JOURNAL OF MANAGEMENT PERSPECTIVES
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A Proposed Agile Framework for Scalability in the Banking Sector

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DOI: https://doi.org/10.64287/jmp.2026.2.1

ABSTRACT

The research explored the adoption of Scaled Agile Frameworks (SAFs) within a single retail bank in South Africa, addressing the gap in the literature on how emerging markets, particularly South African banks, face challenges to Agile implementation. The study aimed to develop a framework for the effective implementation of SAFs in banks, addressing challenges like regulatory constraints, organisational resistance, and digital transformation complexities. Key research questions focused on identifying success factors, such as leadership commitment, cultural alignment, and technological readiness, and how these could guide Agile adoption in the sector. A quantitative design was employed, using quantitative data collection. Surveys with a stratified random sample of 196 banking professionals captured key variables like organisational readiness, leadership engagement, and regulatory compliance. Quantitative data were analysed using regression and chi-square tests. The study found mixed outcomes in SAF adoption. Key benefits included improved organisational alignment (60.3%), project execution efficiency (60.9%), and customer satisfaction (47.7%). However, challenges included difficulties in aligning teams (54.1%), resistance to change (38.4%), and technology infrastructure limitations (43.8%). Critical factors for success included leadership support (57.3%), clear communication (58.5%), and continuous improvement mechanisms (56.7%). The study underscored the importance of leadership commitment, organisational culture, and technological readiness in scaling Agile within the banking sector. The findings led to a framework that integrates regulatory compliance with Agile principles. The research highlighted the need for tailored training, cross-team collaboration, and stronger technological support to overcome barriers to successful Agile adoption.

Keywords: Technological infrastructure readiness, regulatory compliance, operational efficiency, leadership engagement.

Introduction

Globally, the banking sector has traditionally been defined by hierarchical structures and bureaucratic processes. However, significant transformations occurred due to technological advancements and rapidly changing customer expectations. Financial institutions worldwide were compelled to innovate and adapt. Agile methodologies, initially developed for software development, became crucial in this transformation, providing a way to improve operational efficiency, speed up innovation, and enhance customer experiences. As the financial services sector operated in increasingly competitive and demanding environments, the ability to adopt and scale agile practices became essential for maintaining relevance and competitiveness.

From a regional perspective, the South African banking sector reflected many of the global trends but faced unique challenges stemming from its highly regulated environment, economic disparities, and distinct cultural dynamics. While the benefits of agile practices are well-documented, the adoption of scaled-agile frameworks (SAFs) in South Africa has advanced more slowly than in other regions.

Aim and Objectives

The aim of this research was to propose a framework that would guide South African banks in the successful implementation of Scaled Agile Frameworks (SAFs). The objectives of this study were to identify the key challenges and opportunities associated with implementing Scaled Agile Frameworks (SAFs) in the South African banking sector, to analyse the state of Agile adoption in South African banks including their level of maturity, common practices, and challenges faced, and to propose a framework that outlined the critical success factors for implementing SAFs by considering organisational culture, leadership, talent management, and technological infrastructure. Furthermore, the study sought to explore the potential impact of SAFs on organisational performance in terms of increased agility, improved customer satisfaction, and enhanced employee engagement, as well as to identify best practices and lessons learned from Agile implementations in other industries with similar regulatory and operational complexities. Lastly, it is intended to develop a practical implementation roadmap to guide South African banks in their Agile transformation journey, offering recommendations for change management, training, and coaching.

Literature Review

Several studies highlighted that in South Africa, banks had to navigate a complex intersection of regulatory compliance, technological modernisation, and cultural resistance to change. For instance, Moloto, Harmse, and Zuva (2021:157–173) emphasise that while agile methodologies promised efficiency and innovation, their application in the South African banking context was hindered by challenges such as high transition costs, entrenched organisational silos, and the need for significant cultural transformation.

Existing studies focus on technology-driven industries, offering limited insight into banking. This scholar posits that analysing the current maturity level and agile practices in South African banks can reveal whether SAFs' expected benefits, such as enhanced cross-functional collaboration, are realised or hindered by sector-specific limitations (Garcia and Taylor, 2022:56). Furthermore, Enterprise Resource Planning (ERP) systems and integrated software development environments have been identified as pivotal in providing visibility into project progress and resource allocation for large-scale projects. Patel and Ahmed (2022:104) assert that technology adoption reduces manual processes, minimises bottlenecks, and ensures a seamless flow of information across multiple teams. Garcia and Kim (2023:58) propose that cloud-based solutions enhance system scalability, ensuring that technology infrastructure aligns with the evolving needs of an Agile enterprise.

