ3

From the statements presented above, one can conclude that agile methodology is beneficial in allowing project managers to quickly establish whether the project is on the success path at an earlier stage. In addition, quickly completing tasks and reviewing progress ensures that iterations if needed, are done early.

5.7. Research question 4

What are the challenges of adopting APM at a large traditional South African bank?

5.7.1. Theme 1: Barriers to agile adoption

This theme was aligned with the second research objective, which sought to establish the barriers faced by the traditional bank in South Africa in transitioning from waterfall to agile methodology. Several barriers were identified, including cultural (9), regulatory (4), technological (4) and communication (5) barriers. These sub-themes and frequencies are presented in Figure 5.8 below.

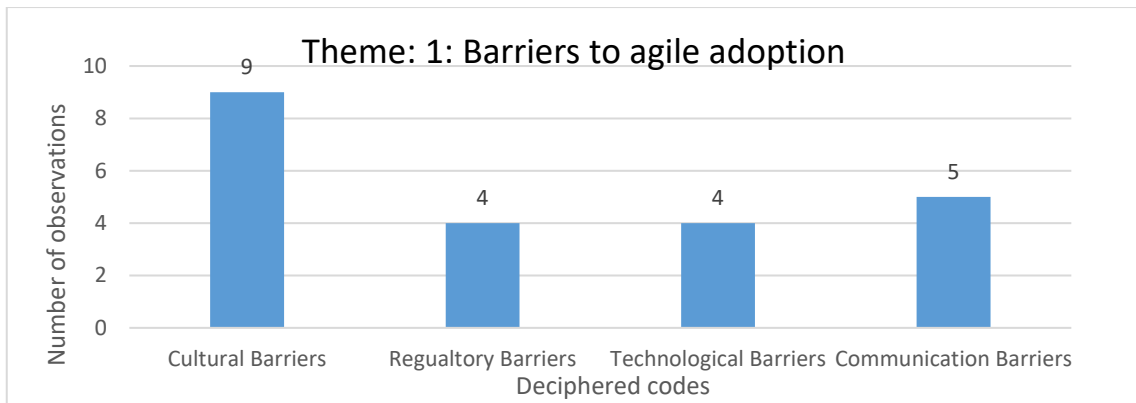


Figure 5.8: Barriers to the adoption of agile methodology

Cultural barriers

As shown in Figure 5.6, cultural barriers were the most dominant barrier impacting the smooth transition from waterfall to agile methodology. The cultural barriers that emerged were mainly organisational cultural barriers. The participants indicated that individuals oriented towards waterfall methodology aligned more with the WPM culture. Therefore, the transition to agile methodology resulted in a cultural conflict. The participants expressed the following sentiment:

Yes, there was any cultural barriers or mindset barriers? Yes, because it's, once again, a new, as I mentioned, a new way of working (P4).

Some teams are I'm more used to a traditional way of working (P3)

The cultural barriers presented above stemmed from the transition from traditional methodology, as some participants held on to the traditional mindset, which then acted as a barrier to learning new knowledge about agile methodology. In addition to the cultural barrier, the language barrier was also mentioned and shared by many participants. Participant 7 indicated that some can probably 'do the work, but then it is the language barrier.' This meant language differences among team members could affect the transition to agile methodology. Another barrier, although isolated, was the barrier to women's participation. Participant 5 indicated that in the Indian culture, it was unacceptable for women to challenge men's ideas directly. The participant said:

I think it's difficult for Indian men living in India to be addressed in such a way in a meeting. So, I was escalated. I was told that if I wanted to talk to him, I shouldn't speak to him. I must be the development manager with a man-act dream. It's a barrier (P5).

Although the sub-theme appears more like a cultural barrier, it was more directed towards women's participation. Therefore, it emerged as a barrier faced by women.

For project teams that operated in different geographical locations, especially continents, one of the challenges they faced was the time zone barrier. The different time zones meant that while a team in one country was still at work during the day, the team was not at work in another continent.

Coordinating with those teams across different countries can get more challenging than time zones and B because culturally, some people in other cultures will take a break in the middle of the day or start earlier later (P3).

Regulatory barriers

Handling customers' private information is a very sensitive task. The participants believed there are risks associated with failure to follow ethical standards and regulations regarding handling privacy information. These mistakes could result in an organisation suffering from reputational damage. Participant 1 echoed:

These severe reputational risks that the bank faces, which is Expedia dated these days in terms of how information gets rightfully or wrongfully disseminated using compelling platforms like social media, WhatsApp, Twitter, Facebook, Instagram, Snapchat, whatever. So, although these are highly regulated barriers to entry, you'll find that sentiment, whether right or wrong (P1).

Lastly, there are entry barriers to agile methodology. The transition from a waterfall to an agile method was slowed by regulatory barriers, which could be frustrating. Regulatory mechanisms such as licence and certification require follow-up processes. Participant 7 said

The barriers to entry in the banking industry are quite significant because you have to get a regulatory licence. However, the subject only allows people to sell financial services, not on the scale traditional banks do (P7).

The abovementioned barriers show that the cultural barrier is the biggest challenge affecting the smooth transition from waterfall to agile methodology. It shows that changing traditional mindsets to a team-based, deadline-driven, iterative approach to APM was challenging.

Technological barriers

Some technological barriers identified by participants related to iterations. Although the iterations, one of the characteristics of the agile methodology, were earlier admired by some participants, others felt that the iterations were also problematic. The participants indicated that the traditional banking systems were not yet ready to fully adopt agile methodology because banks have fragmented data systems and a vulnerable testing environment. Furthermore, some participants felt that the bank was still more aligned with traditional methodology; thus, their data systems were fragmented. This made it difficult to adopt an agile methodology, which requires focusing on various data systems.

You've got lots of fragmented data systems from their perspective, and there's so much cross-reliance on things, especially as a group function where we might be learning something great in a centre. But if businesses have to change it from their onboarding channels, for example, they've got to make changes to 70 onboarding channels because, you know, we don't just have one system in the bank (P11).

And not and not about the bigger group. So, the one programme that I'm managing is about this particular one that I'm looking at is about 9090 odd people that are working on the programme. So, as it becomes quite challenging and the cultures are different in these silos and how they operate is different, the way they take in requirements is different. The forms are different, so there's no alignment in how things are done across the various stick teams (P12).

The statements above show that traditional banks still face challenges with agile adoption because their data systems do not always align with the agile environment. In addition to the fragmentation, the participants indicated that the testing system was vulnerable. This problem is related to a weaker testing system, which does not align with the agile environment. The participants said:

The testing environment is very vulnerable. It gets it; it goes back to understand what? This investigation. What's the reason for the defect? Settings are generally weak, and you can't just move in a true agile fashion (P6).

From my observation, it's from a methodology perspective, so it worked well. The statement is that when you come in, you get trained on the agile, and you must get trained on the agile methodology (P10).

The views above reflect that traditional banks still lack sufficient technological readiness to align their data systems with the agile environment. Consequently, these limitations impact the adoption of agile methodology within some organisations.

Communication barriers

The lack of clarity was identified as a communication barrier facing agile methodology. Some participants held that the implementation of agile methodology was unclear and did not provide a clear view of the end product. The data revealed that some project managers felt the agile methodology had less documentation. Instead of looking at that as an advantage, they indicated that it was a disadvantage as it resulted in vagueness. They indicated that the move away from the waterfall way of having more paperwork resulted in user stories that were difficult to understand. The participants said,

From a paperwork perspective, the only other challenge that could exist is a documentation perspective. You may find that sometimes it's pretty light. You know, from a documentation perspective, and again, you know it depends on how you write your user stories, et cetera (P10).

Another limitation highlighted by the participants was that the agile methodology did not provide them with a clear view of the end of the project. This was the case because, in agile methodology, developers deliberately do not have a predefined view of the end product to allow for iterations during the project cycle and to respond to customers' experiences.

The environment will prevent us from. That's going to be a huge challenge. Having a dedicated, first of all, having a clear understanding, and this is now outside of agile and the project management space. Should I say this? I need a clearer understanding of the landscape. So, you need to have a real view of what project is going to land exactly when you need to have that rigour in place to allow the next step in the process (P6).

People expect project teams to work and what they hope to see at the end. So yeah, it goes back to shifting that culture of what was the norm before to what we're moving towards (P9).

Based on the statements presented above, the study established that while the agile method resulted in less paperwork, which can be seen as an advantage, clarity was needed. In addition, the study established no clarity on the end product. This means that some people negatively perceived the agile way of continuous iterations.

Summary of Theme 1 of RQ4

Based on the above presented views there are cultural, regulatory, and technological and communication barriers but some views are that through better communication and change in cultural mindset these barriers can be overcome.

