Investigating the adoption and application of the Scaled Agile Framework (SAFe) at a South African bank

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ABSTRACT

The future is agile. The business landscape is dynamic. The success of an organisation depends heavily on its ability to adapt quickly. As digital technologies reshape the competitive landscape, organisations are drawing on digital transformations and the increasing need for business agility. A growing number of organisations, particularly in the financial services sector, are embracing and adopting large-scale agile transformations. Despite this growing popularity, there is still a paucity of peer-reviewed academic literature examining how such frameworks are implemented and benefit organisations, more especially in an African context. The Scaled Agile Framework (SAFe) is one of the most popular frameworks for scaling agile methods within large organisations. This study aimed to investigate the adoption, application, and impact of SAFe in a South African bank corporate division using a qualitative single case study method. Thirteen semi-structured interviews were conducted with agile team members, senior managers, and executives. Through the examination of three business units, findings show that continuous coaching and training, transparency, customisation of practices, and strong leadership are crucial for the successful adoption of SAFe in large organisations. Additionally, the most significant success factor identified was organisations' need to continuously evolve and improve after implementing SAFe or any large-scale agile transformation.

Keywords

Scaled Agile Framework, SAFe, large-scale agile, scaling agile frameworks, agile transformations

DECLARATION

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

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LIST OF ABBREVIATIONS

ART	Agile Release Train
BA	Business Agility
BU	Business Unit
CIB	Corporate and Investment Banking
DAD	Disciplined Agile Delivery
DC	Dynamic Capabilities
DevOps	Development and Operations
EA	Enterprise Agility
FX	Foreign Exchange Markets
LPM	Lean Portfolio Management
LeSS	Large-Scale Scrum
OKRs	Objectives and Key Results
PI Planning	Program Increment Planning
SAFe	Scaled Agile Framework
SoS	Scrum of Scrums
TXB	Transactional Banking
WoW	Ways of Working

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

Introduction

The future is agile. The business landscape is dynamic. As the world continues to face crises, one thing has become increasingly clear: to remain forward-looking, organisations must remain flexible and adaptable. Digitalisation has increased the significance of software development in promoting and enabling innovation by emphasizing its penetration into every aspect of society, allowing companies to sense and respond rapidly to changes (Dingsøyr, Falessi & Power, 2019).

In recent years, digital transformation has become one of the top strategic priorities for CEOs across the globe (Denning, 2018; George, Lakhani & Puranam, 2020). The emergence of new technologies, disruptive innovation, and digitalisation are transforming traditional business models and processes (George et al., 2020; Tekic & Koroteev, 2019). Technology has disrupted the competition landscape in the financial services sector, shifting customers towards digital banks. Traditional banks are being forced to adapt their business models to accommodate changes in customer engagement and automate their middle and back-office operations to remain competitive (Kitsios, Giatsidis & Kamariotou, 2021).

Since the global pandemic erupted in early 2020, organisations have become increasingly aware of the opportunities and challenges of navigating a digitally led world. They have recognised that agility is required not only in software development but also for project delivery, corporate strategy, and overall operational execution (Digital.ai Software Inc., 2021; Ebert & Paasivaara, 2017; Kalenda, Hyna & Rossi, 2018; Putta, Uludag, Hong, Paasivaara, & Lassenius, 2021).

Furthermore, black swan or grey rhino events such as the global pandemic, have further accelerated a fundamental transformation of businesses' digital infrastructure and cloud applications (George et al., 2020; Mangalaraj, Nerur & Dwivedi, 2022). A crucial element of firm success, yet one that presents a significant challenge for modern organisations, is their ability to respond to changes in the business environment in a timely and effective manner; this is known as business or enterprise agility (Karvonen, Sharp & Barroca, 2018; Overby, Bharadwaj & Sambamurthy, 2006).

The possibility of black swan events disrupting an organisation's business may necessitate a radical change in its business operating model. In many cases, organisations' often-rigid traditional operating models prevent them from adjusting

quickly to the changes needed to sustain their competitive advantage, occasionally resulting in obsolescence. The volatility of the modern business environment requires organisations to possess specific core dynamic capabilities to adapt and become more resilient (Felin & Powell, 2016; Teece, 2018). Organisations remain successful because they can adapt responsively and using an Agile methodology may be one way to ensure this.

Agile management is often referred to as a capability related to managing events under conditions of high uncertainty, fluidity of resources, and continuous innovation of the operating environment (Teece, Peteraf & Leih, 2016). The concept of agile has been around since the 1990s when it was developed to overcome problems associated with traditional, rigid methods and processes in software development (Ebert & Paasivaara, 2017). A 'fail-fast' approach and quick adaptability made agile software development popular (Denning, 2018).

However, it is important to note that agility should not be constrained to black swan events or deep uncertainty; reinvention is a continuous yet challenging process for companies (Teece et al., 2016). In any business environment, firms must develop, build, and adjust internal capabilities to respond to and implement change. Organisations can effectively use these dynamic capabilities to respond to change more rapidly and effectively by adopting more agile ways of work (Teece, 2018).

Background to the research problem

It has become increasingly common for projects undertaken in rapidly changing environments to use agile methodologies (Uludağ, Putta, Paasivaara & Matthes, 2021). Many organisations are adopting agile practices and ways of working as part of the digital transformation revolution, resulting in enterprise-wide agile transformation programmes that require flexibility, adaptability, and business agility (Bharadwaj & Sambamurthy, 2006). Senior executives must remain flexible and agile in an ever-changing world; thus, the concept of "Agile management" has become increasingly important over the years (Denning, 2018).

Research (Ebert & Paasivaara, 2017; Kalenda et al., 2018; Putta, Uludağ, Hong, Paasivaara & Lassenius, 2021) has revealed that agile transformations can have a significant impact on the bottom line. Organisations are seeking ways to become more agile as they recognise that agility is necessary not only for software development, but also for project delivery, strategic planning, and overall operational execution.

Since the creation of the Agile Manifesto in 2001 by Beck et al. (2001), agile methods have transformed software development over the past two decades by emphasising strong collaboration across teams and customers and change tolerance (Putta et al., 2021; Uludag, Kleehaus, Caprano & Matthes, 2018). These agile methods traditionally created for small, co-located technical teams of less than fifty people (known as the "Agile sweet spot"), have inspired organisations to apply them on a larger scale to reap business benefits and deliver value to their customer base (Dingsøyr, Moe, Fægri & Seim, 2018; Uludag, Kleehaus, Dreymann, Kabelin & Matthes, 2019).

While methods for implementing Agile in smaller teams or organisations have proved to be effective, strategies for implementing Agile on a large scale have not (Conboy & Carroll, 2019; Turetken, Stojanov & Trienekens, 2017). Companies embarking on large-scale agile transformations are finding it difficult to plan delivery, manage team dependencies, and align business objectives to tactical delivery. As a result, customer satisfaction often declines alongside profit and market share (Ebert & Paasivaara, 2017; Putta et al., 2021). There are also risks and challenges associated with large-scale agile, particularly when cross-functional interaction is present, geographically distributed teams are involved, and cultural shifts are necessary (Dingsøyr, Falessi & Power, 2019; Santos & Carvalho, 2021; Uludag et al., 2019; Uludağ et al., 2021). In response, several scaling agile frameworks have emerged to address the needs of distributed teams and large projects. These include frameworks such as Large-Scale Scrum (LeSS), Scrum of Scrums (SOS), Scaled Agile Framework (SAFe) and Disciplined Agile Delivery (DAD (Dingsøyr et al., 2019; Ebert & Paasivaara, 2017).

According to the State of Agile Survey that has been conducted annually for over the last decade, the Scaled Agile Framework (SAFe[1]) is the most popular scaling agile framework and one that has received increasing academic attention in recent years (Digital.ai Software Inc., 2021; Putta et al., 2019; Turetken et al., 2017). SAFe implementation can be adopted at various levels; namely, essential, large solutions, portfolio or full (Scaled Agile Inc, 2021b). As a result of its popularity in the past few years, the SAFe framework has become an important option for organisations looking to scale agility by addressing both scalability and introducing new practices and concepts.

[1] SAFe and Scaled Agile Framework are registered trademarks of Scaled Agile Inc.

Despite SAFe's popularity, there are a limited number of case studies demonstrating its successful implementation in organisations. Even with the few encouraging results, case studies also suggest that the adoption of SAFe can often be challenging (Dikert et al., 2016; Dingsøyr & Moe, 2013; Kalenda et al., 2018; Tengstrand et al., 2021; Turetken et al., 2017b).

Purpose of the research

The purpose of this paper is to present a case study about the adoption, application, and impact of the Scaled Agile Framework (SAFe) in a corporate and investment banking division (CIB) of a large South African bank. SAFe implementation required a fundamental re-evaluation of the ways of working within the CIB division. This included looking at the business and technology team structures, cultural mindset shifts, working practices and, training.

While agile transformations and scaling agile frameworks have become increasingly popular, there is still a paucity of peer-reviewed academic literature that examines the ways in which such frameworks are adopted, implemented, and benefit organisations (Limaj & Bernroider, 2022; Putta et al., 2019; Santos & de Carvalho, 2021; Uludağ et al., 2021); and especially in an African context (Conboy & Carroll, 2019). Furthermore, sufficient research has not been conducted to provide information about the strategic aspects of implementing scaling agile frameworks (Dikert, Paasivaara & Lassenius, 2016). Authors such as Limaj & Bernroider (2022). Santos & de Carvalho (2021) argue that the emerging growth of SAFe in industry and practice still requires considerable academic attention.

This study aims to fill that gap by examining the practices, opportunities and challenges associated with the implementation of SAFe in the South African banking industry, and to a greater extent, in the African banking industry. The study aims to contribute to the body of knowledge on scaling agility in medium to large organisations and provide a foundation for African financial organisations to assess how to scale enterprise-wide. A practical contribution will seek new insights to generate ideas for research agendas on agile approaches on a large scale. The research questions will thus examine: (1) how SAFe has been adopted, (2) how SAFe has been applied, and (3) How SAFe has impacted the business.

Scope of the research

The scope of the study was limited to one of the top five banks in the South African financial services sector. Research was conducted through semi-structured

interviews with pre-selected roles across three business units that utilised SAFe principles within the corporate and Investment banking division (CIB). The scope of this research further covers the following terms and concepts and their respective definitions:

Adoption and Application. In this paper, adoption refers to the formal decision made by an organisation, in this case the CIB division, to adopt the SAFe framework (Backer & Rogers, 2010), whereas application can be defined as the process of integrating the framework into an organisation's operational practices and processes (Cassar et al., 2019).

Business or Enterprise Agility. For the purpose of this paper, the terms "Business Agility" (BA) and "Enterprise Agility" (EA) will be used interchangeably. There are many dimensions to the definition of enterprise of business agility in software and management literature, Overby, Bharadwaj & Sambamurthy (2006) and Knaster & Leffingwell (2020) define it as an organisation's ability to sense environmental changes and respond quickly to them by utilising innovative, technologically-enabled solutions. This is the definition that was adopted for use in this paper. Furthermore, the construct of agility will mainly be viewed from a scaled-framework-driven transformation perspective (Barroca, Sharp, et al., 2019).

The Scaled Agile Framework (SAFe). Knaster and Leffingwell (2020) define SAFe as a capability that facilitates agile scalability across teams, business units, and organisations to develop quality, customer-centric products quickly and in highly collaborative environments. SAFe 5.0, the most recent version of SAFe as of writing this paper (figure A1), is based on the seven Lean enterprise core competencies (Knaster & Leffingwell, 2020).Through SAFe, Lean-Agile principles (figure A2) are applied at multiple levels of the organisation, linking business strategy with execution (Knaster & Leffingwell, 2020; Scaled Agile Inc., 2021). An in-depth examination of the core competencies will be conducted as part of the literature review.

Delimitations

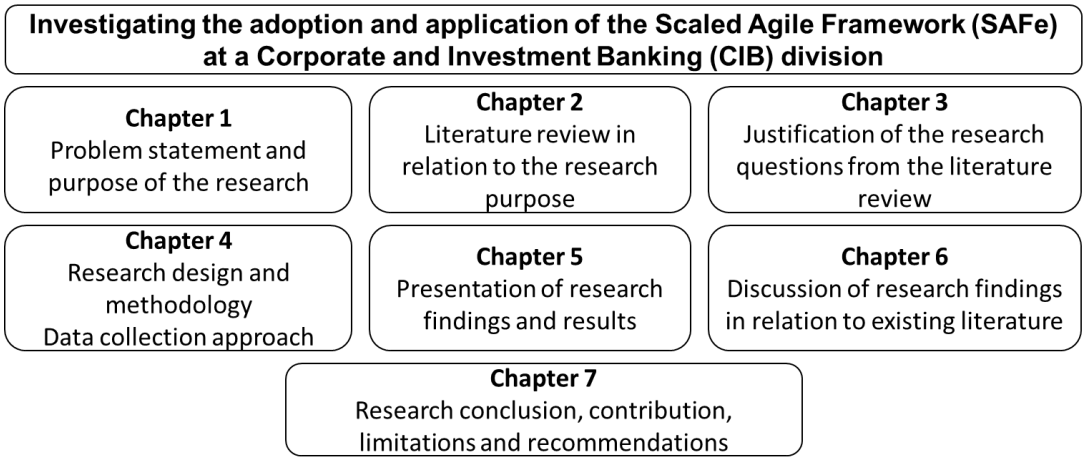
A significant portion of the research paper does not focus on what occurred prior to SAFe's adoption, but rather on how the CIB division is implementing and adopting SAFe across its business units. The SAFe framework has four levels of adoption; namely, essential, large solutions, portfolio and full levels as depicted in figure A1 (Scaled Agile Inc, 2021b). This study focused on SAFe adoption at the portfolio level as the division of the organisation being studied has applied the framework at these

levels. Furthermore, it focused on the delivery teams (essential level). Accordingly, the recommendations provided in this paper focus solely on SAFe rather than other scaling agile frameworks.

Conclusion

This paper consists of the following chapters: Chapter two provides a review of existing literature on Agile, business agility, dynamic capabilities, scaling agile frameworks, and a comprehensive discussion of Scaled Agile Frameworks (SAFe). As a result of the literature review, the third chapter presents the research questions and their justification. For the fourth chapter, the single case study research methodology and design is explained along with ethical considerations and limitations of the research methodology used. Chapter five presents and examines the findings of the semi-structured interviews. In chapter six, the findings of the study are evaluated in relation to the existing literature and the purpose of the study provided in chapters one and two. Finally, the last chapter of the report concludes the study with a discussion of the research contributions, limitations, and recommendations for future research regarding SAFe adoption and application. The roadmap for this paper is shown in Figure 1.