Leadership engagement is also critical in developing an effective agile framework in banking. Anderson and Lee (2022:49) assert that addressing cultural and leadership dynamics is pivotal for fostering team cohesion and collaboration in agile environments. Leadership buy-in and a supportive culture bridge the gap between theoretical agile benefits and practical implementation (Smith and Johnson, 2023:77). Moreover, Brown and Taylor (2020:78) assert that executive involvement in setting strategic priorities, allocating resources, and nurturing a culture of continuous improvement plays a vital role in Agile adoption. Consequently, integrating success factors such as leadership commitment, organisational culture, and technological readiness will enhance the feasibility of SAF adoption.

Martinez (2022:45) asserts that leadership commitment provides strategic direction, resource allocation, and cultural endorsement. However, South African banks encounter unique challenges, such as complex regulatory environments, legacy systems, and hierarchical structures, which potentially impede executive alignment. Consequently, the extent to which leadership commitment influences strategic outcomes, especially in resource-intensive settings, requires deeper exploration (Martinez, 2022:47).

The proposed framework would help structure roadmaps and transformation in the banking industry to address its unique regulatory and operational challenges. Smith (2020:45) posits that phased integration would ensure smoother adaptation to agile practices in heavily regulated industries such as banking. Moreover, Johnson and Lee (2019:112) assert that this structured approach fosters stability and minimises disruption during the transition. Integrating compliance within Agile workflows is another transferable strategy. Johnson and Lee (2021:89) suggest embedding compliance experts into Agile teams and treating regulatory requirements as deliverables in "compliance sprints." This approach ensures ongoing adherence to legal standards without hindering product delivery timelines.

In recent years, the banking sector has been disrupted by rapid technological developments, shifting consumer expectations, and evolving regulatory demands as posited by Smith (2020:45). To stay competitive, Jones and Taylor (2019:102) emphasise that banks needed to respond swiftly to these changes, and many began exploring methodologies that enhanced flexibility and efficiency. One such approach was the adoption of scaled agile frameworks (SAFs), originally pioneered in the software industry, which was subsequently adapted to various sectors, including finance (Rigby, Elk and Berez, 2020:45). Scaled agile frameworks presented a structured yet adaptive approach to managing complex, cross-functional projects requiring coordination across diverse teams, assisting organisations enhance their ability to deliver customer-centric products and services at speed (Leite, Sampaio and Silva, 2021:78).

Despite the growing adoption of agile methodologies across industries, banks faced unique challenges in implementing these frameworks at scale. Traditional banking institutions were often encumbered

by legacy systems, hierarchical organisational structures, and stringent regulatory requirements, which made agile transformation challenging (Mabaso and Nyathi, 2021:112). While some banks in North America, Europe, and Asia embraced scaled agile frameworks, the South African banking sector was slower in its adoption, with agile initiatives frequently confined to individual departments or small pilot projects rather than comprehensive, organisation-wide transformations (Moodley, 2022:56).

Research by Khan and Van der Merwe (2019:91) indicates that several factors contribute to this reluctance. Organisational culture, leadership commitment, and agile skill levels among employees played significant roles in the success of agile implementations in banks. Moreover, regulatory and compliance requirements unique to the South African banking sector imposed additional constraints, often intensifying resistance to the structural changes that agile frameworks demanded (Pillay and Govender, 2023:132). These barriers highlighted the need for a tailored approach that considered the specific context of South African banks to overcome resistance and facilitate the effective adoption of scaled agile methodologies (Chima and Ncube, 2023:73).

Despite these challenges, there were successful Agile transformations in specific areas. For instance, Standard Bank adopted the Scaled Agile Framework (SAF), showing that Agile methodologies can work well when implemented correctly. However, such cases remained the exception rather than the rule. The broader reluctance and slow pace of SAF adoption across the South African banking sector highlighted the need for a more structured and comprehensive approach to Agile transformation.

Given these challenges, the proposal of a framework to guide the implementation of scaled agile frameworks in South African banks was deemed essential. As banks grappled with the complexities of digital transformation, a tailored framework could enable South African banks to harness the benefits of agile methodologies, such as improved customer responsiveness, faster innovation cycles, and increased operational efficiency (Beck and Andres, 2020:89). Such a framework could address the specific operational, regulatory, and cultural constraints these institutions faced, providing a structured yet flexible roadmap for integrating agile practices within a traditional banking context.

Existing frameworks provided broad guidelines, but without adaptations that accounted for South African banking sector dynamics, agile transformations often failed to deliver the anticipated operational benefits or enhanced customer experiences (Naicker and Zondi, 2021:210). The scholar intends to close this gap by proposing a structured and contextually relevant framework that could guide South African banks in successfully implementing the Scaled Agile Frameworks, thereby enabling these organisations to enhance competitiveness, innovation, and customer-centricity in a complex regulatory and economic landscape.