5.7.2. Theme 2: Resistance to change

The transition from waterfall methodology to hybrid and agile methodology faces scepticism (9) and resistance from people with a traditional mindset (4). These sub-themes had more observations, indicating that resistance was a dominant challenge to agile adoption. The sub-themes and frequencies are presented in Figure 5.9.

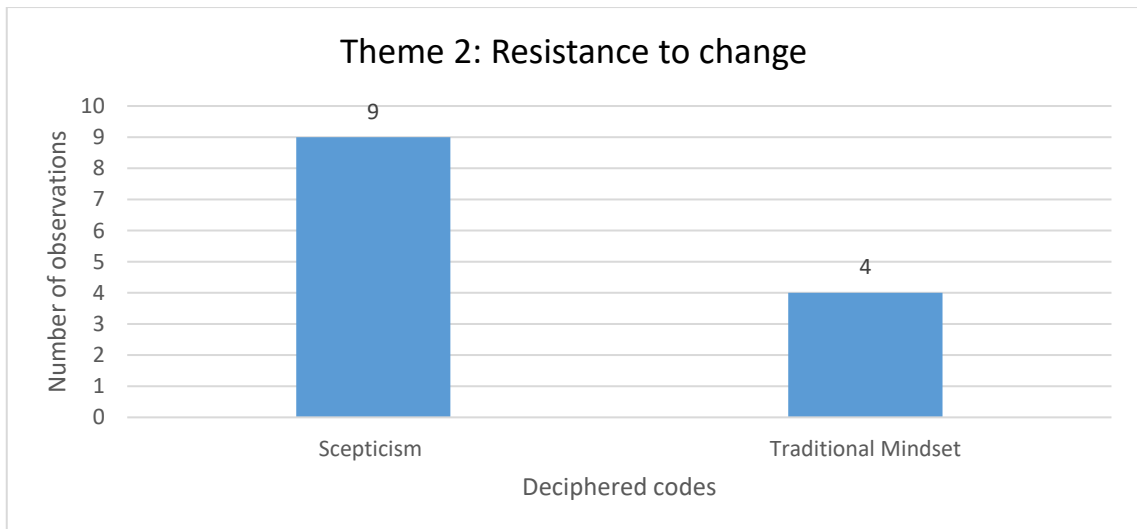


Figure 5.9: Sub-themes for resistance to change

Scepticism

The data reveals that most participants highlighted that some individuals, especially those in top management, are sceptical of the transition from waterfall and hybrid to agile methodology. This scepticism was linked to having the fear of losing control of the members, as agile offers greater flexibility and independence.

Most of the sort of executives and senior stakeholders were part of that. We were driving the deadlines that we had. We're very sceptical about the agile way of work because it looked too loose and controllable (P3).

Resistance in the sense that it's a new way of working and whether the ownership now lies is the one thing I point to scepticism. I've experienced some scepticism from the employees and the stakeholders (P4).

It was a systems analyst. Who said to me that this is not going to work? I wouldn't like it. I don't want to do it. And then we said OK, but let's break it down. (P5).

The statement above indicates that the lack of top management support slowed down top management support for transitioning from waterfall to agile methodology. The management felt that agile methodology had the potential to dilute power.

Traditional mindset

Another form of resistance that was reported by most of the project managers was having a traditional mindset. This means those who resisted were aligned with waterfall methodology and unwilling to consider learning about agile methodology. In explaining why they resisted the change, Participant 1 indicated, "*People don't like change. They want to be stuck in their silos. Remember, we come from a waterfall thinking you start here and end there.*". This implies an unwillingness to change to agile, a common behaviour in people. Other participants highlighted the following:

Yes, there was much resistance, but it wasn't resistance when, in my opinion, it wasn't resistance to the model. It was resistant due to the communication of the module. So, the problem was that it was done by tech. It was very high level. (P2)

The technological advancements that we've all embraced over the last 20-30 years, right, the audit has stayed very much the same approach, right? So this digitisation of internal audit and these new ways of working it is it, it's on revolutionary, for some people in the sense that that's not how they've worked even if they've worked for many years to just short. I mean, they've yet to be exposed to the state. They followed a traditional way of executing an audit, how it's been done over the last 20 years (P4).

The challenge is that if there are many cultural subdivisions, more organisational problems will inhibit you from being successful inside, for example. They esteem issues if it's making sense. So, these, these, these, these, these pieces of everything (P5).

Summary of Theme 2 of RQ4

The perceptions presented above indicate that scepticism by top management is a huge barrier to agile adoption in that all decisions are made by management. The implication is that if they are sceptical, they stifle progressive decisions towards adopting agile methodology. The other form of resistance was from individuals who were generally unwilling to move away from the waterfall methodology, a common trait in humans when confronted with change.

5.8. Summary of the findings

Table 5.4: Link between research questions and major themes

Research question	Themes
RQ1: What strategies and best practices could a large traditional bank employ to enhance the transition from waterfall and hybrid to agile project management?	<ul style="list-style-type: none"> • Coaching and training • Communication • Buy-in and mindset shift
RQ2: What is the influence of regulation on the adoption of and implementation of agile project management methodology at a large traditional South African bank?	<ul style="list-style-type: none"> • Regulatory requirements promote standards
RQ3: What are the benefits of adopting agile project management at a large traditional South African bank?	<ul style="list-style-type: none"> • Teamwork • Communication • Flexibility • Return on investment • Quick turnaround
RQ4: What are the key challenges faced by a large traditional South African bank when transitioning from waterfall, hybrid to agile project management?	<ul style="list-style-type: none"> • Cultural barriers • Technological barriers • Resistance to change

5.9. Conclusion

The chapter was dedicated to the presentation of research findings. The conceptual framework dimensions were all addressed and new themes arose from the data collected during the interviews which were highlighted such as the financial theme. The themes were finally linked to the research objectives, and the thematic areas presented focused on the strategies to adopt agile methodology. This was followed by a presentation of the regulatory environment. The findings then highlighted the best practices to enhance the adoption of agile methodology benefits. In addition, themes related to the challenges faced by the traditional bank in transitioning from the waterfall and hybrid to the agile method were presented.

The following section presents a discussion of the findings. The discussion recaps the main findings and then links these findings with the scholarly work from the literature review. Comparing the findings with the literature review helps to demonstrate the current study's contribution to knowledge.

Chapter 6: Discussion of Findings

6.1. Introduction

This chapter aims to present a discussion of the findings in Chapter 5. For each research question, the chapter presents the key findings and then links the findings to the literature. By doing this, the study can establish areas of new knowledge. The initial focus of the discussion relates to the strategies and practices that enhance agile adoption. Then the discussion on the influence of the regulatory environment. The next focus is on agile adoption benefits of adopting project management at a large traditional South African bank. Finally, the discussion on the challenges faced by the traditional South African bank in the transition from waterfall and hybrid to agile methodology concludes. The collaboration theory is used to link the findings to practice.

6.2. Research question 1

Research objective	Sub-themes	Themes
What strategies and best practices could a large traditional bank employ to enhance the transition from waterfall and hybrid operation to APM?	<ul style="list-style-type: none">• Collaboration• Coaching and training• Communication• Buy-in and mindset shift	Strategies and best practices

6.2.1. Theme 1: Strategies and best practices

The study established strategies that could be utilised to enhance the transition to agile methodology. In addition, the study identified practices that were implemented in other contexts that could be adopted by the traditional bank, which was the focus of this study. Based on the challenges to adopting agile methodology, the research revealed that the strategies that could be utilised were collaboration, coaching and training, communication, buy-in, mindset shift and self-teaching.

Collaboration

The study revealed that adopting an agile methodology could be enhanced through more team collaboration. Collaboration helped to ensure that teams took advantage of each other's strengths. The findings are consistent with previous studies, which indicated that although collaborative practices are difficult to achieve due to resistance to organisational changes (Ghayyur et al., 2018; Al Maamzi & Tawfik, 2022), the longer organisations continue to apply agile development the more they tend to develop a collaboration and cultivation organisational culture (Cooper & Sommer, 2018). Collaboration forms part of the organisational dimension of the conceptual framework.

The findings aligned with two of the four Agile Manifesto values, highlighting the need for good cooperation in agile methodology. The manifesto emphasises the need for effective and respectful communication. In addition, testers and developers are encouraged to collaborate to replicate and address issues (Piwowar-Sulej, 2021; Ram & Dolla, 2023).

The collaboration theory supports the theme of collaboration, which emphasises that internal collaboration allows teams to share ideas and build on each other's strengths (Ghayyur et al., 2018). Agile approaches are particularly developed to help teams communicate, collaborate, and coordinate in a fast-paced setting. Practices such as shared team rooms, agile ceremonies, and daily stand-ups to encourage regular informal contact are examples of this. Informative working settings enable ubiquitous information distribution and quick feedback loops in which a software product is progressively improved in close collaboration with a customer representative.