Figure 1: *Research report content layout*

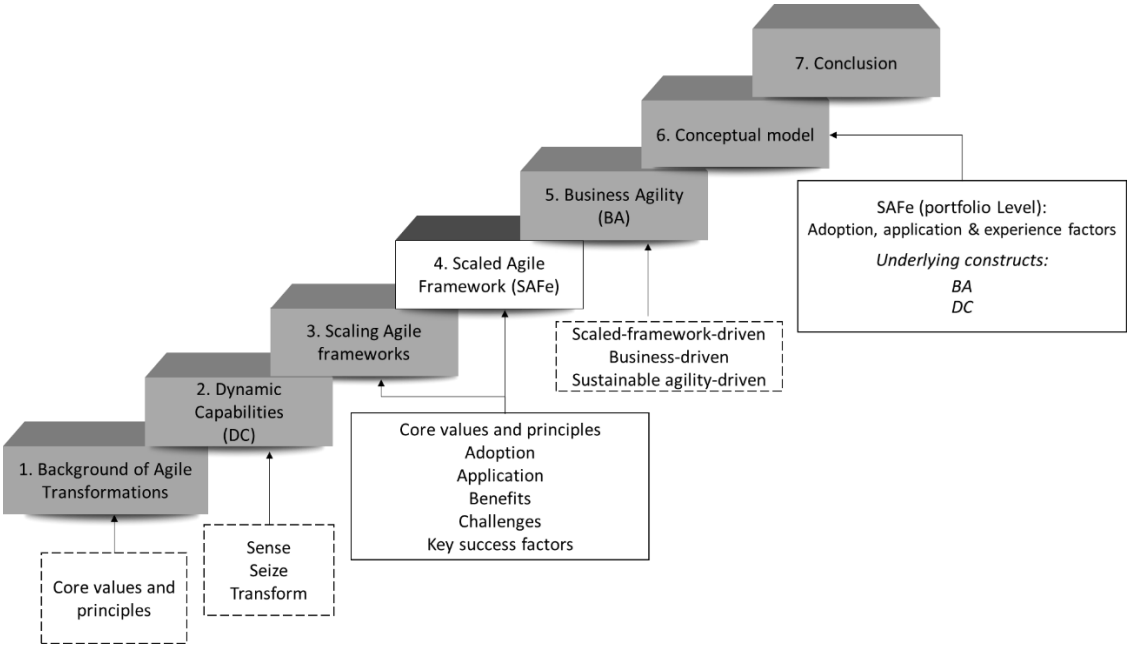


CHAPTER 2: LITERATURE REVIEW

Introduction

The goal for this chapter is to provide a comprehensive review of the relevant literature on the topic before discussing the methodology and findings presented in subsequent chapters. Following an overview of agile transformations, dynamic capabilities and business agility are discussed, before fully examining scaling agile frameworks, with an emphasis on SAFe. As part of the conclusion to the chapter, this information is integrated and presented it in a conceptual model. Figure 2 provides an overview of the literature review approach, highlighting the key constructs, concepts, and factors that were explored.

Figure 2: *Literature review roadmap*



Note. Dashed boxes indicate concepts and factors that are underlying, but not the primary focus of this study.

Background of agile transformations

Agile was not originally intended for scale (Beck et al., 2001; Dikert et al., 2016). The aim was to free developers and engineers from constraints on their workload by empowering them to take the responsibility for implementation independently and incorporating learnings from each iteration as they progressed (Boehm & Turner, 2005; Dikert et al., 2016). In 2001, a group of seventeen developers who are more commonly known as Agile revolutionaries met in Utah and drafted twelve operating

principles entitled: “Principles behind the Agile manifesto,” (Beck et al., 2001) making way for development frameworks that were aligned to these principles to be known as Agile principles.

According to the Agile Manifesto, Agile software development is characterised by four core values: processes and tools are secondary to people and their interactions; a working application is preferable to comprehensive documentation; the importance of customer collaboration over the negotiation of contracts; and the flexibility to respond to change rather than following a rigid plan (Beck et al., 2001). These foundations of agile techniques were designed for competitive environments where the technology or market evolution is fast-paced, ever-changing and filled with uncertainty, resulting in the need for organisations to be flexible to adapt and respond to change, as well as capitalize on new opportunities, in a timely manner (Beck et al, 2001).

Agile differs from waterfall, a traditional methodology, as it is an approach and outlook that involves continuous iterations and testing throughout the entire product development life cycle. As a result, it assists in meeting the needs of contemporary projects in this digitalisation era. An important goal of Agile management is empowering development teams to believe in their abilities. It is the responsibility of management to provide teams with the necessary resources that would encourage self-management. The use of Agile frameworks can guide teams in collaborating with one another and with external stakeholders as many of these frameworks also describe how the work process should be structured (Theobald et al., 2020).

According to research, agile methods have received mixed reviews, with both success and failure attributed to accommodating changes in the scope of work (Boehm & Turner, 2005). In addition, research has shown that agile methods have improved the satisfaction of both customers and developers. However, research suggests that agile methods may not be the best approach for large projects (Barroca, Dingsøyr, et al., 2019; Dingsøyr et al., 2012). Agile methods can be modified, and plan-driven methods applied, allowing organisations to seek a balance that caters to both their needs and those of the industry (Boehm & Turner, 2005).

While intended for software developers, this foundation serves as a blueprint for dealing with uncertainty and managing change in any organisation. In this shift from traditional management, a focus is placed on how teams are managed and how decisions are made, particularly when an organisation is undergoing change. As a

result, it was necessary to transform mindsets at all levels of analysis, from the individual to the organisation as a whole (Gustavsson & Bergkvist, 2019). At its core, Agile is a mindset that is informed by the Agile Manifesto's values and principles. In addition to providing guidance on how to create and respond to change, those values and principles also address how to deal with uncertainty. For an organisation to address deep uncertainty, strong dynamic capabilities are necessary to remain agile and resilient.

Dynamic capabilities

Teece et al. (1997) define dynamic capabilities as an organisation's ability to integrate, develop, and reconfigure its internal and external capabilities in response to rapidly changing environments. Three distinct and inimitable competencies enable an organisation to respond to change swiftly and successfully (Felin & Powell, 2016; Teece, 2018): sensing, seizing, and transforming.

Sensing includes the identification and discernment of exploitable business opportunities by an organisation.

Seizing refers to when value is extracted from identified opportunities by designing and refining business models, resources, and configurations.

Transforming means an organisation's ability to modify its business models in response to change.

Dynamic capabilities catalyse the enhancement of business activities and awareness of changes to the business environment. Businesses leverage and reconfigure their resources in the transform dimension to remain competitive (Baskarada & Koronios, 2018). Among environments characterized by rapid technological change and high uncertainty, such as the financial services industry, dynamic capabilities are believed to foster agility (Teece et al., 2016) when it comes to building (sensing), integrating (seizing), and adapting (transforming) resources and skills (Teece, 2018; Teece et al., 2016) Thus, agile management can be understood as the process of creating and composing dynamic capabilities. This process then allows the company to anticipate opportunities and threats, capitalise on these opportunities, and maintain a competitive advantage.

Despite its widespread popularity, the dynamic capabilities framework has also been widely criticised, largely because there is no clear definition of what these capabilities consist of (Kurtmollaiev, 2020). There appears to be diverse research that points in

different directions, some focusing on firm performance and others on organisational or process-based outcomes (Kurtmollaiev, 2020).

The dynamic capability framework is positively correlated with agility, and businesses with strong dynamic capabilities are highly collaborative and have effective management teams (Teece, 2018). Organisations must have dynamic capabilities to manage deep uncertainty (Teece, 2018) effectively. The relationship between dynamic capabilities and business agility is explored next.

Business agility

Business agility refers to an organisation's ability to detect and respond quickly to environmental changes (Knaster & Leffingwell, 2020; Mathiassen & Pries-Heje, 2017; Overby et al., 2006). The concept of Business (or Enterprise) Agility is also based on other management concepts related to achieving success under turbulent conditions, including dynamic capabilities (Teece et al., 1997). Due to today's competitive landscape, agile organisations are no longer an option but a necessity. An organisation must demonstrate agility in uncertain economic conditions due to changing consumer needs and high levels of competition (Mathiassen & Pries-Heje, 2017).

Enterprise agility is a research topic that has been debated in management literature for decades. In the 1990s, agility was introduced as a concept to cope with the emerging competitive environment. Today, it is perceived as an essential component of strategy implementation (Baskarada & Koronios, 2018; Overby et al., 2006; Teece et al., 2016). Karvonen et al. (2018) argue that business agility is the ability to "sense and seize" new business opportunities more quickly than competitors. However, acquiring those capabilities, such as scaling agility, is challenging for many organisations.

Through business transformation, organisations can achieve business agility in three ways: scaled-framework-driven (operational agility), business-driven (strategic orientation) and sustainable agility (cultural orientation) (Barroca, Sharp, et al., 2019). Scaled-framework-driven approaches assist with improving flow and value creation in large-scale projects. The business-driven approach takes a more strategic lens, looking at how the business model can become more flexible. Sustainable agility approaches are more concerned with organisational culture and its importance for any transformation (Barroca, Sharp, et al., 2019; Karvonen et al., 2018).

Scaled framework-driven approaches achieve agility by gradually adopting agile methods and frameworks, such as Scrum or SAFe. Many of these frameworks have focused on a business's operational aspects, such as creating value and optimising flow in value streams (Karvonen et al., 2018). However, empirical evidence supporting these frameworks' validity is still lacking (Dikert et al., 2016; Uludağ et al., 2021).

The literature highlights the significance of sustainable agility when transforming a business. This cultural orientation plays a central role in improving business agility that lasts, yet it is the hardest category to achieve. When analysing this category in agile methodology and approaches, the major challenge observed was in comprehension at an individual level of analysis with regard to their own role and relevance from an individual perspective, team perspective and organisational perspective. As a result, coupled with insufficient training and a lack of agile mindset, team members can often hinder business agility (Conboy & Carroll, 2019; Tengstrand et al., 2021).

As highlighted in the section above, for agile frameworks to thrive in medium to large organisations, organisational culture or behaviour must be revolutionised. This transition takes time. Yet, there must be an intentional pre-transition phase where the organisation prepares for the transition. Conboy & Carroll (2019) analysed thirteen agile transformations over fifteen years at various large-scale businesses. One of the challenges the study by Conboy & Carroll (2019) observed was in the organisational readiness and appetite to change. In the paper by Kalenda et al., (2018), they point out that organisations should adopt a gradual approach when transitioning and that it should take at least three months to prepare before changing methods and practices.

When narrowing the scope to reviewing SAFe large-scale development framework, several predominant challenges in enhancing business agility were observed in the literature. The first challenge identified was the competency gap in defining the framework concepts, terms, roles, and responsibilities (Conboy & Carroll, 2019; Kalenda et al., 2018; Tengstrand et al., 2021).

The readiness and appetite for adopting the framework by staff was another challenge. Staff played a passive role as opposed to a more proactive role that goes beyond software adoption, in wanting to change their ways of working and thinking to complement the transition (Conboy & Carroll, 2019; Kowalczyk et al., 2022).

However, internal engagement efforts that aimed to educate the staff on the importance of the change increased the likelihood of staff accepting the proposed change and cultivated reactiveness from staff during the change process (Kowalczyk et al., 2022).

Disruption in organisational structure was also noted due to the introduction of new roles and responsibilities (Conboy & Carroll, 2019). The management of external rules and regulations, meeting certification and documentation requirements, as well as customer expectations presented another hindrance to adoption (Santos & de Carvalho, 2021; Tengstrand et al., 2021).

The leadership and management of an organisation plays a central role in achieving the proposed changes. Management struggled to let go of routine-based traditional reporting and its requirements when it comes to the ways of working. The sturdiness of management varies from industry to industry. For example, in the banking industry the management tends to be sturdier given the routine-nature of the work and long-term planning where staff are comfortable with the predictable nature of the business (Tengstrand et al., 2021). Therefore, when shaping the agility of an enterprise in such an industry, literature highlighted that it is critical for all levels of the employee hierarchy to receive quality, adequate and consistent training support. Furthermore, this training support needs to be perceived and integrated as part of their job instead of an additional task that has an impact on their time and work productivity (Kalenda et al., 2018).

The value-derived dialogue was another category highlighted as challenging in implementing an agile way of working. A study by Conboy & Carroll (2019) unpacked the difficulties organisations face when measuring value: how to measure the value derived from the agile transformation from a key performance metric perspective rather than from a framework adherence perspective. This lack of understanding took away from appreciating agile transformation, creating room for staff to undervalue the agile transformation that was taking place. Lastly, larger organisations faced difficulties in measuring and monitoring the progress of the agile transformation per se (Kalenda et al., 2018).

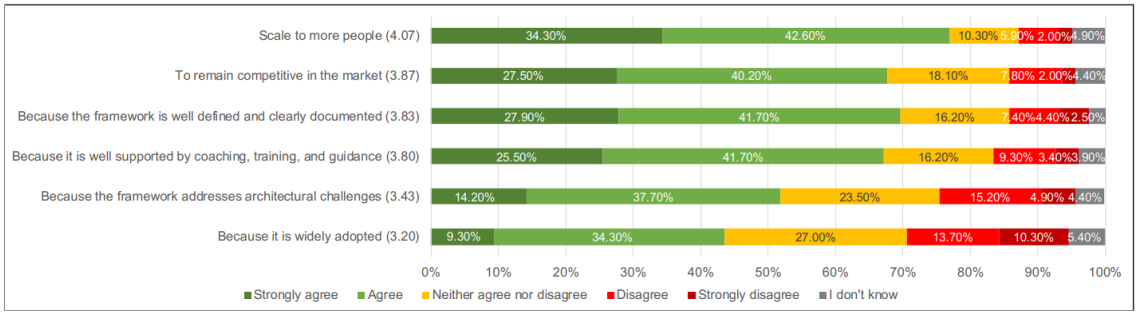
The literature reviewed mainly discussed the implication of addressing sustainable agility to achieve business agility. It was noted in literature that in industries where external regulation and rules are levied on how business operate, generated limitations in improving flow and value creation. In terms of the business-driven

approach, there is no one-size fits all. Emphasis is on customised agile models (Dikert et al., 2016; Ebert & Paasivaara, 2017; Santos & de Carvalho, 2021).

Scaling agile frameworks

The idea of scaling agile is all about enabling an organisation to adeptly adapt to changing circumstances and remain competitive whilst effectively meeting customers' needs. Scaling agile and determining the best approach in doing so are among the most prevalent research subjects, most especially post the coronavirus pandemic (Ciancarini et al., 2022; Conboy & Carroll, 2019; Dingsøyr et al., 2018, 2019b; Ebert & Paasivaara, 2017; Kalenda et al., 2018; Kowalczyk et al., 2022; Limaj & Bernroider, 2022; Mangalaraj et al., 2022; Putta et al., 2021; Santos & de Carvalho, 2021).) Increasing interest in large-scale agile development has led to the creation of new agile frameworks that cater to large-scale software development settings with more members and teams (Dingsøyr & Moe, 2014; Paasivaara, 2017; Uludağ et al., 2021). A survey conducted by Putta et al. (2021) revealed the key reasons why organisations adopt large-scale agile frameworks as a transformation approach to achieving agility. These are summarised below (Figure 3).

Figure 3: *Adoption reasons arranged by mean values*



Note. Retrieved from “Why do organisations adopt agile scaling frameworks? - A Survey of Practitioners”, by A. Putta, Ö. Uludağ, S.L. Hong, M. Paasivaara & C. Lassenius, 2021, Proceedings of the 15th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), pp. 1-12.

Adopting agile frameworks that were intended for single teams to large-scale created misalignments between organisational levels and did not address dependencies and coordination with other teams, thus the need for scaling agile frameworks (Knaster & Leffingwell, 2020). Examples of scaling agile frameworks are Disciplined Agile Delivery (DAD), Large-Scale Scrum (LeSS), Scaled Agile Framework (SAFe), and Scrum of Scrums (SoS; Diebold et al., 2018; Ebert &

Paasivaara, 2017; Turetken et al., 2017). According to the 15th annual state of Agile report published by Digital.ai in 2021, the three most common scaling agile frameworks are outlined in the sub sections below, with the exception of SAFe, the most popular, which is described in more detail thereafter. A table comparing the scaling agile frameworks is presented in Table 1.

***Table 1*: Comparison of the most common scaling agile frameworks**

Framework	**Team Size**	**Degree of flexibility**	**Complexity**	**Underlying Agile method(s)**
Scaled Agile Framework (SAFe)	50 -120 per release train	Low	High/ Medium	Scrum / Kanban / Lean, specific extreme programming practices mandated
Large Scale Scrum (LeSS)	7 per scrum team; 10 Scrum teams	Medium	Medium/ Low	Scrum
Disciplined Agile Delivery (DAD)	>200	Medium	High (many practices)	Scrum / Lean, mixed set of methods
Scrum-of-Scrums (SoS)	5-10 teams	Medium	Medium/ low	Scrum
Spotify Model	6-12 per squad <100 per tribe	High	High/ Medium	Scrum/Kanban, Focus on Culture

Note. Adapted from "Scaling Agile – How to Select the Most Appropriate Framework", by P. Diebold, A. Schmitt and S. Theobald, 2018, *Proceedings of the 19th international conference on agile software development: companion*, pp. 1-4. and "Scaling agile in large organisations: Practices, challenges, and success factors", by M. Kalenda, P. Hyna and B. Rossi, 2018, *Journal of Software: Evolution and Process*, *30*(10).