This research, therefore, aimed to fill a gap in the current literature by proposing a framework that facilitated agile adoption while aligning with the strategic goals of South African banks, thereby enhancing their competitive positioning in an increasingly digital financial landscape. Thus, this study addressed the problem of the absence of a framework specifically tailored for implementing the Scaled Agile Framework within the South African banking sector. This study's focus on developing a framework for scaled agile implementation was both timely and necessary. By developing a sector- and region-specific framework, this study provided South African banks with a structured, adaptable approach to Agile implementation that effectively aligned with their unique regulatory, operational, and socio-economic environment.

The hypotheses for the study are as follows:

Organisational Readiness

H1: Organisational readiness positively impacts operational efficiency in organisations adopting agile methodologies.

The alternative hypothesis was that:

H0: Organisational readiness does not impact operational efficiency in organisations adopting agile methodologies.

Leadership Engagement

H1: Leadership engagement positively influences operational efficiency in organisations adopting agile methodologies.

Alternative hypothesis:

H0: Leadership engagement does not influence operational efficiency in organisations adopting agile methodologies.

Technological Infrastructure

H1: Technological infrastructure positively impacts operational efficiency in

organisations adopting agile methodologies.

Alternative hypothesis:

H0: Technological infrastructure does not impact operational efficiency in organisations adopting agile methodologies.

Regulatory Compliance

H1: Regulatory compliance positively affects operational efficiency in organisations adopting agile methodologies.

Alternative hypothesis:

H0: Regulatory compliance does not affect operational efficiency in organisations adopting agile methodologies.

Research Design and Methodology

This study adopted a pragmatist research philosophy. Pragmatism is a research philosophy that centres on addressing real-world problems using the most effective methods, instead of adhering to a single truth or methodology. This research philosophy has been widely recognised as a framework for bridging the gap between theory and practice, through encouraging researchers to focus on what works in specific contexts rather than adhering strictly to a single methodological or philosophical standpoint. Pragmatism, as an epistemology, emphasises the practical application of knowledge to solve real-world problems, making it suitable for addressing the research objectives for this study.

The study employed a pure quantitative research design to investigate the relationships between organisational readiness, leadership engagement, technological infrastructure, regulatory compliance, and operational efficiency in the context of Agile scalability within the banking sector. This quantitative method approach involved collecting and analysing quantitative data to provide a comprehensive understanding of the phenomena under study. By integrating findings from quantitative data, the quantitative design enabled a holistic exploration of potential associations and interactions between the independent variables and the dependent variable. Additionally, this design allowed for the evaluation of the moderating effect of technological infrastructure readiness on these relationships, ensuring that the study captured a nuanced perspective of the factors influencing operational efficiency in Agile transformations without manipulating any variables.

The target population for this study consisted of 415 employees involved in agile transformation projects, middle

managers, and top-level managers involved in operations at a local bank. The inclusion criteria focused on employees with direct experience in implementing or managing Agile practices, including managers, team leaders, IT professionals, and compliance officers. Participants were required to have at least one year of experience in their current role to ensure familiarity with the organisation's agile initiatives. Exclusion criteria included employees with no direct involvement in agile-related projects or those working in non-relevant departments, such as clerical or administrative roles unrelated to the study's focus. This targeted approach ensured that the participants had the relevant knowledge and experience to provide meaningful insights into the research objectives.

The study employed a stratified random sampling technique, which is widely regarded as an appropriate approach for research requiring specific participant characteristics. This method was selected to ensure that the sample included individuals from all relevant functions of the organisation who possessed experience and knowledge of agile adoption and scalability within the banking sector. These included senior managers, team leaders, and agile practitioners. The stratified random sampling technique allowed the researcher to target those participants who were most likely to provide relevant and insightful data aligned with the study's research objectives. This approach was justified given the need to develop a robust, industry-specific framework tailored to the unique challenges of the banking sector.

Table 1 provides a summary of the target population and sample size determination, providing the different categories of workers who were involved in the study and the number of those selected to participate in the study.

Table 1: Target Population and Sample Size

Participant Category	Population size	Sample size
Contractor Tribe Support	1	1
Coordinator Tribe Support	2	1
Head Technology	1	1
Head Technology Payments	2	2
Junior Specialist Business Analyst	1	1
Junior Specialist Project Manager	1	1
Lead Product Engineer	44	18

Lead QA Engineer	10	5
Lead Scrum Master	3	2
Lead Solution Analyst	17	8
Lead Solution Architect	14	7
Lead Support Engineer	10	5
Lead Technology	7	2
Manager Tribe Support	10	5
No Corporate Grade-Consultant	1	1
Product Engineer	15	7
Programme Lead QA Engineer	1	1
Senior Manager Tribe Support	18	9
Senior Project Manager	5	2
Senior Specialist Business Analyst	1	1
Senior Specialist: Digital Design	1	1
Solution Analyst	12	6
Specialist Business Analyst	6	3
Specialist Data Engineer	2	1
Specialist Digital Design	1	1
Specialist Digital Full Stack developer	3	1
Specialist Managed Services	3	1
Specialist Platform Engineer	1	1
Specialist Process Engineer	2	1
Specialist Product Engineer	82	35
Specialist Project Manager	2	1
Specialist QA Engineer	63	31
Specialist Scrum Master	2	1
Specialist Solution Analyst	33	15
Specialist Support Engineer	22	10
Support Engineer	11	5
Technical Team Lead	5	2
Total	**415**	**196**