Coaching and training

Adapting to agile methodology was found to be enhanced by self-learning. Apart from the bank's training and development initiatives, the study found that self-teaching through various learning platforms, such as the internet, helped team members learn new concepts and gain new skills relating to the agile methodology. Although the theme of self-learning was not captured in the literature review, previous studies show that it helps if the advantages of self-directed learning can be effectively articulated in terms of the learners it creates. Self-directed learners display a higher

level of responsibility awareness (Basten & Haamann, 2018). In other words, individuals may raise awareness about their roles and responsibilities. Individuals who engage in self-directed learning exhibit curiosity and willingness to try new things, see issues as challenges, crave change, and enjoy learning (Basten & Haamann, 2018). Coaching and training is a factor within the people dimension of the conceptual framework.

The transition from waterfall methodology to agile methodology requires project teams to be provided with new skills and knowledge about agile methodology. The study's findings revealed a need for on-the-job training to enhance the skills and competencies of teams. The findings indicated that in areas where training was provided, there was a noticeable improvement in the performance of teams.

Previous studies emphasised the importance of training in agile adoption (Gandomani et al., 2020). Gandomani et al. (2020) highlights the change from waterfall to agile methodology affects practically every part of an organisation and represents a revolution in software development. The transformation is viewed as being agile rather than doing agile (Anthony Jnr, 2023; Bansal et al., 2018), meaning that not only must the development method and activities change, but so must people's roles, responsibilities, and mindsets (Pardo-Calvache et al., 2019; Prasetyaa & Pratama, 2021). The primary transformation hindrances include process, people, and management-related obstacles and cultural and technological issues. Previous research indicates that training is crucial in the agile transition (Thesing et al., 2021).

The study found that training should not only be provided to teams but also to leaders. In line with the collaboration theory, training aims to foster values of collaboration that include trust, communication and information sharing (Tam et al., 2020).

Communication

Communication is one of the key drivers of agile methodology. Building from the communication challenges faced during the transition process, the study found that enhancing communication was important for the effective transition process. Berkani et al. (2019) stated that effective communication enables support teams to complete

tasks and achieve goals. Furthermore, communication is the only way to organise a dynamic team, such as an agile team. Previous studies concluded that effective communication enables support teams to complete tasks and achieve goals (Šimíčková, 2021). Furthermore, communication is the only way to organise a dynamic team, such as an agile one. Communication is a new factor that emerged in the people dimension of the conceptual framework.

In highlighting the communicative process in agile methodology, Eilers et al. (2022) indicated that the product owner reports daily to the team leader and the whole agile team development team, defining and addressing the client's needs. The personnel in charge of developing the product are led by the team leader, to whom they report the status and progress of the project until they receive feedback. Meanwhile, the team leader must speak with the supporting cast to provide technical services before receiving final clearance from the product owner (Azenha et al., 2021). These communicative processes show that agile methodology cannot fully function without effective communication. At the heart of the collaboration theory is team communication. A team's performance is primarily determined by how effectively colleagues can coordinate their efforts in an efficient manner (Altuwaijri & Ferrario, 2022).

Buy-in and mindset shift

Earlier, the findings revealed that resistance and scepticism from top management affected the transition from waterfall to agile methodology. Therefore, in order to transform the people's mindset, there is a need for management to seek the buy-in of teams. To obtain the buy-in of teams, engagement with the various teams involved in the project is important (Azenha et al., 2021); recommended that buy-in can be obtained by adopting some feasible strategies to promote the alignment of user engagement expectations. This comprises a transparent procedure for selecting user representatives that includes feedback from the development team, a brief team meeting during team formation to onboard users to explain and align the expectations of involvement and why, and a quick team meeting during team formation to onboard users to clarify and align expectations of involvement and why (Ghayyur et al., 2018).

The findings revealed that a mindset shift was necessary to ensure that teams adopted the agile methodology. Transitioning from the waterfall methodology to agile

operation was considered a difficult task involving changing the organisational culture, training, development, and collaboration. To that end, strategies to ensure a mindset shift were recommended. To explain why an agile mindset matters, Leong et al. (2023) emphasised that it is vital to pursue buy-in, starting from the actor level and then analyse the impacts at the organisational level.

Buganová and Šimíčková (2019) stated that a mindset shift towards agile adoption demands that leaders provide structures that drive desired behaviour in the organisation or team. They may encourage cooperation by rethinking team composition, workplace architecture, and accessible tools. Structural support is another mechanism that can be used to support mindset shift (Buganová & Šimíčková, 2019). Applying structures may require establishing measurements to ensure that teams and leaders are focused on the desired end rather than on a variety of unimportant outputs (Šimíčková et al., 2020). The collaboration theory highlights the concept of collective impact whereby teams come together and change the way they work with one another, thus shifting mindsets. Therefore, training agile teams to gain skills and competencies that align with the methodology is useful in reinforcing a collaborative culture, which the theory points out as key to organisational and project success (Piccolo et al., 2022). Buy-in and mindset shift overlaps as part of the organisational and people dimension of the conceptual framework.

6.3. Research question 2

Research question	Sub-themes	Themes
What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?	<ul style="list-style-type: none"> • Controls in the Fintech sector • Certification 	Regulatory requirements promote standards

6.3.1 Theme 1: Regulatory requirements promote standards

The study explored the influence of the regulatory environment on adopting and implementing agile methodology. The findings revealed that the Fintech industry has a lot of gatekeeping. One of the gatekeeping measures includes licensing. The

findings revealed that adopting an agile methodology should comply with regulatory measures. One of the measures related to the privacy of customers. Project managers are expected to ensure that information about their clients is kept private and confidential. Previous studies highlighted the value of regulatory compliance in the financial services sector. For example, Baxter et al. (2023) found that in the financial services sector, institutional processes were seen as a barrier to the adoption of agile methodology.

Research shows that the regulatory environment has partly caused most failed agile adoption attempts. By design, the agile methodology necessitates system design flexibility, team decision-making autonomy, and significant policy and administration changes (Bargenda, 2020; Lalmi et al., 2021). The willingness to make these changes may be limited, owing to claims that there is a fundamental conflict between the orientation of public servants and that of agile operation (Buganová & Šimíčková, 2019; Azenha et al., 2021), which raises the question of whether agile methodology can be successfully adopted within existing government culture (Anthony Jnr, 2023), which is frequently highly bureaucratic and compliance-driven.

Another regulatory feature relating to the privacy of information followed the POIA Act. The study found that enforcing the regulations somewhat benefitted the banking sector. Due to the sector's sensitivity, the protection of information was paramount. There is a dearth of literature relating to the protection of information. Previous studies that explored the subject focused on other disciplines and fields. Collignon et al. (2022) raised concerns about complete information sharing and suggested that teams could benefit from keeping certain information private.

The findings did not provide strategies used by project managers to navigate the regulatory environment relating to information privacy. However, project managers admitted that it was difficult to satisfy existing requirements relating to information privacy. Aligning software to meet privacy requirements is challenging because there is still no unified vision in engineering privacy requirements. This has resulted in much confusion among designers and stakeholders, leading to wrong design decisions. Moreover, many developers do not have sufficient knowledge and understanding about privacy or how to develop software while maintaining privacy (Collignon et al., 2022). This view is supported by Rindell et al. (2021), who found

that privacy violations can be avoided if privacy requirements are properly communicated during the early phases of software development. Teams know that omitting these requirements can affect users' privacy and, consequently, may impact how well a system is adopted. The regulatory environment emerged as a new factor within the organisational dimension of the conceptual model.

6.4. Research question 3

Research question	Sub-themes	Themes
What are the benefits of adopting APM at a large traditional South African bank?	<ul style="list-style-type: none"> • Work in teams • Collaboration 	Teamwork
	<ul style="list-style-type: none"> • Daily stand-ups • Agile ceremonies • Sprint reviews 	Communication
	<ul style="list-style-type: none"> • Can be customised • Continuous iterations • Ease of operations 	Flexibility
	<ul style="list-style-type: none"> • Benefit hours • Increased revenue • Reputation 	Return on Investment (ROI)
	<ul style="list-style-type: none"> • Deadline driven • Quick to see results 	Quick turnaround

The transition from waterfall and hybrid to agile methodology was a difficult process but one with several benefits for the bank. The findings revealed that the transition from waterfall to agility made operations easier. The agile method allowed project managers to focus on a few tasks simultaneously, compared to the many tasks they handled using the waterfall methodology. In addition, the transition to agile methodology benefitted the bank by improving the workflow.