Scrum of scrums (SoS)

Rooted in agile principles and short iterations, scrum of scrums framework revolves around integrating the works of multiple smaller project units (scrum teams) and provides the outline of what needs to be done (Sutherland & Schwaber, 2007). The coordination of teams is critical to this framework as it ensures individual teams make their sprint goals and the overall project objectives are met (Kalenda et al., 2018) .

The simplicity of this approach is viewed both as an advantage and disadvantage (Srivastava et al., 2017).

Large Scale Scrum (LeSS)

Using the LeSS framework, one product is developed by multiple teams under the guidance of a single product owner who provides the vision of the product and bridges the gap between the technical and business sides of the development process (Larman & Vodde, 2016). This framework, primarily, deals with organisational design – reducing bureaucracy and complexity, as a result simplifying processes and enhancing agility. It implies that structural changes in the organisation precede cultural changes. The advantage of the LeSS framework is that many organisations are familiar with scrum principles. Therefore, scaling becomes easier to implement. One disadvantage is that it takes time to readjust organisational structures and realign processes accordingly (Uludag et al., 2019).

Disciplined Agile Delivery (DAD)

DAD is a hybrid, process-oriented framework that facilitates interactions between employees and their environment. It is considered a good vehicle for scaling agile (Ambler & Lines, 2022). Furthermore, the framework uses the classic agile phases: inception, construction, and transition. The key advantage of DAD is that it is a flexible approach that offers multiple lifecycles to choose from, based on the situation. The disadvantage of DAD is that the adoption of this approach has been very slow. As a result, there are fewer support networks such as coaches and training programs (Ebert & Paasivaara, 2017; Kalenda et al., 2018).

Discussion of scaling agile frameworks

In this subsection, summarised and categorised findings from various systematic literature reviews on large scale agile transformations are presented. Dikert et al. (2016) conducted a systematic review of the literature describing forty-two industrial cases where organisations have adopted a large-scale Agile approach. The researchers determined that ninety percent of the publications included were experience reports, indicating a paucity of academic research on large-scale Agile practices.

In the aforementioned systematic literature review by Dikert et al. (2016) of industrial large-scale agile transformations, the authors discovered that from the 1875 papers including fifty-two publications, there were four key success factors in implementing

agile transformation including: Choosing and customizing the agile approach (50%), mindset and alignment (40%), management support (40%) and training and coaching (38%). In a similar study conducted by Santos & de Carvalho (2021), key benefits were identified and categorised into three: business, project and team. Similarly, the key barriers identified when organisations start to scale agile can be categorised into six main groups: managerial issues, organisational issues, agile method-specific barriers, product and process issues, customer-focused issues, and team issues.

Organisations and industries vary drastically. It, therefore, makes sense that approaches to scaling agile adapt to the organisational needs and to the pace of the industry that this organisation is operating in. Furthermore, organisational culture – of which is often a replica of the national culture – is another factor to consider when scaling agile (Conboy & Carroll, 2019). When successfully analysed and considered these factors can determine the feasibility of undergoing an agile transition and maintaining it. These two key drivers are highly dependent on the last two identified drivers: management support, and training and coaching.

Management support was identified as pivotal in determining the success in scaling-agile during the initiation phase of the process (Putta et al., 2021). The literature (Putta et al., 2018) conducted highlighted three subcategories that make management support: that it is present, that it is visible, and that management are well-versed on agile. As a result, the management would be able to drive the change through leading by example, motivating and encouraging other staff, and by allocating the appropriate resources. These activities facilitate a platform where staff understand the change motivators, the driving forces, the meaning behind the change, the expected benefits, and its goals (Putta et al., 2021; Santos & de Carvalho, 2021). The result is that varying perspectives are defused, misunderstandings are clarified, and operations are made more coherent as the transition occurs.

During the review done by Kalenda et al. (2018), the researchers observed that in large organisations, resistance to change from upper management and middle management is the predominant problem. The shift of responsibilities of middle management and lack of investment in defining roles and responsibilities, introduced fear and confusion to middle management opening room for job insecurity (Dikert et al., 2016; Putta et al., 2018). Furthermore, fear invigorates a highly competitive internal environment where staff want to be visible instead of working in a team which

leads to apprehension, lack of transparency in knowledge sharing, and poor communication (Kalenda et al., 2018). All these variables) pull away from the essence and the value of adopting scaling agile frameworks.

On the contrary, the study by Putta et al. (2018) illustrated that the visible support of management may come across as top-down which enhances the resistance to change by employees. It was also noted that an inclusive approach that keeps all staff engaged will assist in controlling the misconception/misinformation, reduces the scepticism towards the new ways of working and puts everyone on the same page, resulting in a successful transition. This inclusive approach is what the majority of the literature discuss regarding how to sustainably enhance business agility (Conboy & Carroll, 2019; Kalenda et al., 2018; Tengstrand et al., 2021).

The study conducted by Santos & de Carvalho (2021) confirms the above argument, that there are interdependencies between the benefits and the barriers and that benefits are derived from overcoming the barriers. Therefore, there is no one-size-fits-all when it comes to scaling agile. However, the research highlighted the importance of leadership in promoting the desired change to achieve business goals.

Lastly, the literature highlighted the importance of coordination in scaling agile frameworks (Santos & de Carvalho, 2021). Coordination encompasses communication, integration, and synchronization of people, machines, and activities. Management establishes strategy and makes investment decisions, but effective engagement and coordination empowers everyone to achieve a common goal. Agile practices place a prominence on consistent and frequent engagement between teams (Kalenda et al., 2018).

Scaling Agile frameworks are being promoted as solutions to the challenges encountered during the implementation of large-scale projects or programmes (Ebert & Paasivaara, 2017; Kalenda et al., 2018; Paasivaara, 2017; Uludag et al., 2019). Despite their popularity, there is still limited knowledge about the reasons for their use, the expected strategic and financial benefits, and the satisfaction derived from adopting them, especially in the African context (Conboy & Carroll, 2019; Putta et al., 2018; Tengstrand et al., 2021; Uludağ et al., 2021). What follows next is a discussion on the most popular large-scale agile framework, SAFe.

The Scaled Agile Framework (SAFe)

The Scaled Agile Framework was developed by Dean Leffingwell as a means of scaling agile in large organisations (Scaled Agile Inc, 2021a). It is an approach that

was created for development teams that use multiple layers (portfolio, team, and program) across four levels (essential, large solutions, portfolio and full) to facilitate larger organisations' transition to agile. SAFe principles (figure A2) are rooted in a variety of customer centric agile practices such as Scrum, Kanban and Lean, all of which encourage experimentation and value-driven design thinking. (Knaster & Leffingwell, (2020; Scaled Agile Inc, 2021a). To prepare the overview, the researcher compiled all the information available on the SAFe website as shown in Figure 4.

Figure 4: *A summarised of the SAFe 5 framework for lean enterprises*

SAFe Core Values:	**Alignment**	**Built-in quality**	**Transparency**	**Program execution**
Level	**Core SAFe competencies applied**	**Roles**	**Events**	**Artifacts**
Essential	Team and Technical Agility Agile Product Delivery Lean-Agile Leadership	Team: Scrum Master Product Owner Agile Teams Agile Release Train (ART): Release Train Engineer System Architect/Engineer Product Management Business Owners	Team: Iteration Planning Iteration Execution Iteration Review Retrospective Backlog refinement ART: Program Increment (PI) Planning System Demo Inspect & Adapt (I&A) Scrum of Scrums Product Owner Sync ART Sync	Team: User stories PI objectives Iteration goals Team backlog ART: Features Program Epics PI objectives Program Backlog Program Kanban Vision Roadmap Architectural Runway Solution / Solution context
Large Solutions	Enterprise Solution Delivery Team and Technical Agility Agile Product Delivery	In addition to those at Essential level: Solution Architect/Engineering Solution Management Solution Train Engineer (STE) Shared Services Communities of Practice (CoP)	In addition to those at Essential level: Pre- and Post-PI Planning Solution Demo Inspect & Adapt (I&A)	Capabilities Solution Epics Nonfunctional Requirements (NFRs) Solution Backlog
Portfolio	In addition to those at Essential level: Lean Portfolio Management Continuous Learning Culture Organisational Agility	In addition to those at Essential level: Lean Portfolio Management team Epic Owners Enterprise Architect	In addition to those at Essential level: Portfolio Sync Participatory Budgeting Strategic Portfolio Review	Strategic Themes Portfolio Vision Solutions Investements By Horizon Guardrails Epics (Business & Enabler) Portfolio Kanban Portfolio Backlog Portfolio Canvas
Full	Incorporates all the three levels above			

Note. Author's own.

SAFe is the most extensively used agile scaling framework in organisations (Putta et al., 2019). The fifteenth edition of the State of Agile report indicating that thirty-seven percent of respondents used SAFe in their organisations as compared to the second most popular, Scrum of Scrums (SoS) at 9% (Digital.ai Software Inc., 2021). SAFe has four core values: alignment, built-in quality, transparency, and program execution (Knaster & Leffingwell, 2020). The author will delve into each value briefly below.

Alignment has two components; first, it requires all stakeholders (Business/Products Management and Technology) to get into alignment. Secondly, it requires the maintenance of this alignment as the business evolves and grows. In SAFe, alignment starts at the portfolio level and trickles down to the program and team

level. At the portfolio level is where the blueprint for strategy and investments are set down, making way for the direction of the organisational development to move in.

In project management, how quality is defined and measured has unravelled over the years. In traditional project management, quality is looked at by incorporating certain activities into the development process of a product or service, which identifies gaps to fulfil the quality objective of the desired product or service (Boehm & Turner, 2005). Whereas in agile methodologies, quality plays a bigger role where the emphasis is on whether the product or service can fulfil all the requirements of the customers. SAFe goes a step further by adopting a holistic approach when looking at quality from flow, architecture and design quality, code quality, system quality, and release quality (Scaled Agile Inc, 2021b).

The last two core values, transparency and program execution, are reliant on cultivating a conducive working environment that fosters team collaboration, openness, and continuous value delivery through Program Increments (PI). PI planning is a cadence-based conference-type of event, that is the foundation of an Agile Release Train (ART), or a group of agile teams. This event is intended to align agile teams to the ART around a common strategy. It is stated in the SAFe 5.0 book that "*PI planning is essential to SAFe: If you are not doing it, you are not doing SAFe*" (Knaster & Leffingwell, 2020, p. 99),

The four core values were coupled with support of the seven core competencies to determine the successful execution of SAFe. The seven core competencies are each a set of related knowledge, skills, and behaviours that the organisation needs to achieve business agility (Knaster & Leffingwell, 2020, p. 111). These seven competencies are as follows: lean-agile leadership, team and technical agility, agile product delivery, enterprise solution delivery, lean portfolio management, organisational agility, and a continuous learning culture. The effectiveness of SAFe within the implementing organisation is rooted in the ability of the organisation to adopt the four values, supported by the seven core competencies across all levels of the framework.

The SAFe framework claims to improve engagement (employee and customer), quality of products, productivity, and time to market (Scaled Agile Inc., 2021). What follows is a summary of the key practices, benefits and challenges of SAFe gleaned from literature that was reviewed.

Figure ***5*** illustrates how the SAFe competencies contribute to business agility, with customer centricity constituting the focal point of all seven. This paper touched upon six of the core competencies, thereby excluding enterprise solution delivery from the scope. An explanation of each is provided below.

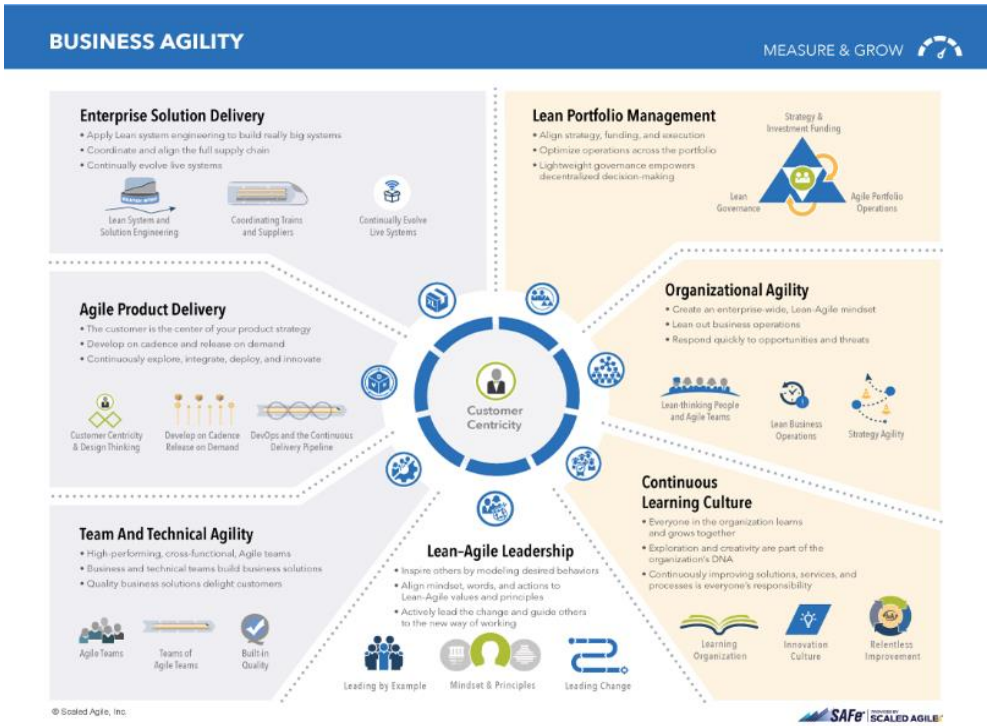
Lean-agile leadership is grounded on the principle that ensures organisation managers and leaders are held accountable for the adoption, success, and continuous improvements of lean-agile development and for fostering the competencies that lead to business agility (Knaster & Leffingwell, 2020, pp. 112-115).

The team and technical agility competency are what fuels the fire that is ignited by lean-agile leadership. This competency addresses the equipping, building, and organising of high-performance, focused and cross-functional (Knaster & Leffingwell, 2020, p. 127). These teams can deliver value, respond to the market changes more quickly and develop innovative business solutions. Similarly, the agile product delivery competency puts the customer at the centre of the equation and looks at delivering the appropriate solution that is relevant based on the customer's needs, at the right time(s) and that can cater to the changing preferences efficiently (Knaster & Leffingwell, 2020, pp. 143-147).

The lean portfolio management (LPM) competency is made up of three dimensions: strategy and investment funding, agile portfolio operations, and lean governance (Knaster & Leffingwell, 2020, p. 210). Understanding both the business and delivery strategies well is a prerequisite for the people operating in the capacity of the LPM function. In SAFe 5.0, objectives and key results (OKRs) were introduced. As a goal-setting framework, OKRs are used to track progress toward achieving a set of business outcomes. OKRs can be determined for every organisational level, thus proving to be a useful team for LPMs to bridge delivery and strategy.

Organisational agility deals with the ability of an organisation to respond to challenges or disruptions and capitalise on emerging opportunities (Knaster & Leffingwell, 2020, p. 239). The last competency to be discussed is continuous learning culture. Disruptive technology, globalisation, health pandemics, and uncertainty are a few of the factors that highlight the importance of cultivating a continuous learning culture within organisations to foster innovation and relentless improvement (Knaster & Leffingwell, 2020, p. 267).