Source: Primary Source (2024)

To ensure the validity and reliability of the research instrument, rigorous testing procedures were undertaken, including a pilot study. The Content Validity Ratio (CVR) was established through a panel of experts familiar with agile methodologies

and organisational performance in the banking sector. These experts reviewed the questionnaire for clarity, relevance, and comprehensiveness, ensuring that the questions accurately captured the constructs of interest. A CVR of 0.78 was attained, and this was considered an acceptable threshold for the questionnaire to be deemed valid. A pilot study was conducted to evaluate the clarity, reliability, and validity of the questionnaire. The pilot study involved 5 participants of individuals involved in agile projects. Feedback from the pilot study was used to refine the questionnaire, ensuring that all questions were unambiguous. Adjustments were made to the wording of certain items to improve comprehensibility, and redundant questions were eliminated to reduce response fatigue. Reliability analysis, using Cronbach's Alpha, confirmed the internal consistency of the scales, while feedback from participants ensured the instrument was both user-friendly and aligned with the study's objectives. The pre-testing process ensured that the final questionnaire was robust and capable of yielding reliable and valid data for the main study. Reliability testing was conducted using Cronbach's Alpha to evaluate the internal consistency of the scales. A Cronbach's Alpha value of 0.7 or higher was considered acceptable, indicating that the items within each construct were consistently measuring the intended variable.

The study complied with ethical considerations under the Protection of Personal Information (POPIA) Act (2018). In this regard, the researcher obtained specific, informed consent from individuals, ensuring data security and privacy, limiting data access to a need-to-know basis, de-identifying or anonymising data as early as possible, retaining data only as long as necessary for defined purposes, and providing mechanisms for withdrawing consent and data removal. The researcher also ensured data accuracy and upheld the principle of accountability for data processing.

Potential conflicts of interest were proactively identified and managed throughout the research process. Any affiliations, fiscal interests, or personal relationships that could have influenced the study's objectivity were disclosed to the ethics committees during the review process. Additionally, steps were taken to ensure that all decisions related to the study design, data collection, and analysis were conducted impartially. To maintain transparency, findings were reported with minimum bias, and acknowledgements of institutional support were included in the final research documentation.

Research Findings and Discussion

Figure 1 illustrates the findings by highlighting the significant associations among key variables analysed in the study. Organisational readiness, leadership engagement, technological infrastructure, and regulatory compliance were found to have direct positive impacts on operational efficiency, thereby affirming hypotheses H1 through to H4. Additionally, technological readiness was confirmed as a moderating variable, enhancing the relationships between organisational readiness, leadership engagement, regulatory compliance, and operational efficiency. The connections were visualised through directed arrows, emphasising the flow and influence of each independent variable and the moderator on the dependent variable, operational efficiency. The layout effectively highlighted the integrative nature of these relationships and underscored the importance of technological readiness as a critical enabler in achieving enhanced outcomes. Figure 1 also provides clarity in understanding how the combined effects of these variables contributed to the overall model, supported by statistical findings.

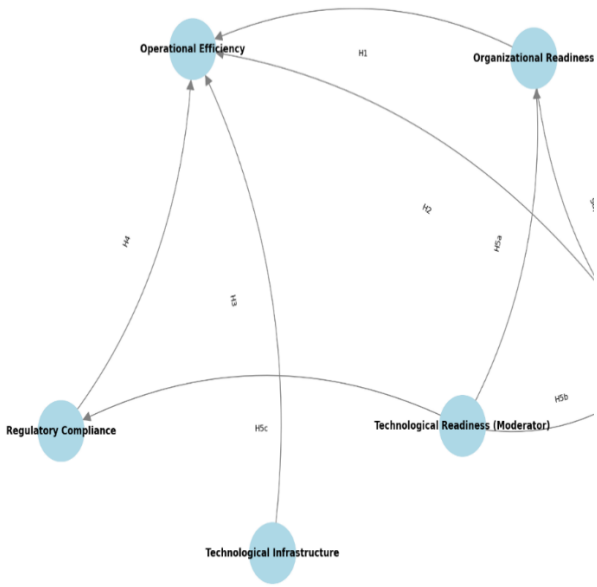

Figure 1: Associations among key variables

Source: Primary Source (2024)

These relationships are further illustrated in the form of a conceptual framework (Figure 2), which illustrates the interconnected relationships among the critical variables influencing operational efficiency within the context of Scaled Agile Framework (SAF) adoption in the South African banking sector. The framework demonstrated how organisational readiness, leadership engagement, technological infrastructure, and regulatory compliance served as the primary independent variables, each contributing uniquely to operational efficiency.