6.4.1. Theme 1: Teamwork

Scrum Teams are self-managing, self-organising, and cross-functional, and they are responsible for discovering how to transform the product backlog into an increment of functionality inside the iteration while managing their work to do so (Thesing et al., 2021). Team members are collectively accountable for each iteration's success and the project as a whole. Lastly, the Scrum Master is in charge of the Scrum process, including educating all team members on the project on Scrum technique, integrating Scrum such that it fits inside an organisation's culture while still delivering the intended benefits, and ensuring that everyone respects Scrum rules and practices (Thesing et al., 2021). Teamwork is an organisational dimension in the conceptual framework.

Kanban flow was particularly identified as an agile methodology that enhanced project efficiency. The Kanban methodology was singled out because it is the simplest agile framework, which allows project managers to monitor and manage their projects. The findings are consistent with the literature, which found that the Kanban board layout in the software environment includes at least columns for definition, development, testing, and deployment (Ghayyur et al., 2018). A work-in-progress restriction is established for each column. As a result, flow and bottlenecks are frequently discussed in daily meetings and play an important role in finding potential for improvement (Lalmi et al., 2021). In addition, the findings reflect a link with collaboration theory, particularly in monitoring and managing projects.

The easy flow of adopting an agile methodology is anchored in collaboration (Bargenda, 2020; Lalmi et al., 2021). The collaboration theory emphasises that collaboration promotes commitment and efficiency in organisations. Therefore, as the findings indicate, the easy flow of work was enhanced by collaborative meetings, which are a notable characteristic of the agile methodology (Bargenda, 2020; Lalmi et al., 2021).

The findings also revealed that adopting agile methodology improved teamwork among project managers and developers. The findings revealed that Kanban was designed to work with teams. Another agile methodology that promotes teamwork is Scrum. Consistent with previous studies.

The collaborative relationship between the product owner, the agile team and a Scrum Master, as articulated by the collaboration theory, shows that they work together in the precondition, process and outcome phases. Wood and Gray (1991) defined the three phases of collaboration: the preconditions are the conditions that motivate and encourage stakeholders to participate in collaborative activities, while the process is the structure for finding different ways a collaborative activity is practically undertaken and upheld. The findings reflect that agile methodology promotes collaboration among stakeholders involved in projects. Hence, project managers with individual mindsets were influenced to shift to a team-based mindset. The findings concur with the findings from the literature review. For example, Thesing et al. (2021) suggested that agile methodology provided project managers and developers with a platform for collaboration that increased productivity. In addition, Sonterre (2020) found that teamwork in agile projects resulted in four times more successes and one-third fewer failures than in waterfall projects.

6.4.2. Theme 2: Communication

One of the dominant themes that emerged from the findings was communication. Communication is already in the organisational dimension but new under people dimension in the conceptual framework. Agile methodology enhanced communication among teams. Like collaboration, agile methodology was well suited to communicative environments. The findings revealed that daily stand-ups, agile ceremonies and sprint reviews were communicative spaces through which project managers reviewed the project and made decisions regarding iterations. In addition, the communicative spaces provided by daily stand-ups, agile ceremonies and sprint reviews were utilised by development teams to update all members on the work progress and the challenges they faced. Each sprint had a goal reviewed through daily stand-ups, agile ceremonies and sprint revisions.

The communicative nature of agile methodology is well documented in the literature. Effective communication enables support teams to complete tasks and achieve goals (Thesing et al., 2021). Furthermore, communication is the only way to organise a dynamic team like an agile one. From the perspective of APM, there is a complicated organisational process from when the customer submits a request until it is

successfully granted (Gemino et al., 2021). The process begins with the client's requirement or request to create and provide a certain product/service/product-service system/solution (Buganová & Šimíčková, 2019).

As mentioned earlier, the person the client will communicate with the most will be the product owner, who is a project manager and product specialist. Every day, the product owner provides updates and arguments about the client's requirements to the team leader and the remaining agile development team (Buganová & Šimíčková, 2019). The personnel in charge of developing the product are led by the team leader, to whom they report the state and progress of the project until they receive feedback. Meanwhile, the team leader must communicate with the supporting cast to provide technical services before receiving final clearance from the product owner.

Khalid et al. (2020) indicated that agile software approaches such as sprint reviews and ceremonies provide a communicative platform for project managers and developers to make quick adaptations to match the demands of modern product development. Extant literature supports the view that the communicative space offered by sprint reviews and agile ceremonies allows teams to get feedback on work activities during a sprint. It also allows them to assess how successfully they worked together (Eilers et al., 2022; Lee & Chen, 2023; Tam et al., 2020). With feedback, a team can confirm that they are fulfilling stakeholder needs, understand any adjustments that need to be made, and decide what will remain unchanged in future sprints (Stray et al., 2016). In addition, sprint reviews were communicative spaces between developers, project managers and stakeholders that facilitate project progress (Thesing et al., 2021).

6.4.3. Theme 3: Flexibility

Another element of flexibility provided by agile methodology that marks a clear shift from the constraints of traditional methodology is the authority over procedures that had previously limited them. The concept of flexibility is supported by the value statements of the Agile Manifesto (Gandomani & Nafchi, 2015; Hobb & Petit, 2017). For example, one aspect directly linked to flexibility emphasises responding to change over following a plan. It emphasises the significance of redirecting

development efforts while carrying out a project after learning new information and insight during the development process (Buganová & Šimíčková, 2019). Flexibility is a technical dimension in the conceptual framework.

Scrum is an adaptable and iterative project management and delivery paradigm that does not need the customer to provide a complete specification of the product requirements to the development team early and in full (Bargenda, 2020; Lalmi et al., 2021). It is designed to uncover more fine-grained and specific product requirements and an ideal solution through small, manageable, and incremental processes known as sprints (Conforto et al., 2016). Previous studies show that teamwork and self-organising teams are prevalent in agile methodology (Circic Lalic et al., 2022). Rigid team structures are avoided, with programmers being allowed to pick whatever stories they want to work on for the current iteration (Circic Lalic et al., 2022). Such teams structure themselves in a way that best completes the project at hand, given the available resources and the specific qualities and competencies of the team members (Alade et al., 2022).

Clients can add and alter product needs and reprioritise them in the backlog between sprints. When contrasted with traditional methodology, the Agile Manifesto emphasises welcoming changing requirements even at a late stage of the project (Buganová & Šimíčková, 2019). As indicated in the findings, the participant praised the agile method for allowing continuous iterations at any stage of the project cycle. Although the theme of flexibility is not directly linked to the collaboration theory, it is reasonable to argue that the flexible environment is sustained by collaboration between product owners, agile teams and scrum masters.

6.4.4. Theme 4: Return on investment

The collaboration theory views collaboration in a similar sense to teamwork. The concept of collaboration is well documented in the literature. For example, Scrum agile methodology works with collaboration between the product owner, the agile team and the Scrum Master. The product owner's job in the collaborative effort is representing everyone interested in the project and its resultant system (Thesing et al., 2021). The product owner secures initial and continuous financing for the project by developing the project's initial overall needs, ROI, objectives, and release plans (Thesing et al., 2021). The agile team is in charge of building the functionality. Return

on investment is a new theme/factor that emerged from the data analysis and it forms a new dimension in the conceptual model being the financial dimension.

6.4.5. Theme 5: Quick turnaround

The findings revealed that agile methodology had become the first-choice methodology utilised by traditional banks as it was flexible. Aspects of flexibility raised included the provision for iterations during a project. In addition, the changes were quick, thus allowing project managers to establish early indications of project success or failure. These findings concur with the findings of Cooper and Sommer (2018), who found that the agile approach is distinguished by its ability to quickly and intrinsically produce change, accept change proactively or reactively, and learn from change while adding to the value perceived by the customer through its collective components and connections with its environment. In addition, Altuwaijri and Ferrario (2022) contended that agile methodologies are flexible, allowing continuous iterations during a project. Quick turnaround is a new factor/ theme under technical dimension in the conceptual framework.

The iterative nature of agile methodology reflects the benefit of having a functioning version of the product maintained monthly or daily while also valued as a beneficial use of incremental or evolutionary design (Sonterre, 2020). Rather than spending significant time planning, analysing, and designing for a large flawless release at the end of a long development cycle, agile developers undertake each of these processes incrementally as development continues (Lee & Chen, 2023; Sonterre, 2020).