Figure 5: *Overview of SAFe core competencies*



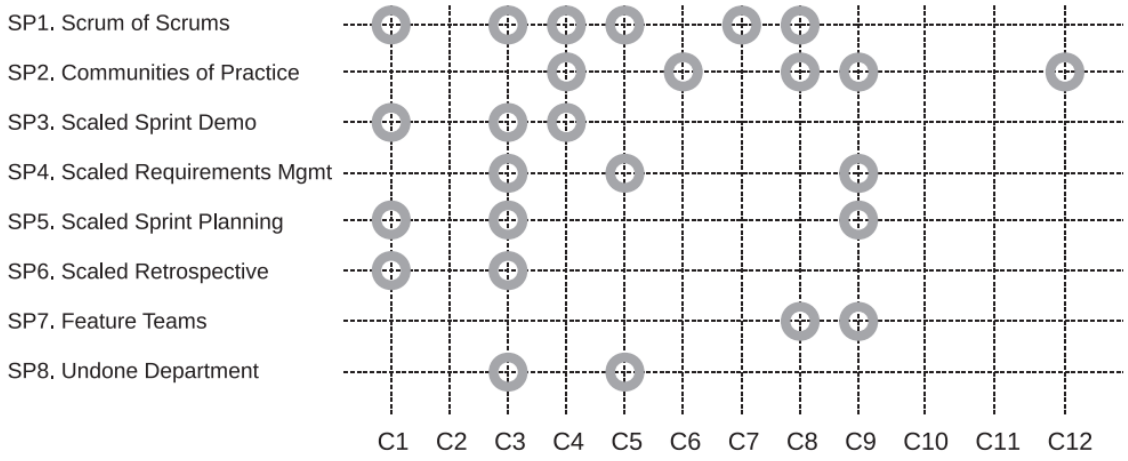
Note. Retrieved from https://www.scaledagileframework.com/safe-for-lean-enterprises. Copyright 2021 by Scaled Agile, Inc.

The effectiveness of SAFe within the implementing organisation is rooted in the ability of the organisation to adopt the four values, supported by the seven core competencies across all levels of the framework. The SAFe framework claims to improve engagement (employee and customer), quality of products, productivity and time to market (Scaled Agile Inc, 2021b). The key practices, benefits and challenges of SAFe are summarised in the sections that follow.

Common practices of SAFe

Kalenda et al. (2018), found eight common scaling practices when assessing two scaling agile frameworks, namely SAFe and LeSS. The two most common practices mentioned were the scum of scrums event and communities of practice These are summarised below. SAFe and other scaling agile frameworks have a dearth of research examining and comparing what practices and tooling systems have been effective and which have been ineffective in this regard.

Figure 6: *Mapping of papers to individual scaling practices*



Note. O = The practice is discussed in the article. Retrieved from "Scaling agile in large organisations: Practices, challenges, and success factors", by M. Kalenda, P. Hyna and B. Rossi, 2018, *Journal of Software: Evolution and Process*, *30*(10).

Benefits of SAFe

SAFe recognizes the benefits of cross-functional teams in scaling agile development (Kalenda et al., 2018). Furthermore, unlike other scaling agile frameworks such as DAD, the provision available to support organisations in using the SAFe framework has enabled it to be widely adopted (Putta et al., 2021). The advantage of adopting SAFe is that it bridges the gap between business and technology and this alignment enhances business agility. Despite this, very little academic research exists on the transformation process (Putta et al., 2019; Santos & de Carvalho, 2021; Uludag et al., 2018).

A Multivocal Literature Review (MLR) conducted by Putta et al. (2018) examined SAFe implementation across multiple industries, with most cases being from the financial services. There were many cases observed that were based on sources that were not peer-reviewed or grey literature. The main benefits are summarised in Table 2 and the main challenges in Table 3.

Table 2: *MLR summary of benefits of adopting SAFe*

Benefit	Description	Number of cases
Transparency	Enhanced transparency, process transparency, cross team dependencies are transparent, transparency in communication	22
Alignment	Increased alignment in teams, alignment of customer expectations, alignment between IT and business units, clients and vendors, alignment towards organisational goals, processes, tools, products, and priorities	19
Time to market	Improved time to market	17
Quality	Improved product quality, higher quality releases	17
Predictability	Greater predictability in project delivery	16
Productivity	Improved productivity, increase in productivity across teams and employees, increased delivery of number of products and capabilities	15
Collaboration	Enhanced collaboration, greater collaboration between team members, international teams, diverse working groups, different units (IT, Business), cross site and cross functional	14
Autonomy	More empowered teams, self-managing and self-organizing teams, improved morale, ownership, control of own commitments and own code	13
Engagement	Engagement Improved employee engagement, improved employee retention, decrease in attrition	12
Visibility	Improved visibility	11
Employee Satisfaction	Improved employee satisfaction, happier teams, happy employees	8
Continuous Improvement	Focus on continuous improvement	7
Dependencies	Improved dependency management, dependencies across trains are addressed	7

Note. Retrieved from “Benefits and Challenges of Adopting the Scaled Agile Framework (SAFe): Preliminary Results from a Multivocal Literature Review”, by A. Putta, M. Paasivaara and C. Lassenius, 2018, In *Product-Focused Software Process Improvement. PROFES 2018. Lecture Notes in Computer Science*, vol 11271. https://doi.org/10.1007/978-3-030-03673-7_24.

Some of these benefits can be further corroborated from one of the only African cases of a SAFe implementation to be published both academically and from Scaled Agile Inc, Standard Bank South Africa. Standard Bank reported a 12% increase in organisational health from 2013 – 2016 and a major decrease in time to market from

700 days to 30 days in one product line (Johnston et al., 2017; Scaled Agile Inc, 2017b).

Challenges of SAFe

As with any other framework, case studies indicate that SAFe adoption is not without its challenges (Ciancarini et al., 2022; Dikert et al., 2016; Putta et al., 2018). Research suggests there is currently no well-structured gradual approach to establishing SAFe (Turetken et al., 2017).

Systems thinking underpins SAFe, which brings everyone together to plan, implement, and deliver value to the intended audience. As a result of SAFe, additional layers of administration, supervision, and coordination are required. A major criticism of SAFe is its comprehensive nature and the higher investment it requires in tools, training, and recruiting of consultants or technical experts (Ebert & Paasivaara, 2017; Tengstrand et al., 2021). Consequently, job security, communication gaps, and resistance to change become worse (Kalenda et al., 2018).

A second concern is the length of planning cycles due to the long-term holistic vision SAFe emphasizes - longer sessions dilute agile principles. It has been argued, for example, that recent efforts to "scale Agile," such as those promoted by SAFe, are inefficient (Denning, 2016, 2018). SAFe encourages a top-down implementation approach which destroys the very essence of what Agile truly is (Ciancarini et al., 2022). As part of SAFe, agile teams are aligned to corporate goals. Agile and Management are intertwined.

Another challenge of adopting SAFe is that, given the heavy investment required, it is more effective when utilising a top-down approach where executives need to be competent enough to influence employees. In addition, given how technical this framework is, it leaves very little room for organisations to customize these practices and rules. The scaling agile framework comparison that was presented in Table 1 in the previous subsection also highlights this, as SAFe is the framework with the least amount of flexibility, a feature that is contrary to what agile embodies.

Table 3**:** *MLR summary of challenges of adopting SAFe*

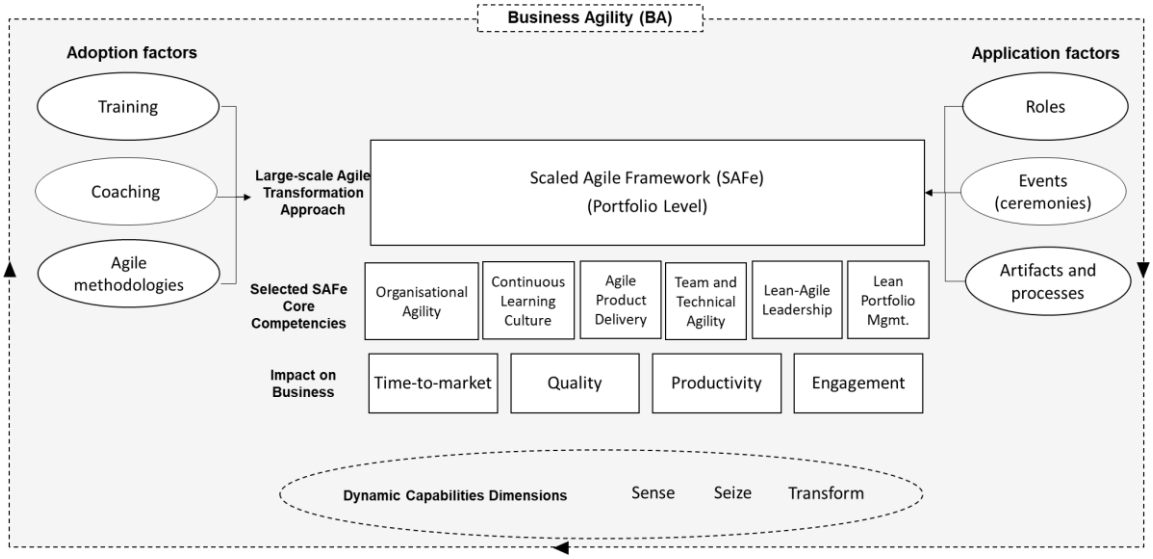
Challenge	Description	No. of cases
Change Resistance	Resistance towards accepting change, experiencing change as negative, initial hesitation from teams, individuals choose to leave, teams reject to take part in ART, reject the common ways of working, strong change resistance from teams towards a lack of SAFe knowledge and need to change	10
First PI Planning	Lack of knowledge on importance about PI, chaotic event, discomfort during PI and considered it as unpleasant, clash of time slots to fix PI planning, surprises during PI planning, fail to implement effective cadence, teams' resistance towards PI, logistic challenges	7
Moving away from Agile	Moving to SAFe feels like moving back to plan driven methods (such as waterfall), fixed increments, centralised planning, loss of incremental and iterative development, too much detail	7
Staffing roles	Trouble to find the Product Owners and challenging to find someone with both technical and industrial experience, Product ownership is complex across, staffing scrum master was also difficult	6
Controversies with framework	More complex and risky, confusion with the way of working, framework as overhead, controversies regarding story point normalisation, difficulties with release management in SAFe framework, framework not suitable for organisations working on multiple products	6
Agile Release Train (ART)	Failure demand of ART's due to ineffective integration of teams with less dependencies into agile release trains, handling cross team dependencies across the ART's, rearrangement of trains for distributed teams, rejection to take part into ART, difficulties to define ART in organisational context	6
Global Software Development	Collaborative planning meeting and critical gatherings were difficult due to distributed teams, deriving global priorities, different time zones, scaling agile to global organisation, rearrangement of ART's was challenging due to geographic distribution, release planning challenges due to distributed teams	4

Note. retrieved from "Benefits and Challenges of Adopting the Scaled Agile Framework (SAFe): Preliminary Results from a Multivocal Literature Review", by A. Putta, M. Paasivaara and C. Lassenius, 2018, In *Product-Focused Software Process Improvement. PROFES 2018. Lecture Notes in Computer Science*, vol 11271. https://doi.org/10.1007/978-3-030-03673-7_24.

The conceptual model

The research was contextualised by creating a conceptual model based on the literature and presented in Figure 7. A further purpose of the model is to provide continuity between the literature review, the research questions presented in chapter three, and the findings in chapter five. The conceptual model was developed in accordance with SAFe Agile principles as detailed by Knaster and Leffingwell (2020), and the key theories and findings presented by Overby, Bharadwaj & Sambamurthy (2006) and Teece et al. (2018) and supported by quality ranked journals on the impact SAFe is having on organisations.

Figure 7: *Conceptual model on SAFe as a mechanism for large-scale Agile transformation*



Note. Author's own.

Six SAFe core competencies are used to show how they are all interconnected to achieve business agility. The dynamic capabilities dimensions by Teece et al. (2018) are also incorporated, underpinning the SAFe business transformation approach by Leffingwell (2020). The conceptual model demonstrates how organisations use scaling agile frameworks as a mechanism to increase performance to gain a competitive advantage in uncertain or complex environments. The aim of this study was to demonstrate two aspects. The first is how a large organisation adopted and applied SAFe to achieve more business benefits and, therefore, business agility. A second focus was on documenting the challenges encountered and the lessons learned during the journey.

Conclusion

In conclusion, the literature review, mainly consisting of papers presented at conference proceedings, highlighted the scarcity of academic journals on SAFe adoption and implementation in large organisations. According to authors such as (Limaj & Bernroider, 2022), and (Santos & de Carvalho, 2021), scholarly attention is still needed to understand the emergence of SAFe in industry and practice.

Given the limited research available, there is need for research into the pre- and post-implementation journey of SAFe as well as other scaling agile frameworks from both an academic and business perspective. Despite the considerable amount of literature on the advantages and challenges associated with scaling agile frameworks, particularly SAFe; much of the knowledge is contained in industry reports and grey literature. And despite the increasing popularity of SAFe, there is still limited research on the practices adopted (how exactly it is implemented and applied) by large companies, as well as the expected financial and strategic benefits of adopting it. In the following chapter, three research questions based on the paper's purpose as described in chapter one, as well as the arguments presented in chapter two, are presented.

CHAPTER 3: RESEARCH QUESTIONS

Introduction

A key objective of this research was to investigate the organisation's approach towards implementing SAFe across three of CIB's largest business units and comparing it to the ways in which adoption and application differ from what SAFe prescribes. In terms of the adoption of the SAFe framework, the decision of the CIB division to adopt the framework and the process by which it was adopted were examined (Backer & Rogers, 2010). In terms of application, the examination focussed on how the CIB division has integrated the framework's practices and processes into its organisational environment (Cassar et al., 2019). To achieve the research objectives, the following three questions were developed:

Research question 1

How has SAFe been adopted in the CIB business?

The purpose of this research question was to understand how SAFe is adopted at large scale within organisations in a South African context. Exploratory questions were used for the following two categories: (1) training and coaching, (2) Agile methodologies and frameworks used, to evaluate the adoption of the framework and what impact this approach has had on the business (Kalenda et al., 2018; Laanti, 2014).

Research question 2

How has SAFe been applied in the CIB Business?

The purpose of this research question was to understand how SAFe is applied at large scale within organisations in a South African context. Application in the context of this research paper looked at roles, artefacts including tooling systems, ceremonies and processes that are being used in the CIB division and compare these to not only those mentioned in the SAFe literature by Knaster & Leffingwell (2020), but also across other cases, especially in the banking sector (Kowalczyk et al., 2022; Scaled Agile Inc, 2022; Tengstrand et al., 2021).

Research question 3

How has SAFe impacted the CIB business?

In recent years, most research on SAFe has focused on the implementation benefits as well as challenges that organisations face when adopting and applying scaling

agile ways of working. A large portion still consists of grey literature, experience reports or non-peer reviewed journals (Dikert et al., 2016; Paasivaara, 2017; Putta et al., 2018; Uludağ et al., 2021). Through a case study of a division of a South African financial services provider that is undergoing agile transformation using SAFe, the research can contribute to the body of knowledge by addressing the question: Is there a reflection of their experiences in the available research literature?

CHAPTER 4: RESEARCH METHODOLOGY

Introduction

Research questions can only be satisfactorily answered by choosing appropriate methods that are academically proven and capable of guiding the researcher towards the desired outcome. Chapter four present the approach to the research project, which was an integral part of the research paper. The sections of this chapter are divided into several subsections. The first subsections address the design, approach, and strategy of the research. The latter subsections examine the design of the study, the framework for collecting and analysing data, as well as limitations associated with the chosen methodology.

Choice of methodology

There are two main methods of conducting research, qualitative research, and quantitative research. The qualitative research approach involves the collection of non-numerical data, whereas quantitative research generally involves the collection of numerical data (Saunders & Lewis, 2018). In this study, a qualitative research methodological approach was utilised to provide an in-depth description of the thoughts and experiences of the sampled population and thus examine and understand how SAFe was implemented in a corporate environment for the organisation in its journey to agility (Creswell & Creswell, 2017; Saunders & Lewis, 2018).