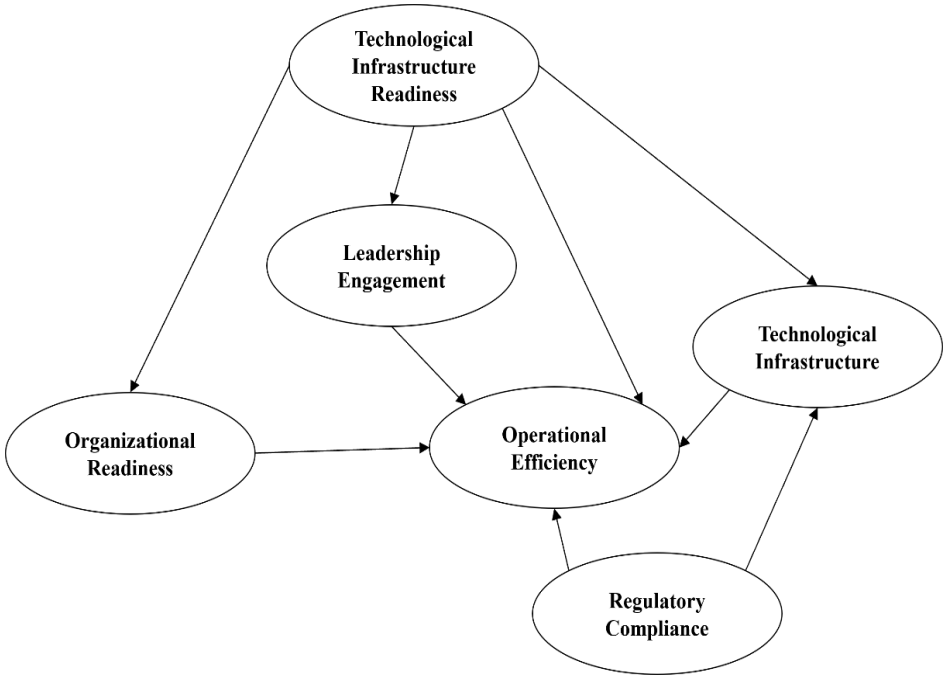

Figure 2: Conceptual Framework

Source: Primary Source (2024)

Framework Components

Technological readiness evaluates whether the current infrastructure and tools can support agile practices. This includes assessing the availability of DevOps (Development and Operations) pipelines, CI/CD (Continuous Integration and Continuous Delivery) capabilities, and automated workflows. It addresses potential challenges such as legacy systems and fragmented tools. Technological readiness feeds into the first phase by identifying gaps that could hinder agile implementation. This confirmed Hypothesis 1 that Organisational readiness positively impacts operational efficiency in organisations adopting agile methodologies.

Organisational readiness assesses the capacity of the institution to adopt agile practices, focusing on adaptability and openness to change. It examines workflows, team structures, and cultural attitudes toward transformation. This component informs Phase 1 by highlighting potential roadblocks and areas requiring change. Leadership engagement is crucial to driving agile transformation. Leaders align agile goals with strategic objectives, foster collaboration, and encourage innovation. A supportive culture that emphasises psychological safety and continuous learning is foundational to agile success. This component connects to Phase 1 by ensuring leadership buy-in. The findings confirm the hypothesis that Leadership engagement positively influences operational efficiency in organisations adopting agile methodologies.

Efficient processes and tools are essential for agile adoption. This component ensures the organisation has suitable tools like Jira or Confluence for task management and collaboration, and workflows are optimised for iterative development. Inputs from this component shape the practical implementation strategies in Phase 1.

Clearly defined roles, such as Scrum Masters, Product Owners, and Agile Coaches, ensure accountability and streamline collaboration. This component also clarifies reporting structures to prevent redundancies. Phase 1 uses this input to establish team responsibilities and align efforts. The banking sector is heavily regulated, making compliance integral to agile adoption. This component integrates legal and regulatory requirements into agile workflows to ensure that no non-compliance risks arise during the transformation. It links to Phase 1,

establishing the necessary compliance checkpoints. The findings confirm the hypothesis that regulatory compliance positively affects operational efficiency in organisations adopting agile methodologies.