The agile principles, namely, can sum up the benefits of agile methodology;

- Harnessing change for competitive advantage
- Delivering software in a short space of time
- Teamwork
- Supportive environment
- Communication (face-to-face conversations)
- Technical excellence

- Simplicity
- Self-organising teams (independence)
- Reflection and feedback

6.5. Research question 4

Research question	Sub-themes	Themes
What are the key challenges a large traditional South African bank faces when transitioning from waterfall and hybrid operation to APM?	<ul style="list-style-type: none"> • Cultural barriers • Regulatory barriers • Technological barriers • Communication barriers 	Barriers to agile adoption
	<ul style="list-style-type: none"> • Scepticism • Traditional mindset 	Resistance to change

6.5.1. Theme 1: Barriers to agile adoption

Cultural Barriers

The findings revealed that transitioning from waterfall and hybrid to agile methodology is challenging. The barriers to adopting agile methodology include cultural and language barriers, barriers to the participation of women, traditional mindsets, and entry barriers. The findings revealed that cultural barriers impacted the transition to and adoption of agile methodology. The cultural barriers were first viewed as part of organisational culture. Organisational culture plays a significant role in successfully implementing agile methodologies in an organisation's workforce (Ghayyur et al., 2018). Organisational culture is the organisational dimension in the conceptual framework.

Agile methodologies require a different mindset and approach to work, which can conflict with traditional organisational cultures that value hierarchy, control, and predictability. Agile methodologies, such as Scrum and Kanban, emphasise

collaboration, adaptability, and continuous improvement (Azenha et al., 2021). Organisations must embrace these values to successfully implement agile operations and shift from a command-and-control management style to a more participatory approach (Eilers et al., 2022; Gregory & Taylor, 2019). However, changing the organisational culture is difficult and requires a significant effort from management and employees (Thesing et al., 2021).

Project managers and developers who were used to using traditional methodology were resistant to shifting the mindset to align with agile methodology and the culture thereof (Binci et al., 2023). For example, agile methodology involves teamwork, continuous iterations, communication and feedback. Individuals with a traditional mindset felt that these practices were cumbersome. The findings resonate with the literature review, which found that organisational culture can hinder the adoption of an agile methodology.

The various studies found that a lack of top management support, effective communication, and teamwork resulted in a lack of motivation to adopt agile methodology (Altuwajri & Ferrario, 2022). In addition, Tenedez et al. (2018) found that one of the major difficulties faced by software practitioners in the fintech software sector was securing the backing and commitment of senior management. Successful agile adoption requires strong leadership to manage the significant organisational change needed.

Research studies identified several key leadership practices important for facilitating agile adoption, including creating a shared vision for the organisation, providing support and resources to teams, and fostering a culture of experimentation and continuous improvement (Serrador & Pinto, 2015). In addition, effective communication and collaboration between leadership and teams is crucial for ensuring the success of agile projects.

Although the literature indicated that the cultural background of practitioners influences their attitudes toward agile methodology, most of the participants in the study averred that culture has very little influence on adopting agile methodology. However, some isolated practices in Indian culture represented an organisational culture that limited women's participation in discussions and debates about agile adoption. Thus, cultural differences have a significant role in determining whether an

organisation will adopt a new technology and how, when, and what kind of technology will be adopted (Van Kelle et al., 2015).

Technological barriers

Another barrier to agile adoption is related to iterations. The findings showed that continuous iterations were difficult to implement in the banking system because it had many fragmented systems. In addition, the findings revealed that the testing environment was very weak. These findings were not directly found in the literature. Instead, they aligned more with the technological challenges that affected the adoption of agile methodology (Altuwaijri & Ferrario, 2022). Technological already are part of the technical dimension of the conceptual framework.

Research shows that organisations that struggle to utilise agile methodology's advantages fully have cited the lack of knowledge and expertise among employees and a reluctance to acquire new knowledge (Gandomani & Nafchi, 2016; Ayed et al., 2017). Some of the implementation issues experienced by organisations include team members' disinterest in collaboration to complete agile software projects (Ayed et al., 2017). Extant literature that sought to understand the cause of resistance to agile adoption found that agile approaches might also provide psychological impediments to success (Altuwaijri & Ferrario, 2022; Binci et al., 2023).

The findings are consistent with several studies on agile methodology (Altuwaijri & Ferrario, 2022; Ciric Lalic et al., 2022; Khalid et al., 2020). The literature shows that the agile methodology does not provide a clear view of the entire project like the waterfall method. There is a consensus that uncertainty is an intrinsic component of software development and that attempting to manage fluctuations through statistical and other measures was fruitless (Khalid et al., 2020).

6.5.2. Theme 2: Resistance to change

Scepticism and traditional mindset

Resistance to change emerged as one of the barriers to the adoption of agile methodology. The resistance was mainly attributed to a lack of desire to accept new knowledge, which required moving away from the waterfall methodology. Most project managers were used to the waterfall and hybrid methods. Therefore, when

agile methodology was introduced, it required those managers to update their knowledge and skills to suit the demands of agile methodology. In addition, they needed to change their mindset and organisational culture. Extant literature revealed that resistance to change is a common barrier whenever new systems are introduced in organisations (Altuwaijri & Ferrario, 2022; Hobb & Petit, 2017). The reasons vary from fear of losing control, as revealed in this study, to fear of losing their jobs and a lack of interest in undertaking training and development initiatives (Ciric Lalic et al., 2022). Resistance to change emerged as a new theme/factor within the organisational dimension in the conceptual framework.

Studies that explored people-related barriers to agile adoption in organisations highlighted that some software engineers were concerned that their potential skill limitations might be exposed in an agile team (Sonterre, 2020). That could lead to resistance and opposition to agile adoption (Lee & Chen, 2023). In addition, some people who resist agile adoption fear increased reliance on the social skills and teamwork that come with agile methodology (Tam et al., 2020).

Lastly, the study found that although adopting an agile methodology was noble, it lacked clarity. The findings revealed that since the agile methodology used sprint reviews, project managers and developers did not provide the whole plan for the project but instead had a sprint goal, which is a small target achievable in about two weeks. Compared with the waterfall method, the findings are shared with several studies showing that agile methodology may be difficult to apply in some projects.

Although agile methodology provides freedom and independence to project managers, contiguous iteration as the project goes on also allows teams to become distracted quickly (Khalid et al., 2020). Scope creep is often unavoidable when you proceed without adequate documentation or a clear vision of your end product or outcome (Khalid et al., 2020). The lean approach was promoted to reduce unnecessary effort, notably wasted documentation generation (Khalid et al., 2020). Many, including some of the participants in this study, misinterpreted this to imply no need for any documentation. However, a closer interpretation of the Agile Manifesto reflects that it meant recording what was essential and nothing more.

6.6. Linkage of sub-themes and themes to the conceptual framework

The below table summarises the link of the sub-themes and themes to the conceptual framework. The new themes and sub-themes become factors in the conceptual framework that must be considered in the transition from WPM and HPM to AGM in a large traditional bank. The sub-themes and themes in red are new factors for the conceptual model and the return on investment adds a new dimension to the conceptual framework. The framework is concluded in chapter 7 of this study where it shows the framework introduced in chapter 2 and linked to the findings in chapter 5 and the discussion in chapter 6.

Table 6.1: Linkage of sub-themes and themes to the conceptual framework

No	Sub-Themes	Themes	Dimensions of conceptual framework
1	<ul style="list-style-type: none"> Work in teams Collaboration 	Teamwork	Organisational factors
2	<ul style="list-style-type: none"> Daily stand-ups Sprint reviews Agile ceremonies 	Communication	
3	<ul style="list-style-type: none"> Controls in the Fintech sector Certification 	Regulatory requirements promote standards	
4	<ul style="list-style-type: none"> Scepticism Traditional mindset 	Resistance to change	
5	<ul style="list-style-type: none"> Collaboration Buy-in and mindset 	Strategies and best practices	
6	<ul style="list-style-type: none"> Training Communication Buy-in and mindset 	Strategies and best practices	People Factors
7	<ul style="list-style-type: none"> Can be customised Continuous iterations 	Flexibility	Technical factors
8	<ul style="list-style-type: none"> Deadline-driven 	Quick turnaround	

	<ul style="list-style-type: none"> • Quick to see results 		
9	<ul style="list-style-type: none"> • Technology 	Barriers to agile adoption	
10	<ul style="list-style-type: none"> • Benefit hours • Revenue generation • Reputation 	Return on investment	Financial Factors

6.7. Conclusion

The chapter was dedicated to the discussion of findings. The transition from traditional to agile methodology has benefits and challenges. The chapter discussed the strategies and best practices that can enhance the adoption of agile methodology. The regulatory environment was also discussed. The chapter further discussed the benefits, including promoting teamwork, ease of operations, teamwork, collaboration, communication, flexibility, ROI and quick turnaround. Lastly, the chapter discussed the barriers to agile adoption, focusing on cultural barriers, language barriers, barriers for women, different time zones, risks and entry barriers. The discussion relied on reviewed studies from Chapter 2 and collaboration theory, which linked the findings to theory and practice.