Studies that aim to gain new insights or assess topics from a new perspective are described as exploratory studies (Saunders & Lewis, 2018). The single-case study undertook an exploratory approach as although academic literature is abundant on agile methods and company case statistics on the numerous large-scale Agile frameworks, there remains a gap in the academic literature on its application. The study explored how SAFe has been adopted and applied in the real world through a large, South African financial institution corporate and investment banking division.

Research design

To discuss how the CIB business adopted agile methods at a large scale through a single case, the interpretivism research philosophy was adopted, as the aim of the study was to rely on the participants' perspectives to address the research questions (Creswell & Creswell, 2017). Saunders & Lewis (2018) describe interpretive

approaches as those that consider social phenomena in the context of their natural surroundings.

The purpose of this study was to understand the level of SAFe adoption and application across the Corporate and Investment Banking (CIB) business, thus a positivist approach was not considered. A positivist approach would have been a good match for research which aimed to propose short-term solutions; therefore, the approach was deemed not to be suitable for this research that looked at longer term implications of the SAFe framework.

An inductive process of data analysis was followed, which involved gathering data in the participant's environment, in this case, business units (BU) within the CIB division, and conclusions were drawn based on the interpretation of the data (Creswell & Creswell, 2017; Roller & Lavrakas, 2015; Saunders & Lewis, 2018). The study utilised an inductive research approach to gain a deeper understanding of SAFe at a larger scale by examining how the BUs adopted and applied SAFe ceremonies, processes, and artefacts in a large organisation. The inductive process was used to build general themes as they emerged from the data. This type of research supported a focus on the researcher's interpretation and emphasised the importance of understanding the complexity and distinctive characteristics of a situation (Creswell & Creswell, 2017; Saunders & Lewis, 2018).

Semi-structured interviews were used to collect data, following a mono-method qualitative study approach (Saunders & Lewis, 2018). Interviews were selected to provide a holistic overview of the various SAFe roles within the CIB division and the experiences described within the context of the research question on how SAFe enabled the CIB business to scale agility.

This paper utilised a case study research strategy to gain in-depth knowledge of the scaling agile phenomenon in a real-life situation. The use of a case study facilitated methodological flexibility by examining a phenomenon that had not yet been fully explored and documented by academic research (Runeson & Höst, 2009; Yin, 2018). The single case organisation was purposefully selected as it provides a unique opportunity to investigate the adoption and application of SAFe and offered an information-rich case (Runeson & Höst, 2009; Yin, 2018). Providing a comprehensive analysis of phenomena and contributing to theory, using a case study allowed the researcher a comprehensive investigation that allows multiple

viewpoints of the SAFe implementation journey to be considered (Saunders & Lewis, 2018).

When conducting academic research, students often opt to perform cross-sectional studies due to time constraints, thus, the choice of utilising a case study strategy (Yin, 2018). As the organisation has already begun its journey of implementing the SAFe framework across its CIB division, a cross-sectional study was selected as the most appropriate to address the research questions. The study aim was to gain a deeper understanding of the large-scale agile phenomenon; therefore, a cross-sectional study approach was the best as it provided an observational snapshot for a postgraduate academic research paper (Saunders & Lewis, 2018).

Sampling approach

Population

The target population was based on a financial services organisation headquartered in Johannesburg, in the Gauteng province of South Africa. The selected large financial organisation has over 38,000 employees across the continent, 74% of which were based in South Africa. The target population for this research specifically concentrated on the latter workforce, particularly those employed in the project, change and product management space of the CIB division. Three BUs were pre-selected within the CIB division, Foreign Exchange Markets (FX), Payments and Transactional Banking (TXB), based on their significance to application development and experience with SAFe. The three business units were selected as they are the biggest units in CIB and those that utilise SAFe the most, albeit being at different maturity levels. The company implements significant software projects, thus providing the perfect foundation for exploring the use and impact of Agile outside of the Agile 'sweet spot' at a project, portfolio, and organisational level.

Unit of analysis

In qualitative data analysis, selecting the unit of analysis is the first step (Yin, 2018). Case studies can be designed in many ways: single case studies use a single research object or event, holistic case studies use one unit of analysis throughout, and embedded case studies use multiple units of analysis (Yin, 2018). In this context, the research project was divided into multiple units of analysis; at a holistic level, the CIB division was the focus of this study. At an embedded unit of analysis level, the various CIB business units, namely, FX Markets, Payments, and Transactional

banking (TXB), and the individuals within these business units who utilised attributes of SAFe in their daily business operations were the focus of study.

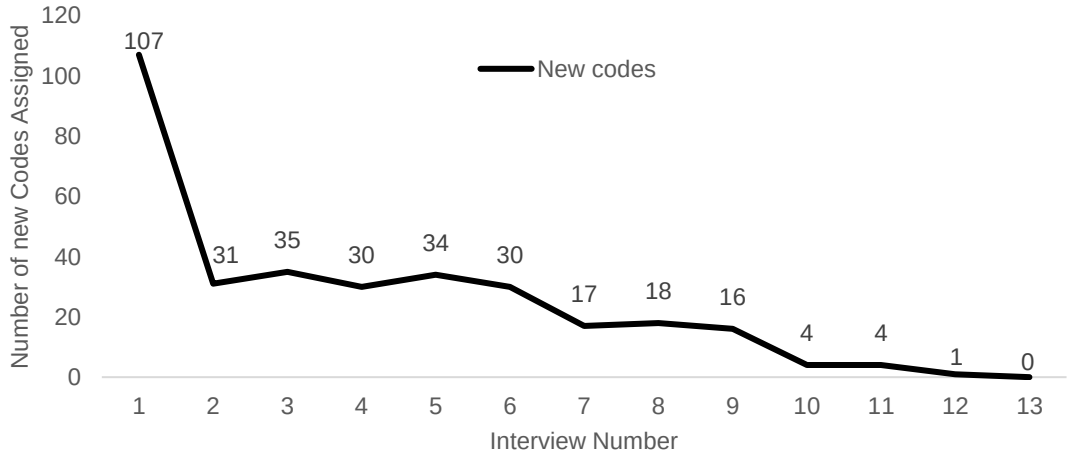
Sampling method and size

The selection of research participants and sampling technique were crucial factors for data outcomes (Marshall & Rossman, 2016). Purposive sampling was used to select participants by evaluating their value-add to the study (Saunders & Lewis, 2018). As a non-probabilistic sampling method, purposive sampling was chosen since it relies on the concept of data saturation to determine sample size.

Participants in purposive samples are typically selected based on specific criteria, so there is a certain degree of homogeneity in the sampling (Guest, Bunce & Johnson, 2006). CIB participants across three business units were selected for this study based on their job roles, with participants coming from different teams or value streams within these units. As the company's first business unit to implement SAFe practices, more participants were selected from TXB. The interviewed roles included a scrum master, product owner, project and programme managers, release train engineer, solutions analysts, and business and executives

Guided by the study conducted by Guest et al., (2006), fifteen participants were selected from within the CIB business for semi-structured interviews. However, thirteen interviews were conducted until it became apparent that no additional information or coding was being assigned to the data, commonly referred to as saturation of data (Figure 8; Braun & Clarke, 2019).

Figure 8: *Interview data saturation graph*



Measurement instrument

Semi-structured interviews were used as the primary data collection tool. This allowed respondents to freely express themselves while still maintaining the research focus. The author utilised exploratory questions for the following categories: (1) training and coaching, (2) Agile methodologies and frameworks used, (3) application of roles, artefacts, processes, and tooling, (4) what worked well, (5) challenges and (6) lessons learned and key success factors, to evaluate the adoption of the SAFe framework.

As shown in Table 4, the consistency matrix provided an overview of how the interview questions chosen related to the research questions as well as how they were developed based on chapters one and two. Considering the open-ended nature of the interview, the interviewees touched upon both adoption and application on questions eight (8) and nine (9) thus the overlap. An interview guide was drafted based on the principles of the SAFe® by Knaster & Leffingwell (2020) and traded under the Scaled Agile Incorporation. Scaled Agile, Inc. *"liberally allow the use of SAFe for academic purposes, such as for a class presentation, paper or thesis"* (Scaled Agile Inc, 2021b). Both specific and open-ended questions adapted from Uludag et al. (2019) and Ahmad (2021) were included in the interview guide (see Appendix B). The interview guide was slightly different for participants labelled as executives to gain a deeper understanding of the rationale behind the SAFe implementation. All interviews followed a similar pattern, with the author establishing some background information before addressing the research questions.

Table 4: *Consistency matrix*

Research questions	Literature review	Data collection tool [a]
RQ1: How has SAFe been adopted in the business	Turetken et al., 2017 Kalenda et al., 2018 Putta et al., 2021	Questions 4 - 9
RQ2: How has SAFe been applied in the business	Laanti, 2014 Turetken et al., 2017 Kalenda et al., 2018	Question 8 - 10
RQ3: What impact has implementing SAFe had on the organisation?	Dikert et al., 2016 Putta et al., 2018 Kalenda et al., 2018 Tengstrand et al., 2021 Santos & de Carvalho, 2021 Ciancarini et al., 2022	Question 11 *(Touches upon some aspects of Q4 – Q10)*

Note. [a] Questions are based on the normal interview guide

Data gathering process

In accordance with best practices for conducting case studies, the proposed study drew on a variety of sources of data, ranging from the Scaled Agile textbook and white papers to industry reports and other academic sources (Yin, 2018). Nevertheless, the author relied primarily on semi-structured interviews with participants in the CIB business that utilised the SAFe framework. The semi-structured interviews were chosen to extract perspectives and experiences relating to the SAFe transformation journey via open-ended questions (Marshall & Rossman, 2016). Data was collected on a specific topic pertaining to the adoption and application of the SAFe framework.

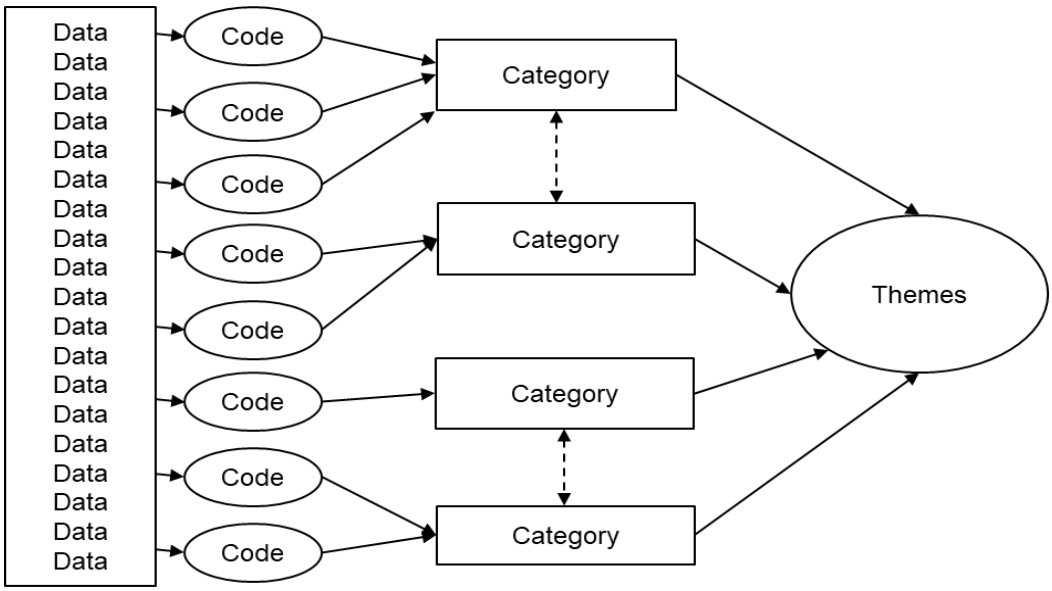
Data analysis approach

As soon as the University of Pretoria's ethical clearance process for research was approved (see Appendix C), the researcher began the data collection process. The interview guide was tested in a pilot interview to determine its validity and appropriateness. Minor adjustments were made to the initial interview schedule as a result and the pilot interviewee's responses have not been incorporated in the findings and results presented in this paper.

Interviews were conducted virtually over Microsoft Teams. The recorded interviews were transcribed with the assistance of the Microsoft Teams transcription functionality. Microsoft Teams offers an automated live transcription that uses smart artificial intelligence, thus delivering scripts with high accuracy. Additionally, a data clean-up of each transcript was manually performed as part of data quality control.

Atlas.ti, a computer assisted qualitative data analysis software was chosen as the most effective tool based on the chosen data methodology. Atlas.ti was preferred because it facilitates a wide range of strategies and tools for data analysis approaches. Several studies (Rambaree, 2014) have acknowledged the importance of Atlas.ti as an indispensable tool that facilitates the researchers' ability to conduct systematic and efficient data analysis, especially when dealing with large volumes of text or audio data files. In addition to making qualitative data more visual, the software also simplifies the process of analytical discussion (Rambaree, 2014). Using ATLAS.ti, transcript coding and thematic analysis was performed, guided by Saldaña's (2021) three-step codes-to-theory approach as illustrated in Figure 9.

Figure 9: *The Author's simplified illustration of Saldaña's approach to thematic analysis*



Note. Adapted from *The Coding Manual for Qualitative Researchers* (4th ed., p.46), by J. Saldaña, 2021, SAGE Publishing.

A total of thirteen semi-structured interview transcripts were cleaned and coded using Atlas.ti. Coding was performed inductively using a bottom-up approach, starting with no codes, and developing them as the dataset was analysed. The researcher then organised to find patterns and thus put them into broader thematic categories (code groups), which formed the basis of the themes captured (Saldaña, 2021). As a result, the progressive code groups were then merged into concepts related to the three research questions. Additionally, tables were constructed to compare the information from the interview participants according to the three research questions of which will be presented in chapter five. An inductive coding approach was used to provide a comprehensive method to the analysis of qualitative data and theme development (Kiger & Varpio, 2020; Saldaña, 2021).

Quality controls

When properly conducted, qualitative research should be impartial, in-depth, valid, and rigorous (Roller & Lavrakas, 2015). There must be a method for determining the extent to which statements are supported by reliable evidence. The quality of the research design was measured against two critical criteria, namely, validity and reliability (Saunders & Lewis, 2018). The findings deemed valid as they accurately represented the phenomena for which they were intended, which was exploring the

adoption and application of SAFe. The findings were deemed reliable as they could consistently be repeated (Creswell, Hanson, Clark & Morales, 2007; Saunders & Lewis, 2018).

Validity. To assess the construct validity, the author interviewed multiple participants across the three business units that used SAFe, to provide a holistic description and triangulation of the case. Since this research was neither explanatory nor causal, internal validity was deemed not relevant (Runeson & Höst, 2009). The author addressed external validity by providing details of the case while emphasising generalisation. Triangulation was also demonstrated by comparing technology participants to business participants and the executives. The constant comparison allowed for the examination of the data more holistically (Roller & Lavrakas, 2015).

Reliability. The researcher avoided bias by incorporating member checking into their research design. Through member checking, participants were allowed to review the researcher's description of their experiences to ensure the right information was captured (Galdas, 2017). The author abided by the standard quality approach was abided by at each step of the research design to remove any subjective bias and thus ensure a holistic quality-centric approach.

Ethical consideration.

An informed consent letter was sent to the identified participants in the CIB business (see Appendix D). As part of ethical consideration, all participants were required to sign an informed consent letter, which stated that participation was voluntary and that participants could withdraw from the interview without being penalised. Participant anonymity in the research paper and storage was also assured as the organisation and participant names were removed and interviews were stored according to a participant numbering system. Furthermore, interview etiquette as detailed on the guide (see Appendix B) was read at the beginning of each interview to ensure that the participants were fully aware of the purpose of the study, to enable them to decide whether to continue or not.