Visual Representation of the Final Framework

Figure 3 depicts the final Scalability framework for implementing SAFs in the South African banks. The Agile Scalability framework is derived from the conceptual framework by operationalising its variables into actionable components and aligning them with a sequential implementation process. Inputs such as Technological Readiness, Organisational Readiness, Leadership Engagement, and Regulatory Compliance feed into Phase 1: Assessment and Preparation, where the organisation evaluates its capacity to adopt agile practices. The intermediary component, Technological Infrastructure, is expanded in Phase 2: Pilot and Refinement and Phase 3: Scaling and Integration, where tools, processes, and infrastructure are implemented, assessed, and scaled to support broader organisational integration. Throughout these phases, feedback loops from the conceptual framework ensure iterative improvements, fostering continuous learning and adaptation. Moderators like Leadership Engagement and Regulatory Compliance influence all phases, ensuring alignment with organisational goals and legal standards. Finally, the conceptual framework's outcome, Operational Efficiency, is articulated as measurable results in the phases framework: Agility, Productivity, and Scalability, achieved through sustained improvement in Phase 4. This structured transformation from conceptual variables to implementation phases ensures a practical and iterative approach to agile scalability in the banking sector.

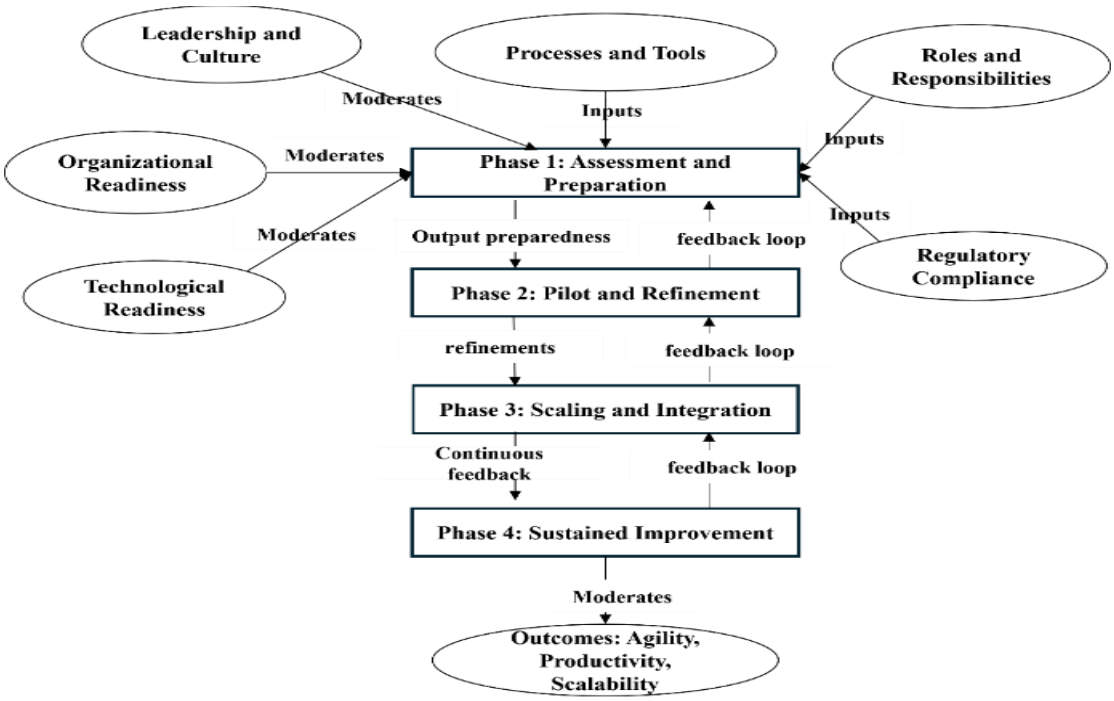

Figure 3: Framework for Agile Scalability in the Banking Sector

Source: Author's Construct (2024)

Phase one: Assessment and Preparation

Assessment and Preparation laid the foundation for the framework implementation by evaluating the readiness of the organisation across all components. Activities in this phase included gap analysis, leadership engagement, and roadmap development. Outputs of this phase included a detailed readiness report and action plan. It was informed by inputs from all framework components and establishes feedback mechanisms for subsequent phases.

Phase two: Pilot and Refinement

The Pilot and Refinement phase assessed agile practices on a smaller scale to identify and address initial challenges. Teams conducted iterative experiments, collected feedback, and refined workflows. This phase provided a feedback loop to Phase 1, ensuring readiness assessments were continuously updated based on pilot outcomes.

Phase 3: Scaling and Integration

In the Scaling and Integration phase, agile practices were scaled across teams and departments. Cross-functional communication channels were established to promote collaboration, and resources are allocated to address scaling challenges. Inputs from Phase 2 shaped the scaling

strategies, while feedback ensured iterative adjustments.

Phase 4; Sustained Improvement

The final phase, Sustained Improvement, focused on embedding agile practices as part of the organisational culture. Continuous learning, performance monitoring, and retrospectives were prioritised. Feedback loops from this phase ensured sustained improvements in scalability, productivity, and agility. Outputs directly drove organisational outcomes.