Chapter 7, which follows, is the concluding chapter of the study. It presents the principal findings and the implications of the findings on management and project management. In addition, the researcher presents the study's limitations and makes suggestions for future research. The researcher presents a framework for successful transition from waterfall and hybrid to agile project management in an adoption framework. This framework extends the conceptual framework that was discussed in the literature chapter 2 and it extends with new themes and dimensions that arose from the findings established from the data collection through interviews with the 12 participants. The researcher makes a recommendation to implement the framework presented in chapter 7 to successfully transition from waterfall and hybrid to agile project management in a large traditional bank in South Africa.

Chapter 7: Conclusions and Recommendations

7.1. Introduction

This concluding chapter presents the conclusions and recommendations of the study. Firstly, an overview of the study is presented, indicating the research objective, questions, methodological processes, and decisions. Thereafter, the chapter presents the principal findings, focusing on the four research objectives. After presenting the conclusions, the chapter presents the implications of the findings to management, followed by implications for the project management field. The chapter recommends the adoption of the agile adoption framework since there is limited research on that aspect in South Africa. Finally, suggestions for future research are provided.

7.2. Overview of the study

The study sought to examine the experiences of project managers during the transition from WPM and HPM to APM at a large traditional bank in South Africa. To achieve this objective, the study answered the following research questions:

- i. What strategies and best practices could financial services organisations employ to enhance the transition from WPM and HPM to APM?
- ii. What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?
- iii. What are the benefits of adopting APM at a large traditional South African bank?
- iv. What are the key challenges a large traditional South African bank faces when transitioning from WPM and HPM to APM?

The study utilised a qualitative inductive approach as it allowed for understanding the experiences of project managers regarding the transition from waterfall and hybrid to agile methodology. Supporting the qualitative design, the interpretive research paradigm guided the research journey and decisions. The interpretive research design allowed the researcher to present detailed comments about project managers' different experiences and perceptions as they transitioned from waterfall and hybrid to agile methodology (Greening, 2019). The study population comprised three divisions within a large traditional South African bank: Corporate and

Investment Bank, Retail and Business Bank, and Group. Regarding the population, the unit of analysis was project managers from each division. A small sample size of 12 project managers was deemed consistent with qualitative research, arrived at when saturation was reached, and was utilised for data collection. The data was collected using semi-structured interviews, transcribed and analysed using ATLAS.ti. The findings presented in Chapter 5 were discussed and supported by the collaboration theory in Chapter 6. This concluding chapter presents the principal findings, the implications for project management, the research limitations and suggestions for future research.

7.3. Principle findings

The principal findings for each of the research objectives are presented as follows:

7.3.1. Strategies and best practices to enhance the transition from WPM and HPM to APM in a large traditional bank in South Africa

As the agile methodology is still a recent phenomenon in the South African banking sector, the study showed that the strategies and best practices that the bank could utilise were enhanced collaboration, coaching and training, communication, buy-in, mindset shift and self-teaching.

Although the findings revealed that communication and collaboration were being practised in the bank, they needed to be enhanced as they are key principles for agile deployment (Al Maamzi & Tawfik, 2022).

To address resistance to adopting agile methodology, one of the barriers, the study revealed that the buy-in of various stakeholders involved in the agile adoption was crucial. Therefore, the study indicated that transitioning from waterfall and hybrid to agile methodology should continuously engage stakeholders such as product owners, agile teams and project managers (Piwowar-Sulej, 2021; Ram & Dolla, 2023).

Training and development programmes support a successful transition from waterfall and hybrid to agile methodology. Training and development aim to address challenges mentioned earlier, such as fixed mindsets, resistance to change, cultural barriers and the lack of skills (Tam et al., 2020).

Training and development were already implemented in the organisation but at a minimal scale. The training was for both teams and management, as it helped manage the change process.

Apart from training and development initiatives, the study showed that self-directed teaching helped equip agile teams with knowledge about agile methodology via searching for information on the internet and in books. The benefits of self-directed learning include the development of a greater sense of responsibility (Basten & Haamann, 2018).

7.3.2. The influence of regulation on the adoption of and implementation of APM methodology

The study revealed that the banking system is highly regulated because it is a sensitive area. Therefore, the regulatory environment influences the transition from waterfall and hybrid to agile methodology. Compliance with regulatory procedures was an important aspect of agile methodology.

Security measures such as protecting private information were key regulatory mechanisms that had to be followed in adopting agile methodology. However, stiffer regulatory measures were considered barriers to the smooth transition from waterfall and hybrid to agile methodology. Previous studies showed that failed agile adoption was linked to the regulatory environment (Bargenda, 2020; Lalmi et al., 2021).

The study also revealed that agile methodology was more suitable for non-regulatory projects, which was a barrier for project teams working on regulatory projects. That implies that the waterfall methodology is still essential for regulatory projects, thus taking advantage of the limitations of agile methodology.

7.3.3. The benefits of adopting agile project management

The transition from waterfall and hybrid to agile methodology was viewed as a difficult process with several benefits for the traditional bank. Firstly, unlike the waterfall methodology, the agile method allows project managers to focus on a few tasks simultaneously. This ensured project efficiency (Lalmi et al., 2021). The study found that transitioning from waterfall and hybrid to agile methodology enhanced teamwork.

Specifically, Kanban and Scrum methodologies were designed to work with teams. Therefore, by design, when using agile methodology, product owners, agile teams, and scrum masters highlighted the need for teamwork (Thesing et al., 2021). As a result of teamwork, agile projects tend to have greater chances of success compared to their predecessors, the waterfall and hybrid methodology (Sonterre, 2020).

Communication is a central feature of agile methodology. Similarly to collaboration, agile methodology works in an environment with effective communication. The findings revealed that the agile methodology offered several communicative platforms, including sprint reviews, daily stand-ups and agile ceremonies. Sprint reviews and daily stand-ups were utilised as a communication platform for project managers and developers to quickly adapt to the needs of current product development (Eilers, et al., 2022; Lee & Chen, 2023; Tam et al., 2020).

In addition, agile ceremonies were both communicative and celebratory platforms for the achievements made during a sprint (Stray et al., 2016). Unlike the waterfall methodology, the study found that the agile methodology was flexible, allowing for iterations during the project. As a result, agile teams could quickly make iterations to align with the product owner's expectations while adding the value customers perceive to the project (Cooper & Sommer, 2018).

7.3.4. Challenges faced when transitioning from WPM and HPM to APM

Much of the literature on the challenges faced in transitioning from waterfall and hybrid to agile methodology in the banking industry did not focus on the South African context, as research is scarce in the area. The findings showed that the agile methodology is still a new phenomenon for most traditional banks. Consequently, the transition was hampered by several barriers to change from team members and top management. The barriers also included cultural barriers, language barriers, barriers to the participation of women, traditional mindsets, and entry barriers.

The transition from waterfall and hybrid to agile methodology was met with cultural barriers, comprising conflicting organisational cultures between waterfall methodology and agile mythology. The study found that the agile methodology works well with organisations which value agile principles such as communication, teamwork, independence and flexibility. These principles differ from the command-

and-control management style of the waterfall methodology (Eilers et al., 2022). Due to factors that include fear of losing control and being shy to expose technological weaknesses, adopting agile methodology also required a transition of organisational culture from waterfall methodology to agile methodology, which was a difficult process.

Similar to organisational culture, the transition from waterfall and hybrid methodology to agile methodology required the agile teams and the management to shift their mindsets. There was resistance among individuals who were used to the waterfall methodology. The mindset shift that aligns with agile methodology entails adopting agile principles that include communication, flexibility, independence, teamwork, and shifting from a command-and-control management style to a more participatory approach (Eilers et al., 2022).

The study provides new knowledge about cultural obstacles that affect women's participation in the transition from waterfall and hybrid to agile methodology. It was revealed that some patriarchal cultures still overlook the expertise of women, and their voices and advice regarding the decisions regarding agile projects were not fully considered.

Lastly, resistance to change was one of the biggest impediments to transitioning from waterfall and hybrid to agile methodology. Although the resistance's reasons were unclear, the literature shows that most managers fear losing control of their teams as the agile methodology institutes greater team independence. In addition, people-related challenges to agile adoption were linked to a fear of exposing skill limitations (Sonterre, 2020).

7.4. Recommendations and implications for management

The transition from waterfall and hybrid methodology to agile methodology requires the support of top management. In addition, management could provide better transformational leadership if they were confident about their skills and knowledge concerning agile methodology.