Limitations

Research conducted qualitatively is sometimes not as well understood, visualised, and accepted as research conducted quantitatively (Roller & Lavrakas, 2015). This is because it depends heavily on the researcher and thus may be subject to the researcher's personal biases and idiosyncrasies (Creswell & Creswell, 2017).

Interviews. As the researcher worked in an Agile project management office (PMO), critics would suggest that the researcher's direct involvement in interviews, or the researcher's role in drafting leading questions, introduced bias that may affect the validity of interviews (Creswell & Creswell, 2017). Other limitations of utilising interviews as a strategy included that indirect information was filtered via respondents' perspectives and that it gave information in a controlled environment rather than in the natural field setting (Creswell & Creswell, 2017). Furthermore, with semi-structured interviews, the time required restricted the capacity to cover large samples, hence the choice of purposive sampling method (Creswell & Creswell, 2017).

Documents. Due to company data privacy policies, the author was not permitted to access several documents which would have benefitted the study (Creswell & Creswell, 2017) as it would have visually illustrated how processes, artefacts and tooling systems are being utilised.

Case study. The single case study of a large CIB division utilised a smaller sample; hence generalisation may be questionable and critiqued (Yin, 2018). This meant that the results that the researcher concluded may not apply to other population samples. For example, in this single case study, a pan-African financial institution based in South Africa was used. It is unclear whether the results of this case study can be applied to other African jurisdictions or industries, particularly those that are less software intensive.

As case studies are founded on the examination of qualitative data, the researcher's interpretation of the material gathered was crucial, similar to the limitations on interviews, and thus, may have introduced researcher's bias as the thematic analysis presented in the paper was subjective based on the researcher's understanding (Creswell & Creswell, 2017; Yin, 2018).

Methodology. The sample was a limitation for this study as a single organisation may not accurately represent the real world. Furthermore, a longitudinal study would have provided a deeper analysis of the applicability transformation journey. However, the researcher chose to use a cross-sectional method given the time constraints for this academic research paper.

Conclusion

In this chapter, the methodological approach used in response to the research questions was discussed, along with quality control and limitations related to the

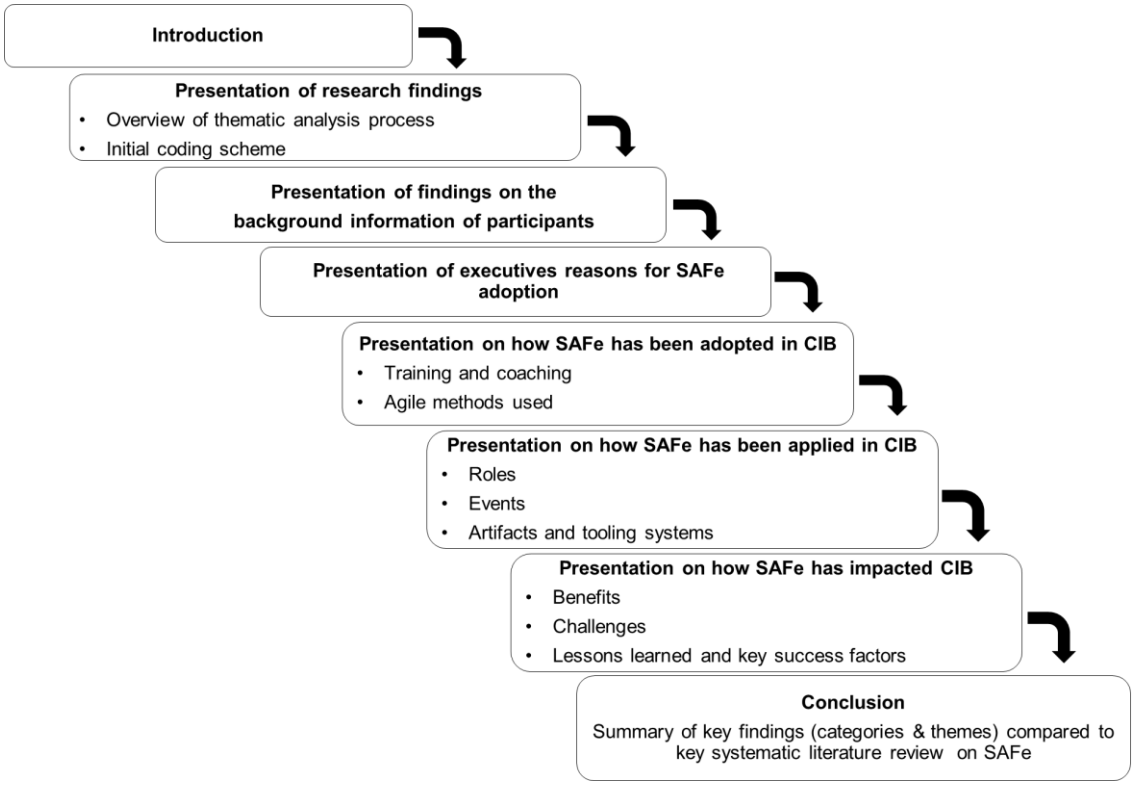
study. Based on the research design and methodology, the results and findings will be presented in the next chapter.

CHAPTER 5: FINDINGS/RESULTS

Introduction

A summary of the data gathered from the thirteen semi-structured interviews is presented in this chapter. Having developed a series of interview questions based on the research objectives presented in chapter one and the literature review presented in chapter two, three research questions were developed and presented in chapter three. Transcription, analysis, and organisation of the participant interviews were based on the categories and themes that emerged from the analysis of the participant interviews. An overview of the structure of chapter five is presented below.

Figure 10: *Overview of Chapter 5 layout*



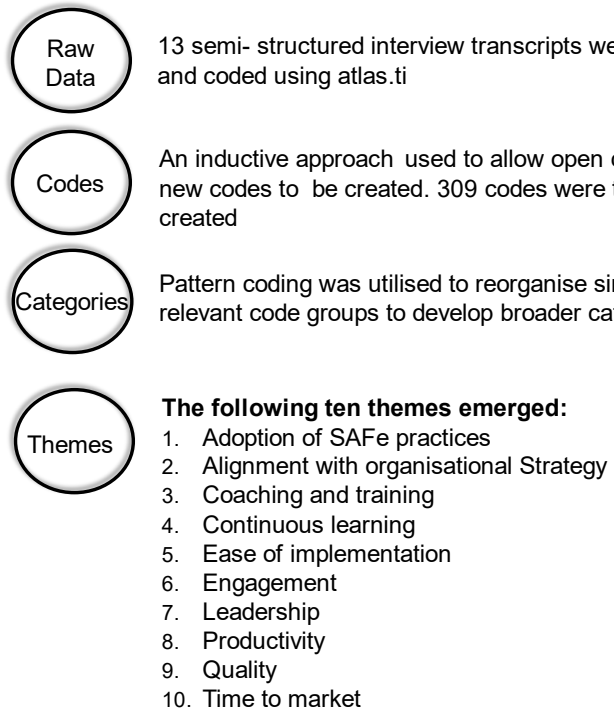
Presentation of research findings

In thematic analysis, patterns (themes) are identified, examined, and reported from the dataset (Braun & Clarke, 2006). To obtain an in-depth understanding of the adoption, application, and overall experience of using SAFe in a large organisation, the researcher developed an interpretative relationship with each participant's transcript to ensure a thorough understanding of everyone's experiences, opinions, and journeys. To identify and summarise important concepts, codes were developed

and assigned as a result of the thirteen interviews conducted until saturation was reached (Braun & Clarke, 2019; Guest et al., 2006).

The researcher utilised the three-step-codes-to-theory approach, guided by Saldana (2021) to distil the codes into categories, to derive themes. This process led to the emergence of fifty-three categories and ten themes from over three hundred codes (see Appendix E). The thematic analytical process is summarised in Figure 11.

Figure 11: *A summary of the author's thematic analysis process*



Note. Author's own.

Background information of interview participants

Background information on the participants was obtained using the interview guide, specifically questions one to five in both the normal and executive guide. The sample was representative of the participants from the technical functions and business (product management), the two areas that are most associated with delivering products to clients and are therefore exposed to SAFe. Moreover, two executives who were integral to the decision to implement SAFe were also interviewed, one representing technology and the other representing business. There was a proportional representation between the two largest business units (BU) in CIB, FX Markets and TXB, while Payments, which is also heavily software-intensive,

accounted for the remaining participants. Based on the data collected, only two participants had been with the company for less than five years. Most of them had been with the company for more than ten years, with four participants having been with the company for more than twenty years. A summary of this demographic has been provided in Table 5.

Table 5: *Interview participant background information*

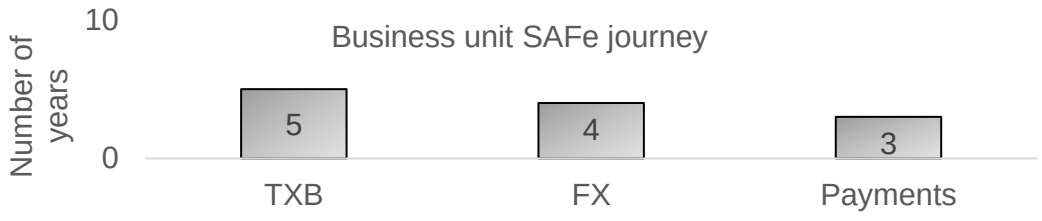
CIB BU	Tech. / Business	Role title	Length in role (years)	Length with company (years)
CIB	Technology	Executive [a]	4	14.5
FX Markets	Technology	Senior Scrum Master	6	6
	Technology	Solutions Analyst	4	4
	Technology	Lead Solutions Analyst / (Tech.) Product Owner	3	>5
	Business	Business Analyst / Project Manager	4	4
Payments	Business	Programme Manager	7	25
	Business	Portfolio Manager	1	25
	Technology	Release Train Engineer	1.5	9.5
TXB	Technology	Analyst	2.5	7
	Business	Head of Project Office	7	8
	Business	Senior Project Manager	5	19
	Business	Executive [a]	0.5	21
	Business	Project Manager	5	23

Note. [a] Participants interviewed using the executive interview guide.

Reasons for adoption of SAFe

When it comes to when SAFe was adopted, a phased approach across the CIB division was adopted, as the timelines varied across the selected three business units. TXB was the business unit that was first to roll it out five years ago, followed by FX Markets four years ago, and lastly payments three years ago (Figure 12).

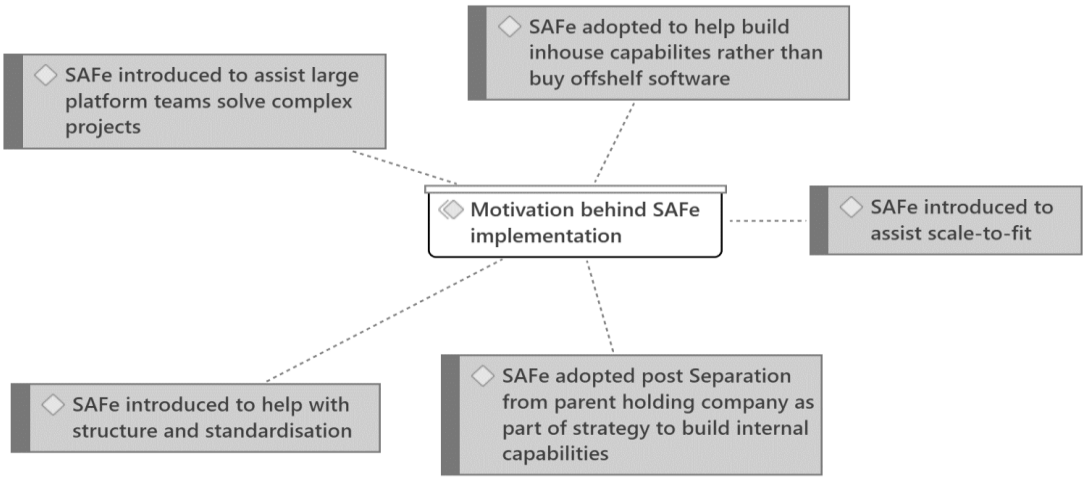
Figure 12: *Timeline of SAFe adoption across the three business units*



For the purpose of exploring the rationale behind the adoption, the author drafted a slightly different executive interview guide to examine the reasoning behind the

CIB division's decision to implement SAFe. A reason for this was that it contained two questions asking specifically why the CIB business chose SAFe and how it was implemented. SAFe was introduced at a time when the company was undergoing a separation from its parent holding company and rebranding. Figure 13 summarises the key themes from the executive interviews regarding the rationale for the implementation of SAFe.

Figure 13: *Key motivation behind SAFe implementation: executives' response*



Note. Extraction from Atlas.ti.

When asked why the business chose to adopt SAFe, one executive stated:

"*Umm, so I would first say I don't think we did really implement SAFe. I mean we used a lot of the stuff from SAFe. But you know, if I look at my teams, so I mean, I'm going to roll back probably four and a half, five years, when we first rolled SAFe out. I don't know what version it was back then, and we did our first PI planning, which was when we decided that this thing made sense and we were going to do like quarterly planning…and that was when we started using SAFe. But as I say like we had an agile coach working with us, who wasn't SAFe certified either"*, participant 5, Executive.

The executives were however united in saying that one of the key objectives was to start building and strengthening in-house capabilities.

> *"If you remember, we started this probably 4 - 5 years ago as we were separating from the parent company and we were building a capability so we could build our own software, whereas previously we used to buy applications and integrate them*". Participant 5, Executive.

Another participant stated that it was more about finding a framework to help them structure agile teams to solve the complexity that comes with having multiple platform teams that are heavily dependent on one another:

"You're managing lots of dependencies and that kind of stuff like you need some tooling and framework to help you navigate that … it was about finding a framework that helped us solve for the growth and helped us solve for ways of working around the growth". Participant 6, Executive.

Research question 1: How has SAFe been adopted in the CIB business?

Exploratory questions were used for the following two (1) training and coaching, (2) methodologies and other frameworks used, to evaluate the adoption of the framework. Table 6 summarises the results of the coaching and agile or SAFe training received per BU as reported by the participants. As the CIB division was already agile (but not SAFe), all participants had undergone agile (non-SAFe) training prior to the adoption of SAFe. For those that had undergone SAFe training, all but one participant confirmed that it was provided and funded by the company. A different picture was painted by over a third of participants who stated that they had not received any formal training in SAFe, including an executive that was part of the decision-making committee to implement SAFe.

"I mean, I've used their material, read the material that's freely available, but I've never had any formal training on SAFe. I've just done it through reading". Participant 5, Executive.

"To be quite honest, I've only attended one day training which is the Kanban training I've not had like a formal SAFe training". Participant 9, FX.

When it came to coaching, all participants from FX Markets mentioned that they had an in-house coach present, a similar view that was shared by the TXB business unit. However, with Payments, only one participant mentioned having an in-house coach.

"We had coaches that came in and assisted us in that, they assisted in guiding us through the process." Participant 3, TXB.

"We actually had a full-time coach at one point in CIB and he was doing some of the stuff around SAFe. But it was more fit for purpose, so he was more there to guide in terms of the value and the principles". Participant 1, FX.

"Not officially. I mean, I've been on training etcetera, but not like anything official, right. We had on-the-job coaching". Participant 12, Payments.