From the literature review, gaps were identified in the literature related to the study. Resource-centric models often overlook the cultural and relational dimensions of Agile scalability, which this research addressed by emphasising the interplay of organisational culture, leadership, and external partnerships. While prior research extensively discussed agile adoption in technology-driven industries, the application within highly regulated environments, such as banking, was underexplored. The study contributed to closing this gap by demonstrating how agile principles could be adapted to meet stringent regulatory requirements while maintaining operational agility. Below are some specific theories whose shortcomings were identified and incorporated in the proposed framework for this study.

Alignment with Agile Principles

Although the framework aligned well with the majority of agile principles, such as iterative improvement and cross-functional collaboration, the framework risks diluting others, particularly simplicity and speed. The detailed structure and inclusion of all components may make the framework feel overly process-heavy, which could deter organisations seeking a more lightweight, adaptive approach to agile adoption.

Underpinning Theories in the Framework

Theories related to the study, such as the Complex Adaptive Systems (CAS), the lean theory and value stream management, the Socio-Technical Systems (STS) theory, the Burke-Litwin change model, the Technology Acceptance Model (TAM), and agile philosophies and principles, are discussed below to provide context to the proposed framework.

Complex Adaptive Systems (CAS)

The CAS theory emphasised adaptability, self-organisation, and decentralised decision-making. These principles resonate with the agile framework's focus on team autonomy and iterative processes.

However, CAS lacks specificity when applied to large-scale, highly regulated industries such as banking. While it provides theoretical guidance on adaptability, the absence of clear strategies for integrating these principles into Scaled Agile Frameworks (SAFs) poses a limitation. The proposed framework addressed this gap by incorporating feedback loops and structured phases, aligning CAS's adaptability with practical implementation strategies tailored to the banking context.

Lean Theory and Value Stream Management

The Lean theory's focus on efficiency and waste reduction aligns well with Agile principles, particularly in streamlining workflows and ensuring value delivery. However, the Lean theory's emphasis on manufacturing-like efficiency proves to be challenging in a banking environment, where regulatory constraints and compliance requirements often delay iterative cycles. The SAF framework mitigated these challenges by embedding compliance checkpoints within agile processes, ensuring that Lean's theory value delivery principles are preserved while addressing the unique complexities of the banking sector.

Socio-Technical Systems (STS) Theory

The STS theory highlighted the balance between technical efficiency and human factors, emphasising collaboration and transparency. While the framework incorporates socio-technical elements such as leadership engagement and cross-functional teamwork, STS does not fully address the complexities of scaling Agile practices across hierarchical structures in banks. The SAF framework advances STS principles by explicitly including leadership roles and cultural readiness as moderating factors, ensuring a holistic approach to agile adoption.

Burke–Litwin Change Model

The Burke–Litwin model's emphasis on transformational and transactional factors provides a robust foundation for diagnosing organisational change. The model's focus on leadership, culture, and strategy aligned with the framework's initial phases of assessment and preparation. However, the model's linear approach to change contrasts with the iterative nature of agile methodologies. The SAF framework addressed this limitation by embedding continuous feedback loops, which enabled adaptability while maintaining alignment with Burke-Litwin's strategic focus.

Technology Acceptance Model (TAM)

The TAM's focus is on perceived usefulness, and ease of use is pivotal in fostering acceptance of Agile tools and practices. However, the TAM primarily addresses individual acceptance, overlooking the organisational dynamics that are critical for scaling agile frameworks. The SAF framework incorporated TAM insights into its technological readiness phase, extending the model's applicability to organisational-level adoption and emphasising leadership support and change management as essential enablers.

Agile Philosophy and Principles

Agile philosophy, rooted in adaptability and customer-centricity, aligns seamlessly with the framework's iterative phases. However, the philosophy's generality poses challenges in regulated environments such as banking. The SAF framework addressed this by tailoring agile principles to include regulatory compliance and risk management, thereby ensuring alignment with industry-specific requirements.

Recommendations and Conclusion

Future research may expand upon this study by exploring agile adoption across a broader range of regions and industries to enhance the generalisability of the findings. This expansion could include small and medium enterprises operating in less technologically advanced environments, providing insights into how agile practices can be tailored to resource-constrained settings. Longitudinal studies are particularly recommended to evaluate the sustained impacts of agile scalability on organisational performance over time. Such research would facilitate a deeper understanding of the dynamic nature of agile adoption and its long-term benefits.

Additionally, further investigation into the moderating effects of technological readiness could yield valuable insights into its role as a critical enabler of operational efficiency. Future studies could focus on how emerging technologies, such as artificial intelligence (AI) and machine learning, interact with agile frameworks to drive innovation and scalability.