7.5. Recommendations and implications for project management

The scarcity of literature on the transition from waterfall and hybrid to agile methodology in the large traditional bank in South Africa indicates that the bank has not yet fully adopted agile methodology. The findings indicate that while the traditional bank had made significant progress towards agile adoption, its adoption still had challenges. Given these challenges, the researcher proposes the agile adoption framework to guide large traditional banks committed to agile adoption. The additional themes were added from the findings and are highlighted in figure 7.1 below.

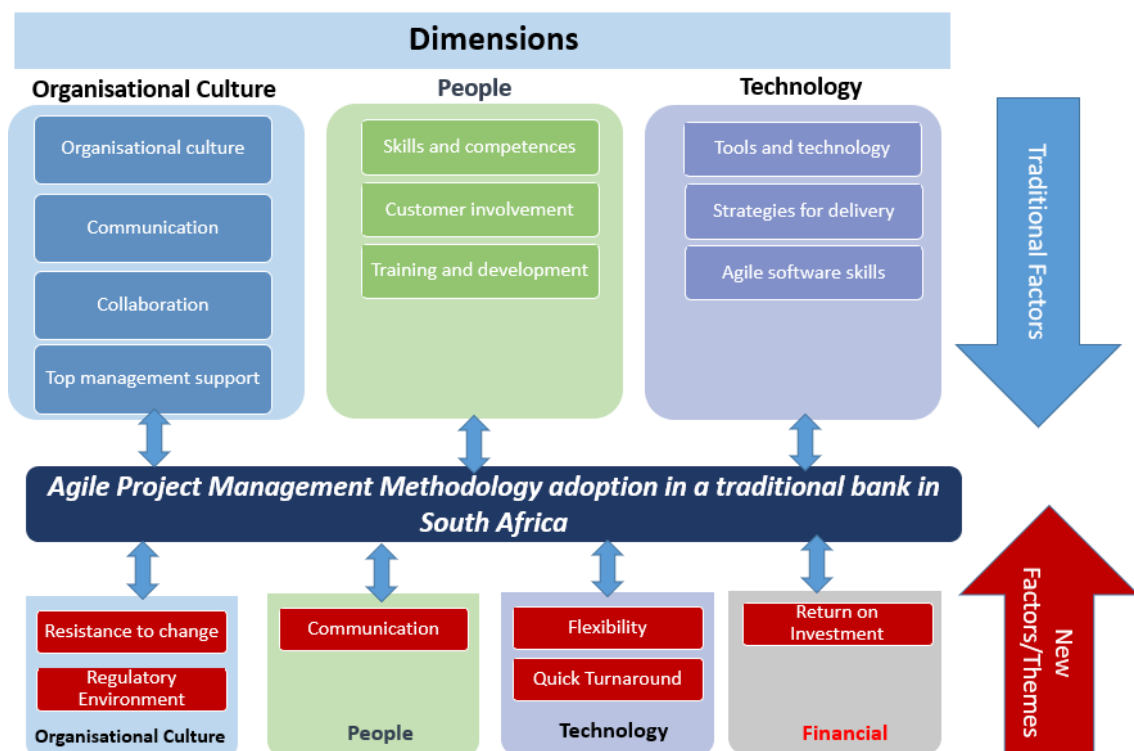


Figure 7.1: Agile adoption framework (Source: Authors compilation)

The proposed agile adoption framework has four constructs: organisational factors, people factors, technical factors and financial factors. These determine the success or failure of the transition from waterfall and hybrid to agile methodology.

Firstly, organisational factors play a significant role in the transition from waterfall and hybrid to agile methodology (Bukanová & Šimíčková, 2018). Firstly, agile project

management research indicates that nature of organisational culture plays a key role in the transition and adoption of agile methodology (Binci et al., 2023). Organisational culture that slows down the transition from waterfall and hybrid to agile methodology include: secrecy, isolation, complexity, shyness, and disrespect (Al Maamzi & Tawfik, 2022). On the contrary, organisational values that promote transition from waterfall and hybrid to agile methodology are collaboration, communication, teamwork, top management support, regulatory environment and dealing with resistance (Altuwaijri & Ferrario, 2022).

Secondly, the people factors that play a role in the transition from waterfall and hybrid to agile methodology are skills and competences, customer involvement, training and development and communication strategies for change management. The Agile principles emphasise the importance of involving stakeholders such as customers and project owners into the agile project process (Hobb & Petit, 2017). In addition, in managing change from waterfall and hybrid, training and development programmes can help enhance the skills of agile teams ((Gandomani & Nafchi, 2016). However, for this change to be achieved, the study found that there is need for use of appropriate communication strategies such as engagement meant to obtain seeking buy-in of stakeholders (Fernandes et al., 2018; Khalid et al., 2020).

The effective adoption of agile methodology is influenced by several technical factors. First, tools and technology should be considered (Altuwaijri & Ferrario, 2021). An organisation should establish its technological readiness for the adoption of agile methodology (Circic Lalic et al., 2022). This assessment should culminate in the identification of barriers and solutions to address these barriers (Gandomani & Nafchi, 2016). One of the technical factors that the study found were the any segmented systems, making it difficult to fully adopt agile methodology. Additional technical factors that emerged from the findings were related to the technical benefits of agile methodology which drive its adoption. These were flexibility and quick turnaround. The technical aspects of agile project management allow for continuous iterations and small accomplishments (Circic Lalic et al., 2022). These are key drivers.

An additional construct that was added to the framework presented in Chapter 2 is financial factors. The findings revealed that the financial benefits of agile transition were a significant driver as businesses are there to make profit. Therefore, return on

investment was a key driver of the transition from waterfall and hybrid to agile methodology.

7.6. Limitations of the research

The unit of analysis used in the study was limited to project managers, whose experiences and perceptions enabled the study to assess the transition from waterfall and hybrid to agile methodology. However, focusing on project managers overlooked other key areas of the agile environment, such as product owners and agile teams, whose views could have enhanced our understanding of the benefits and challenges of the transition from waterfall and hybrid to agile methodology and the regulatory environment.

Another limitation was related to the demarcation of the study. The focus was only limited to one traditional bank in Gauteng province. This limited some divergent views that could have been obtained had the study been broadened to include several traditional banks and cover several provinces.

7.7. Suggestions for future research

As indicated in Chapters 1 and 2, limited research focuses on transitioning from waterfall and hybrid to agile methodology in the South African financial services industry. Therefore, there are several areas that future work could address. Firstly, to encourage agile adoption, future work could focus on a case study exploring the effectiveness of agile adoption in a traditional bank. In addition, future research could consider probing why several banks still have not fully adopted agile methodology. This could be done by investigating the readiness of banks to adopt agile implementation.

Having addressed the future research areas, the following section concludes the study.

7.8. Conclusion

This closing chapter of the research knitted together the different parts of the journey. This research achieved its aim which was to provide valuable insights and guidance to one larger traditional bank in South Africa as it aims towards transitioning from

waterfall and hybrid project management approaches to agile methods. It provided the conclusions for each of the research objectives. In addition, the chapter provided managerial implications, implications for the project management fraternity and areas for future research. In light of the study findings, the chapter presented a framework for agile adoption, which could assist organisations with steps to take when considering the adoption of agile methodology.

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Annexures

Annexure A: Consistency matrix and interview questions

Research Questions	Literature review	Data Collection Tool	Analysis
What strategies and best practices could financial services organisations employ to enhance the transition from WPM and HPM to APM?	Heriyanti & Ishak (2020). Castañer & Oliveira, (2020). Reiff & Schlegel, (2022); Papadakis & Tsironis, (2020) Santhanam et al. (2022)	Semi-structured interview	It was analysing the other strategies in the market from other companies that successfully transitioned from waterfall and hybrid to agile.
What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?	Beerbaum (2021) Rindell et al. (2021) Bargenda, 2020 Lalmi et al., (2021)	Semi-structured interview	Analysis of financial service regulations prevents specific projects from adopting agile processes.
What are the benefits of adopting APM at a large traditional South African bank?	Schneider (2023). Santos and Fernandes (2023) Cooper and Sommer (2018) Lee and Chen (2023) Conforto et al. (2016)	Semi-structured interview	Understanding the benefits of adopting APM processes. Did communication and collaboration improve to adopt agile processes? Did the transition to agile increase innovation and positively impact market sentiment?
What are the key challenges a large traditional South African bank faces	Gemino et al. (2021) Dennehy and Conboy, (2018).	Semi-structured interview	Analysing if employees' structure, hierarchy, roles, and responsibilities posed a challenge.

when transitioning from WPM and HPM to APM?	Buganová and Šimíčková, (2019)		
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Annexure B: Interview consent form

Informed consent letter:

The informed consent letter is to be used in the case of an interview.