Table 6: *Overview of the training provided by BU*

CIB BU	Other Agile (Non-SAFe) training	SAFe training	Training provided by Company	Had an in-house company coach
CIB Technology	Yes	No	N/A	Yes
FX Markets	Yes	Yes	Yes	Yes
	Yes	Yes	No by Agency	Yes
	Yes	Yes	Yes	Yes
	Yes	No	N/A	Yes
Payments	Yes	Yes	Yes	No
	Yes	No	N/A	Yes
	Yes	No	N/A	None mentioned
TXB	Yes	Yes	Yes	None mentioned
	Yes	Yes	Yes	Yes
	Yes	No	N/A	Yes
	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes

Agile methods

SAFe uses a mix of agile methodologies, as one participant succinctly put it "*SAFe is just a conglomeration of a whole bunch of things that have been put together into a framework*". When asked about the methodologies and frameworks that were adopted across the various teams during the interview process. The responses differed across the three business units with TXB having the most varied responses across their teams. In The two frameworks that were mentioned across all three were the use of a hybrid model (agile/waterfall), scrum and Kanban, with Hybrid having a higher code groundedness in TXB and Kanban in FX. A participant in TXB also stated they no longer use any agile methods and now follow a pure traditional plan-driven or waterfall methodology for their projects. A few participants stated that:

> *"that's why you will find in our environment today, we don't have pure SAFe or pure the other one [Waterfall/traditional]. We've got the sort of mishmash". Participant 3, TXB*

> *"We are doing hybrid with agile taking more precedence as compared to your waterfall methodology". Participant 11, Payments*

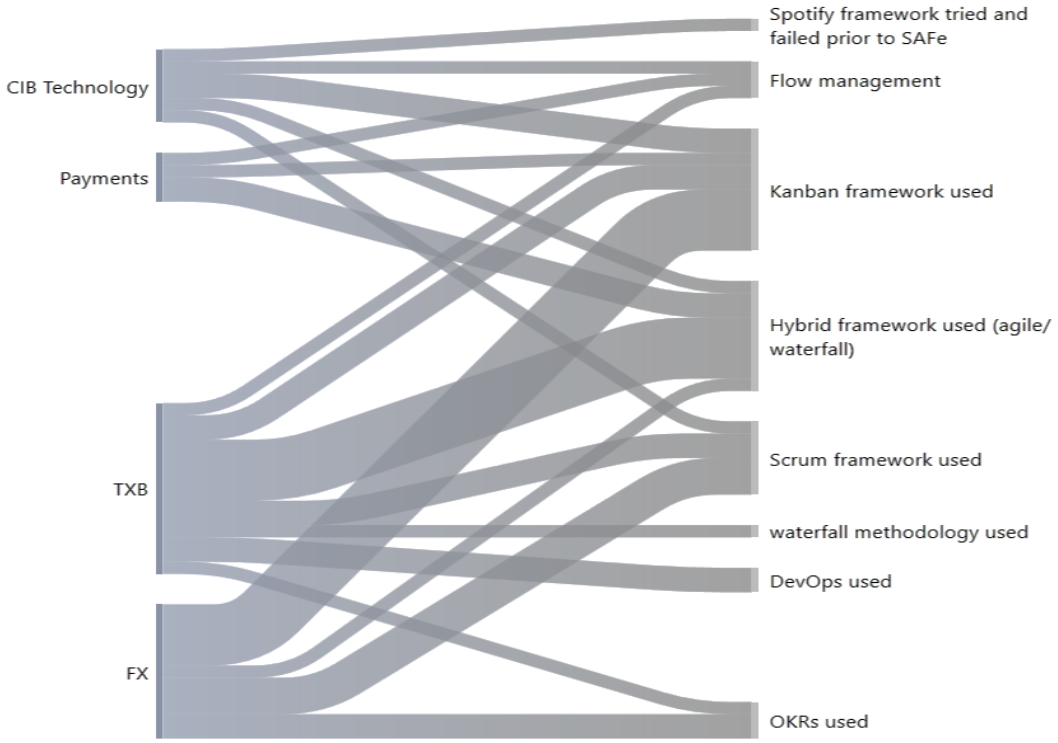
> *"Some of my teams work with a lot of Kanban or a very Kanban focused". Participant 5, Executive.*

> *"And one thing that we are obviously doing is we're doing flow training. So, it's more geared towards Kanban". Participant 1, FX*

"We've then taken, or incorporated things like for instance you know the Kanban frameworks you know also the scrum framework", participant 4, TXB.

Figure 14, a Sankey diagram extracted from Atlas.ti depicts the methodologies and frameworks that interviewees mentioned based on code groundedness. The two frameworks that were mentioned across all three were the use of a hybrid model (agile/waterfall), scrum and Kanban, with Hybrid having a higher code groundedness in TXB and Kanban in FX.

Figure 14: *Overview of methodologies and frameworks used across the business units*



Note. This diagram links methodologies to business units, with flow widths based on groundedness of codes per interview. [a] CIB technology represents the Executive and is not a business unit.

A participant in TXB also stated they no longer use any agile methods and now follow a pure traditional plan-driven or waterfall methodology for their projects. A few participants stated that:

"that's why you will find in our environment today, we don't have pure SAFe or pure the other one [Waterfall/traditional]. We've got the sort of mishmash". Participant 3, TXB

"We are doing hybrid with agile taking more precedence as compared to your waterfall methodology". Participant 11, Payments

"Some of my teams work with a lot of Kanban or a very Kanban focused". Participant 5, Executive.

"And one thing that we are obviously doing is we're doing flow training. So, it's more geared towards Kanban". Participant 1, FX

"We've then taken, or incorporated things like for instance you know the Kanban frameworks you know also the scrum framework", participant 4, TXB.

"that's why you will find in our environment today, we don't have pure SAFe or pure the other one [Waterfall/traditional]. We've got the sort of mishmash". Participant 3, TXB.

"We are doing hybrid with agile taking more precedence as compared to your waterfall methodology". Participant 11, Payments.

"Some of my teams work with a lot of Kanban or a very Kanban focused". Participant 5, Technology executive.

So, it's more geared towards Kanban". Participant 1, FX.

"We've then taken, or incorporated things like for instance you know the Kanban frameworks you know also the scrum framework", participant 4, TXB.

It is also worth mentioning that the CIB business had tried an alternate scaling agile framework, the Spotify framework, which failed, prior to SAFe as mentioned by one of the executives interviewed:

"…or dropping Spotify on the whole organisation and suddenly organising everyone into guilds and chapters and tribes and squads. I mean, that stuff just doesn't work. It worked for Spotify at a point in time. And even they said that, and that point in time was probably like 8 or 10 years ago…We went down that road and it didn't work. It didn't work well at all", Participant 5, Executive

Research question 2: How has SAFe been applied in the CIB business?

To assess the application of the SAFe framework, participants were asked to describe how they applied the SAFe practices in their day-to-day roles within their BUs. This included roles, tooling systems, artefacts, ceremonies, and processes. When Participants were firstly questioned on the basic structures such as having an Agile Release Train (ART) or the most important event of SAFe, PI Planning as

captured in Table 7. When it comes to ART, all apart from one participant was aware of an ART in their business unit or value stream. A few participants mentioned that although ARTs are present, they are referred to as Agile teams as SAFe terminology has not really been adopted. The two participants stated:

"Probably not in that sense, we don't use that terminology. The constructs do exist because it's quite a complex estate". Participant 5, Executive.

"We've got a number of agile release trains as I would describe them, they're probably not exactly how SAFe would describe them", Participant 6, Executive.

When asked if they know what a PI Planning event is and if they have attended one, again, all apart from one participant stated that they had attended one. The one participant who had not attended a PI planning event stated that:

"It's just for me why I am not working on the SAFe ways of working because of the nature of my projects". Participant 10, TXB.

Table 7: *Knowledge of key SAFe practices*

CIB BU	Role	Feels they perform multiple roles / different role from title	Aware of ART(s) present in unit	Has attended a PI Planning ceremony
CIB Tech.	Executive	No	Yes	Yes
FX Markets	Senior Scrum Master	Yes	Yes	Yes
	Solutions Analyst	Yes	Yes	Yes
	Lead Solutions Analyst / (Tech.) Product Owner	Yes	Yes	No
	Business Analyst / Project Manager	Yes	Yes	Yes
Payments	Programme Manager	Yes	Yes	Yes
	Portfolio Manager	No	Yes	Yes
	Release Train Engineer	Yes	No	Yes
TXB	Analyst	Yes	Yes	Yes
	Head of Project Office	No	Yes	Yes
	Senior Project Manager	Yes	Yes	Yes
	Executive	No	Yes	Yes
	Project Manager	No	Yes	Yes

Roles

When it comes to roles and role titles, the company chose not to adopt many of the SAFe team roles. A participant stated:

> *"We didn't change everyone's role profiles and descriptions of what they do so, you know, we've implemented scaled agile, but then we still have to some extent, people in the business who call themselves a project manager for example". Participant 6, Executive.*

This is corroborated as per Table 5 above as there is a mix of SAFe role titles such as "scrum master" or "release train engineer" and traditional titles such as a "project manager". Furthermore, eight out of the thirteen participants felt that they performed multiple roles or that the actual tasks and duties differ from those of their role title. When asked what their role title was, many were not sure what to respond. There were various statements such as:

> *"I'm a specialised scrum master. I think that's the title they gave me, but I do a lot more than that". Participant 1, FX.*

> *"Solution analyst. That's what the title says, but what I do is a different story". Participant 7, FX.*

> *"My current role title is business analyst. However, I'm executing more as a project and program manager to be honest. So yeah, it's a bit of an interesting one". Participant 2, TXB.*

> *"I look after two different teams as well as an RTE role". Participant 13, Payments*

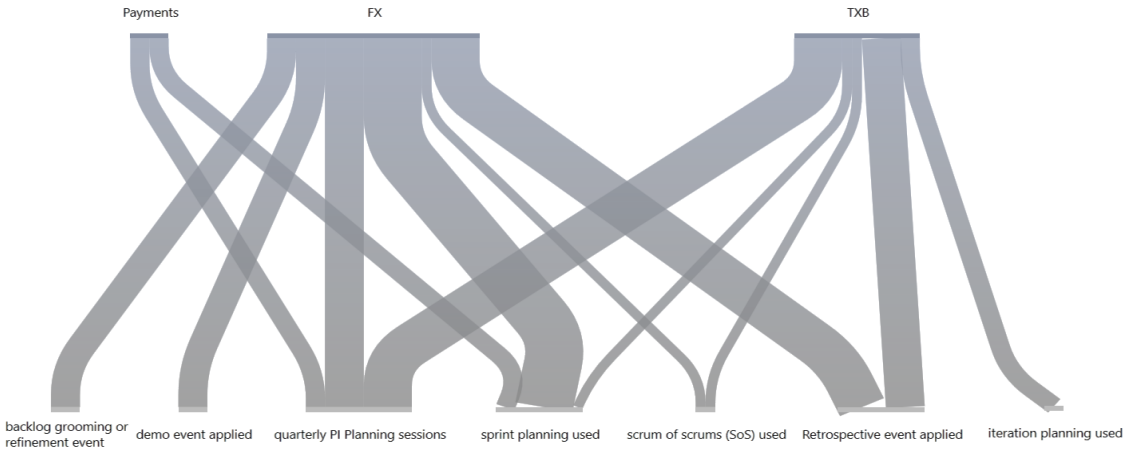
Artefacts, events, and tooling systems

In considering how events and artefacts are being applied, all of them belong to the Essential level of SAFe, which is based on teams rather than a portfolio. When it comes to SAFe events, all business units mentioned attending PI planning, retrospectives, and sprint planning. Whereas responses varied across TXB and Payments, FX participants seemed to adhere to more SAFe events as compared to the other two units (Figure 15), with two FX participant sharing their view as below.

> *"Within my own release train - FX markets, we've been fairly good in terms of the way we've managed to have the interlock between the teams and organize our program increments and things of that nature". Participant 1, FX.*

"So, what we've got with SAFe was this thing of now bringing the various teams together so that we can have that Agile release train, right, and manage our cross-team dependencies a little bit better through the various ceremonies". Participant 8, FX.

Figure 15: *Events applied across the business units*



Note. SAFe events are linked to the business units, with flow widths based on the groundedness of codes.

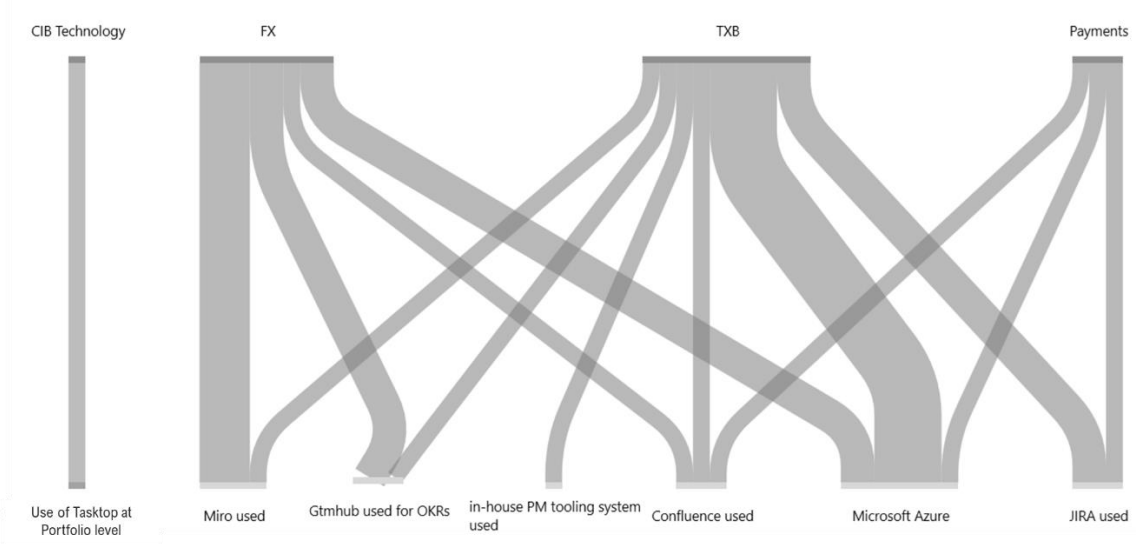
Tooling systems. Project management tooling systems also varied from in-house tooling systems to Agile-specific systems such as JIRA and Confluence (

Figure ***16***). TXB use more systems across their teams than the other two units. Microsoft Azure seemed to be the system that is used the most across all three units at a team level. Confluence was also mentioned by a participant in each business unit. Gtmhub was touched upon as a system that caters to the goal-based framework. OKRs was mentioned by participants in the two biggest units, FX & TXB. Two participants were quoted as saying:

"Some teams use dev Azure, others on JIRA, Confluence and so on. So, in our space, our boss is like, guys, I'm not going to predefine how and what you do. Make sure it just works for you and we get the job done". Participant 13, Payments

"So being in my role because I'm obviously playing the program manager role. It will depend on the various projects. So, say for instance like now I've got the platform teams, they're using Azure and then you go to the payment teams, they are using JIRA or confluence". Participant 4, TXB.

Figure 16: *Tooling systems used across business units*



Note. Project management tooling systems are linked to the business units, with flow widths based on the groundedness of codes.

The approach seemed to be that SAFe had encouraged a more fluid way of working. In most cases, teams were flexible in terms of the systems used. One participant mentioned moving to Tasktop, a software that provides end-to-end visibility into software delivery through value stream management, as a way of improving how to prioritise non-features work such as system enhancements, which are not categorised as products.