Cross-sectoral comparisons remain another promising area for exploration, particularly in identifying transferable best practices from regulated industries such as healthcare, telecommunications, and energy. These comparisons could help uncover novel approaches to balancing compliance requirements with agile principles. Moreover, qualitative studies focusing on leadership strategies and

cultural transformation in agile adoption could provide rich, contextual data to complement quantitative findings.

Addressing these areas would not only refine the proposed framework but also contribute significantly to the theoretical and practical understanding of agile methodologies in diverse organisational contexts. Future research could further explore agile adoption across diverse regions and industries to enhance the generalisability of findings. Longitudinal studies were recommended to assess the long-term impacts of agile scalability on organisational performance. Additionally, examining the moderating effects of technological readiness in greater depth would provide actionable insights. Cross-sectoral comparisons could also enrich the understanding of best practices in agile methodologies.

The significance of this study lies in its potential to contribute to the advancement of agile practices within the South African banking sector. By addressing the specific challenges and opportunities faced by this industry, this research bridges the research gap on scaled agile frameworks in the South African banking context. This involves the development of a practical implementation framework that provides a roadmap for South African banks to effectively adopt and implement these frameworks. Additionally, the study informs the development of industry-specific guidelines and best practices for agile adoption. By successfully implementing scaled agile frameworks, South African banks may improve their operational efficiency, accelerate innovation, and enhance customer satisfaction. To support this transformation, the study further contributes to the development of a skilled workforce capable of leading and managing agile transformations in the banking sector. Ultimately, this research adds to the body of knowledge on agile methodologies and their application in the financial services industry. By addressing the study's research questions and achieving the stated objectives, this study provides valuable insights and practical guidance for South African banks, policymakers, and researchers, ultimately driving the adoption of agile practices and fostering a more agile and innovative banking sector.

The study advanced theoretical understanding by integrating dynamic capability frameworks with practical insights from the banking sector. By emphasising the moderating role of technological readiness, the research extended existing agile theories, offering a

nuanced understanding of scalability in regulated environments. The proposed framework provided a replicable model for future studies, bridging theoretical gaps and contributing to the academic discourse on agile methodologies. Furthermore, this research addressed a critical gap by exploring the interaction between organisational culture, leadership, and compliance mechanisms within agile methodologies, particularly in highly regulated industries. By contextualising Agile principles in the banking sector, the study demonstrated how theoretical concepts such as Complex Adaptive Systems (CAS) and Socio-Technical Systems (STS) could be applied to balance technical efficiency with human-centric collaboration. Additionally, the integration of lessons from other sectors, such as healthcare and telecommunications, illustrated the cross-disciplinary relevance of agile methodologies, further enriching academic conversations. Ultimately, this study not only reinforced existing theories but also opened avenues for interdisciplinary exploration, making significant contributions to the theoretical landscape of agile practices in complex environments.

Practically, the study provided actionable insights for banking institutions and policymakers. By aligning agile principles with the specific demands of regulated environments, the research demonstrated how agile methodologies could address sector-specific challenges, such as compliance requirements and technological constraints. The proposed framework offered a clear roadmap for organisations, emphasising phased implementation, iterative refinements, and the integration of compliance mechanisms into agile workflows. These recommendations are particularly relevant for financial institutions striving to achieve operational efficiency while maintaining adherence to stringent regulatory standards.

The study contributed to advancing the field by highlighting the adaptability of agile methodologies across industries. The research illustrated how lessons from healthcare and telecommunications sectors—notably the use of automation tools and the incorporation of compliance experts within agile teams—could be effectively transferred to the banking industry. This cross-industry applicability underscores the robustness of agile principles when tailored to meet the specific needs of diverse sectors.

In addition, the findings emphasised the transformative potential of leadership

engagement and cultural readiness in fostering successful agile adoption. By demonstrating the interplay between strategic leadership, organisational culture, and technological modernisation, the study provided a holistic perspective on the factors driving scalability. This integrative approach serves as a valuable guide for decision-makers seeking to implement agile practices in environments characterised by hierarchical structures and complex operational demands.

The practical implications of the study extend to organisational training and development programs, which were identified as critical enablers of Agile scalability. By investing in leadership development and fostering a culture of continuous learning, organisations can better equip their teams to navigate the challenges of agile transformation. Furthermore, the framework's applicability was not limited to the banking sector but demonstrated potential for replication in other regulated industries. The emphasis on feedback loops and iterative refinement makes the framework a dynamic tool for addressing evolving challenges and maintaining long-term efficiency.

Ultimately, this study has laid the groundwork for future exploration and practical application of agile methodologies, offering a replicable framework to drive innovation, resilience, and long-term success in regulated industries. It also encourages policymakers to consider how regulatory frameworks can be designed to facilitate, rather than hinder, agile adoption, creating an ecosystem where organisations can thrive while remaining compliant.

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