I am required to complete an Integrated Business Research Project as part of my Master in Business Administration qualification, and as such am conducting research on *The transition from waterfall and hybrid to agile project management in one large traditional bank in South Africa*. The research aims to learn more about the project management methodology used in a large Bank in South Africa. My interview is expected to last about 45 minutes and will help me understand the project management methods adopted in financial services. Your participation is voluntary, and you can withdraw at any time without penalty. All data will be reported without identifiers. Confidentiality and anonymity will be maintained throughout this interview and study. If you have any concerns, please contact my supervisor. Our details are provided below.

Researcher name xxxxxxxxxxxx

Email 22957652@mygibs.co.za

Phone xxxxxxxxxxxx

Research Supervisor Signature

Email xxxxxxxxxxxx

Phone xxxxxxxx

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Annexure C: Interview questions

Section A: Demographic information

1. Do you work in a large traditional South African bank in South Africa?
2. Which of the three divisions do you work in (Corporate and Investment Division, Retail and Business Bank division, or Group division)?

Division	Yes
Corporate and investment division	
Retail and Business Bank division	
Group division	

3. How many years of experience do you have managing projects?

Years	Yes
1-2 years	
2-5 years	
6-10 years	
Above 10 years	

Section B: Questions related to research objectives 1, 2, 3 and 4

4. Can you describe and elaborate on what project management methods your division uses for strategic projects? Waterfall, agile or hybrid project management methods?
5. Can you give me an example of the process followed by a project you are managing?
6. Based on the above definition, does the project you described have any of those processes? Please can you elaborate on what processes?
7. Do you think the project management method followed above is adaptable to changes in the project management and business environment? E.g., willingness to adapt the plan using what the team has learned, willingness to change the project and planning to replan due to changes made during the project.
8. Can you describe the benefits of using the project management method described above?

9. What are the challenges of transitioning from a waterfall or hybrid project management method to fully adopting an APM process on your projects?
10. In your view, what could the division do differently to increase the transition speed from waterfall/hybrid to full APM?
11. Have you witnessed any improvements in collaboration, communication, or flexibility within project teams due to changing methodologies?
12. Did you face any resistance or scepticism from employees or stakeholders during the transition, and how was it addressed?
13. What were the primary cultural barriers or mindset shifts needed to be addressed during the transition?
14. Please give me an example where culture played an influence and where culture did not play an influence.
15. Do you think the division maximises the return on investment by using the project management method you described above?
16. Do you think your project management method is suited to measure the key outcomes and results for division?
17. How do regulatory and compliance requirements influence your division's selection and implementation of APM processes?
18. In your view, do you think that project managers require more training and educational initiatives to transition quicker to agile methodology?

Annexure D: Ethical clearance

**Gordon Institute
of Business Science**
University of Pretoria

**Ethical Clearance
Approved**

Dear 

Please be advised that your application for **Ethical** Clearance has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

[Ethical Clearance Form](#)

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

Annexure E: ATLAS.tl codebook

Individual codes

Benefits of Agile

- Easy flow
 - Focus on few things
 - Works in teams
 - Stand-ups daily
 - Allows "change of course and direction"
 - Collaboration
 - Flexibility
 - Loss is just for a sprint or two
 - Organisational agility
 - Customised to meet "product owner's road-map"
 - On-going work "churning on"
 - We and partners "align"
 - Continuous iteration
 - Work with a sprint goal
 - Quickest turnaround
 - Cheaper
 - Work together with partners
 - All within a squad
 - Return on investment
 - Embedded
 - Continuous deployment
 - Feedback
 - Agile ceremonies
 - Sprint reviews
 - Hold ceremonies
 - Frequent "testing"
 - Benefit hours
 - On budget, on time, with quality
 - Quick to see results
 - Project can start without total budget
 - Increased "revenue"
 - Meet deadlines earlier
 - User stories from input of business unit
 - Reputation
 - Jira used to measure "outcomes"
 - Steerco conversations
 - Deadline-driven
 - Risk avoidance
 - More team members the more ROI
-

- 🌈 Strategies to enhance adoption of Agile
 - ◆ An improvised, "watered down version"
 - ◆ Coaching
 - ◆ On-the-job-training
 - ◆ Structured governance
 - ◆ Enforcement of agile method
 - ◆ Embedment
 - ◆ Communication
 - ◆ Be cooperative
 - ◆ Get "buy-in"
 - ◆ Self-teach via "Google and You Tube"
 - ◆ Need for better analytics capability
 - ◆ Need for "design-thinking capability"
 - ◆ pair junior with senior project managers
 - ◆ Meeting physically in "a room"
 - ◆ Mindset change

- 🌈 Challenges of agile adoption
 - ◆ Cultural barriers
 - ◆ Barriers to entry
 - ◆ Risks
 - ◆ Executing coaching is "difficult"
 - ◆ Stand-ups are time-consuming
 - ◆ Resistance to change
 - ◆ "Traditional" mindset
 - ◆ Too early for full agile
 - ◆ Executives were sceptical
 - ◆ Different time zones
 - ◆ Scepticism
 - ◆ Mindset shift
 - ◆ Performance issues
 - ◆ Women not allowed to challenge men
 - ◆ Testing environment is vulnerable
 - ◆ Limited "bird's eye view" of projects
 - ◆ Regulatory projects require clarity
 - ◆ Not following same principle
 - ◆ Language barrier
 - ◆ People want a view of "the end"
 - ◆ Less documentation lacks "clarity"
 - ◆ Different methodology

- Fragmented data systems
- Difficult to make changes to many onboarding channels
- Business get frustrated
- No alignment



Regulatory environment

- Trade limitations
- Political objectives should align with regulation
- "adher"to regulatory standards
- Customer information regulation
- Regulatory programs are challenging
- Regulatory projects are "time-driven instead of value-driven"
- Regulation and compliance is growing
- Certification
- Understanding deliverables
- Regulations influence the project management process
- Agile suites non/less regulatory projects
- Need to notify SARB
- Controls are in place in Fintech
- Regulatory requirements influenced move to agile

Annexure F: List of respondents

Participant	Years of experience in the traditional bank
P1	13
P2	25
P3	30
P4	15
P5	14
P6	15
P7	25
P8	10
P9	7
P10	10
P11	12
P12	20

Appendix G: Relationship between Research Objectives, Research Questions, and Interview Questions

	Research objective (RO) and Research question (RQ)	Interview questions
RQ3	To identify the benefits of adopting APM at a large traditional South African bank	<ol style="list-style-type: none"> 1. Can you describe and elaborate on what <u>project management methods</u> your division uses for strategic projects? Waterfall, agile or hybrid project management methods? 2. Can you give me an <u>example of the process followed</u> by a project you are managing? Based on the above definition, does <u>the project you described have any of those processes</u>? Please can you elaborate on what processes? 3. Do you think the project management method followed above is <u>adaptable</u> to changes in the project management and business environment? E.g., willingness to adapt the plan using what the team has learned, willingness to change the project and planning to replan due to changes made during the project. 4. Can you describe the <u>benefits</u> of using the project management method described above?
RQ3	What are the benefits of adopting agile project management at a large traditional South African bank?	

		<p>5. Have you witnessed any improvements in <u>collaboration, communication, or flexibility</u> within project teams due to changing methodologies?</p> <p>6. Do you think the division maximises the ROI using the abovementioned project management method?</p> <p>7. Do you think your project management method is suited to measure the <u>key outcomes and results</u> for division?</p>
RQ 4	To investigate the key challenges a large traditional South African bank faces when transitioning from waterfall, hybrid to APM.	<p>8. What are the <u>challenges</u> of transitioning from a waterfall or hybrid project management method to fully adopting an APM process on your projects?</p> <p>9. Did you face any <u>resistance or scepticism</u> from employees or stakeholders during the transition, and how was it addressed?</p> <p>10. What were the primary <u>cultural barriers or mindset shifts</u> needed to be addressed during the transition?</p> <p>11. Please give me an example where culture played an influence and where culture did not play an influence.</p>
RQ 4	What are the key challenges a large traditional South African bank faces when transitioning from waterfall, hybrid, to APM?	
RO 2	To establish the influence of the regulatory environment on the adoption of and implementation of APM methodology at a large traditional South African bank	<p>12. How do <u>regulatory and compliance requirements</u> influence your division's selection and implementation of APM processes?</p>

RQ 2	What is the influence of regulation on adopting and implementing APM methodology at a large traditional South African bank?	
RQ 1	Explore strategies and best practices that financial services organisations could utilise to enhance the transition from waterfall and hybrid to APM.	<p>13. In your view, do you think that project managers require more <u>training and educational</u> initiatives to transition quicker to agile methodology?</p> <p>14. What other strategies do you think can enhance the transition to agile?</p>
RQ 1	What strategies and best practices could financial services organisations employ to enhance the transition from waterfall and hybrid to APM?	