> *"I think the other thing I would say, the stuff that we never really got good at that we're trying to do now, you know, through looking at some of the other systems like Tasktop, is the whole concept of features versus enablers or non-feature work". Participant 5, Executive.*

Artefacts. In terms of artefacts used, based on code groundedness, many of them are those used at the team level rather than the portfolio level as shown in

Figure ***17***, the only exception being the portfolio Kanban. The three artefacts mentioned by all units included user stories, epics, and the team backlog. Once again, FX seemed to unanimously adhere to mentioning more SAFe artefacts than the other two units. TXB responses seemed to vary per participant, explaining why

the flow widths on the diagrams are thinner. One TXB participant was quoted as saying:

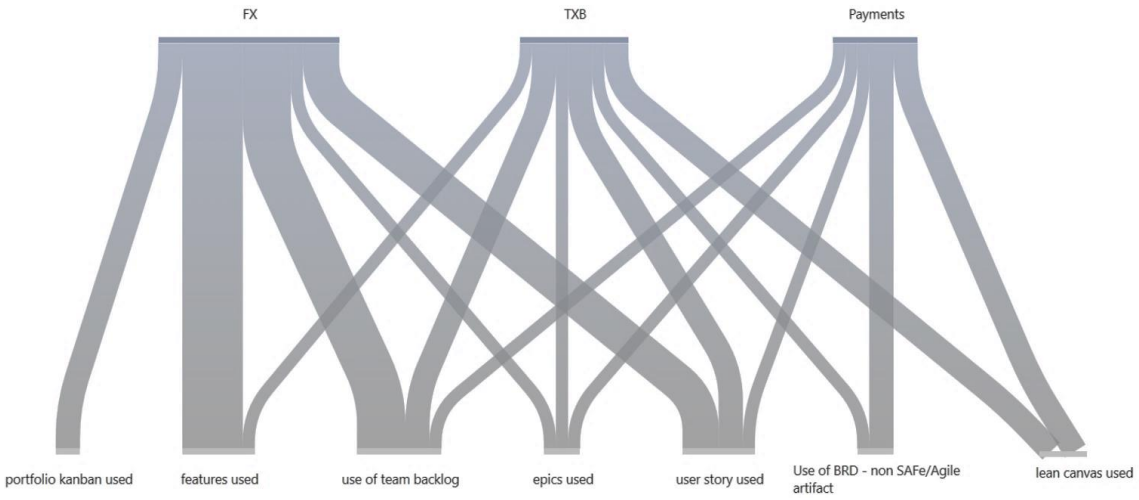
> *"And then aside from that, you know, the other artefacts that were produced were very much based on what the teams needed". Participant 2, TXB.*

A non-Agile artifact, the Business Requirement Document (BRD), was also mentioned by participants in TXB and Payments, which spoke to the hybrid ways of working as it is a key requirement for the Waterfall or traditional methodology. Additionally, a key component mentioned from Payments is the fact that the African subsidiaries that CIB South Africa works with are not on SAFe, hence the need for a hybrid model. Participants from these two units indicated:

> *"Yeah, yet there is still this BRD requirement in ARO [African subsidiaries]". Participant 11, Payments.*

> *"Even today if you want to get something done in ARO core banking, they'll ask you for a BRD. And they'll quote you on cost before they'll do anything". Participant 6, TXB.*

Figure 17: *Artefacts mentioned across the business units*



Note. Artefacts mentioned are linked to the business units, with flow widths based on the groundedness of codes.

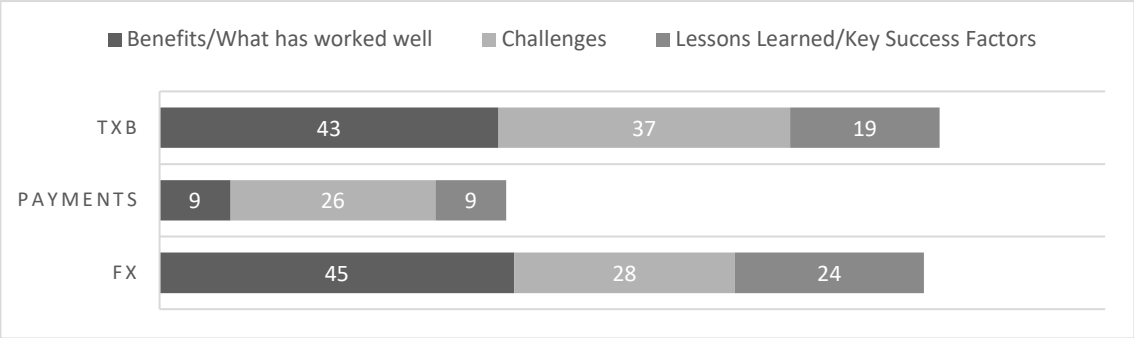
Research question 3: How has SAFe impacted the CIB business?

The findings are categorised into three groups: benefits or what has worked well, challenges, and lessons learned and key success factors. Figure 18 gives an

overview of code groundedness per category across the three business units. Overall, there were more reported benefits than challenges.

The benefits reported were more than the challenges for both FX and TXB units, whereas the opposite is true for the Payments unit where majority of the feedback provided was challenges faced. Similarly, both FX and TXB provided more feedback on the lessons learned and what they felt were key success factors, in contrast to Payments.

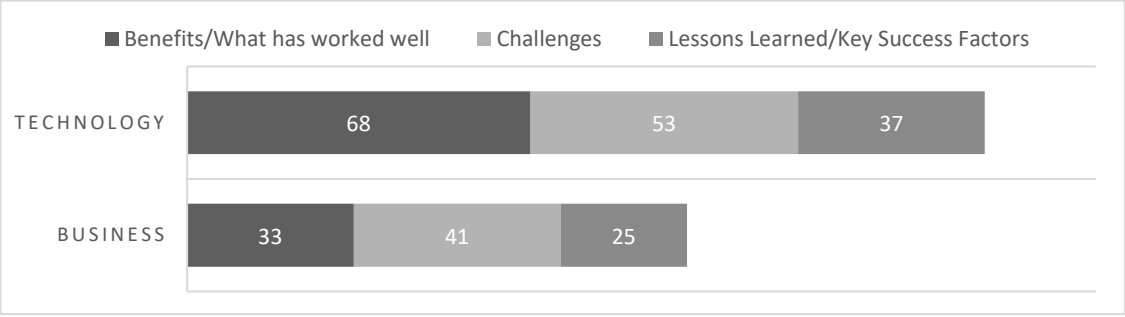
Figure 18: *Overview of benefits, challenges and lessons learned per business unit*



Note. Author's own. Numbers provided are extracted from Atlas.ti and based on codes assigned.

Looking at it from a Business and Technology perspective (Figure 19), where the number of participants was seven to six respectively, one can also note the difference in sentiment of SAFe impact as Technology reported slightly more benefits than challenges, whereas the opposite is true for business. The author will further show the top fifteen codes for each category based on groundedness as depicted by treemaps in Figure 20, Figure 21 and Figure 22.

Figure 19: *Overview of benefits, challenges and lessons learned - Business vs. Technology*



Note. Author's own. Numbers provided are extracted from Atlas.ti and based on codes assigned.

Benefits/what has worked well. The overall theme of productivity prevailed the most, with all participants stating SAFe has enhanced transparency in the business. Over ten participants also stated that PI Planning has made a significant positive impact or worked well and that they were seeing more ownership and accountability, as well as more autonomy. Four participants were quoted as saying:

> *"It was more transparent what was being done and I think it made the relationship with business so much easier", Participant 2, TXB.*
>
> *"PI planning is critical, right? Without that you are dead in the water because it provides what I call the North Star to your delivery teams". Participant 8, FX.*
>
> *"Also think that in some respect there's more visibility. So, if you want, you can go to someone's board, you can see what they're working on, what they are doing". Participant 13, Payments.*
>
> *"So, you want to drive that culture of where people are picking up the mantle and they're able to do the stuff. They can actually show value for the stuff that they already doing without you having to organise everybody within that space. So that, I think, is the biggest win for me from a SAFe perspective". Participant 3, TXB.*

It was noted from the interviews that TXB, the unit that was the first to adopt SAFe, has evolved to self-organising teams that no longer run the quarterly central PI planning sessions, as compared to the other two units. As one TXB participant elaborately put it:

> *"We actually thought when we had started off that this [quarterly PI Planning] would be standard year in and year out. But what we probably didn't know at that time that one of the principles of SAFe is that you're trying to drive self-managed teams, right. So, what we've actually found as we have gone through that, we've actually naturally moved from having the PI planning sessions where everybody is in place to actually allowing the team to do that themselves". Participant 3, TXB*

Engagement was another major theme in this category. Collectively, collaboration featured thrice in the top fifteen codes of what has worked well. Three participants from each unit and an executive were quoted as saying:

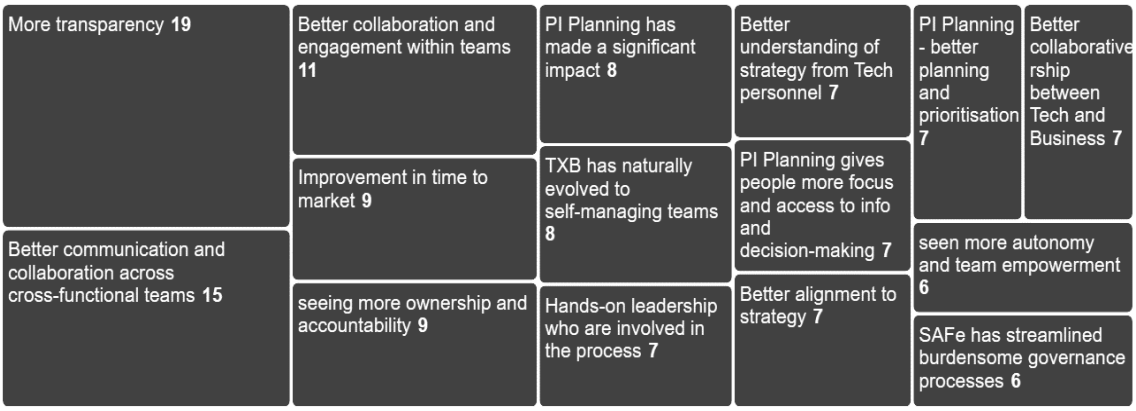
"I think that shift has probably created a better relationship between these execution teams as well as the business owners, whereas before it was kind of just two worlds, Tech. does this and then, you know, business does that". Participant 2, TXB.

"From a benefits perspective…So that's also cross functional right, from a collaboration perspective as well". Participant 12, Payments.

"What I think has worked well in the four years is the continuous collaboration within the team and also the ability to work together from the start", Participant 9, FX.

"And it just provided a platform for that that interaction You know, I guess between business, technology and design, but also across workstreams in terms of trying to navigate dependencies and that kind of stuff which wasn't happening otherwise", Participant 5, Executive.

Figure 20: *Summary of interviews: key benefits of adopting SAFe*



Note. Extracted from Atlas.ti with the numbers representing the code groundedness

Challenges. A summary of the top fifteen challenges mentioned in the interviews, based on coding groundedness is provided in Figure 21. Thirteen of the codes in the challenges treetop fall under the ease of implementation theme. The three biggest challenges were lack of standardisation, adapting to the new ways of working or mindset shift, and having teams and leadership at different maturity levels across the business units. Participants from each of the units were quoted as saying:

"I think because of the scale at which we were trying to do things or teams were at different levels in terms of their own appreciation for what SAFe was trying to achieve, and the way they went about fulfilling some of the objectives and values and principles of SAFe", Participant 1, FX.

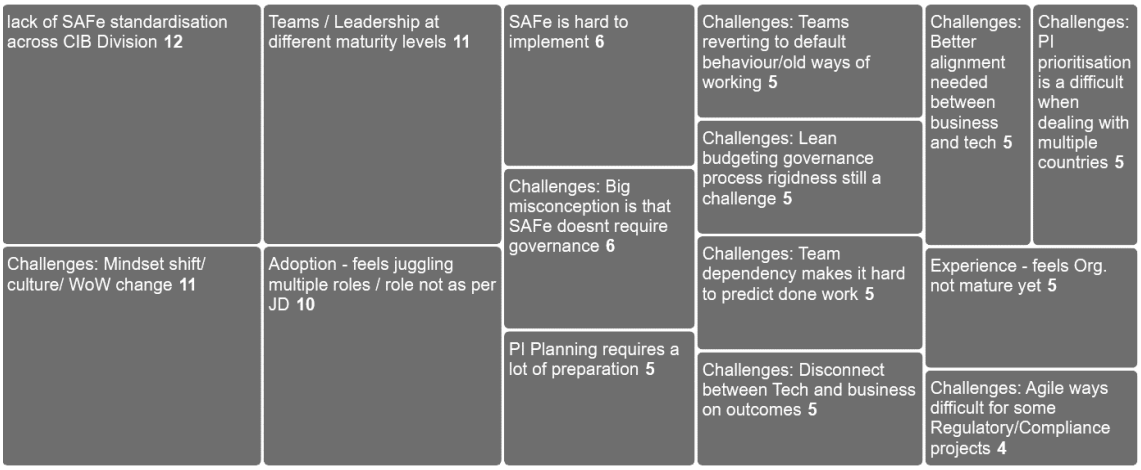
"And different teams and different value streams and different parts of the organisation are at different places on that journey". Participant 5, CIB Technology

"I think there's different levels of maturity. You may find one team that's quite mature. You go to next one, you'll see there's gaps or they're not at the right level", Participant 12, Payments.

"But not all teams in our portfolio are necessarily doing this because there isn't that drive to say all teams should be doing it this way", participant 1, FX

"…but I think the hardest part is more around the culture change and the mind shift", Participant 2, TXB.

Figure 21: *Summary of interviews: key challenges of adopting SAFe*



Note. Extracted from Atlas.ti with the numbers representing the code groundedness

A disconnect between technology and business was also picked up with interviewees stating that more alignment is still needed between the two. Two participants were quoted as saying:

"Come at the end of the quarter we wouldn't have delivered anything because of the difficulty in terms of the approach from the development point of view and from the business. We will always have issues around that", Participant 10, Business - TXB.

"When it comes to alignment, yes - there isn't any. But also, we speak different languages, right? Unlike Tech., for Business, it's like I've got a client in front of me. What are you saying", participant 7, Technology - FX.

There were also participants that were not content with the level of governance in place, especially for the budgeting process, with two participating stating:

"It's the teams that are delivering being aware of what the teams that are giving the direction from a strategic perspective and the investment of funding within that space to actually tie together a little bit more, I think there's still a little bit more work that needs to be done around that", participant 3, TXB

"I think the big challenge that we're looking at now…is around the portfolio component, the budgeting and finance. From my view it is still quite rigid in terms of when you release budget and how you allow teams to manage it", participant 2, TXB.

Another worthy category worth mentioning is the overall governance piece with participants stating that initially a big misconception with delivery teams was that SAFe didn't require much governance with participant who is part of the TXB PMO stating:

"I touched on the idea that teams think you don't necessarily need some governance and artefacts. We've seen that burn us within our space", participant 3, TXB.

SAFe was also perceived to require a lot of preparation and is generally difficult to implement, especially for certain types of projects. Participants found that:

"We couldn't just pivot overnight, and we sort of had to transition through it… Implementing it has been a challenge as well", participant 3, TXB.

"So, the problem with this stuff [SAFe implementation] is that it sounds very easy, but it's really hard to do and that's because actually, it's the depth of understanding you need to have on it is much more than you think", participant 1, FX.

"I guess the one component is that it had never been within the scope of business to own their own change and that transition was just that much harder, participant 2, TXB.

"There's a lot of preparation that goes in ahead of the PI planning. It's not just something that happens, there's a lot of interlock with myself, my technical lead, my product owner, the other product managers, the management within FX markets", participant 1, FX.

"So, a project like that where we are complying to what the regulators are saying. It becomes a bit difficult to try and apply the iterations", participant 4, TXB.

“From a regulatory perspective, all of those things need to be shuffled at some point because when reality sets in, you need to be flexible and you need to adapt SAFe”, participant 12, Payments.

Lessons learned and key success factors. The last subsection for the third research question speaks to what the interviewees thought were lessons learned or key success factors needed to be considered going forward (Figure 22). The theme of continuous learning was the biggest takeaway with both continuous improvement and continuous learning being the two of the biggest categories, which are also closely related. Participants stated that:

“This continuous improvement thing is the best one ever because you realize that nothing is perfect. And you can plan, you can come up with the best plan of how you're going to do things, but when you actually start doing it, you realise that there are things that you never thought of”, Participant 7, FX.

“If there's a lesson to be learned is that we just need to be always ready for change and always ready to improve. Also, don't get married to things. What is relevant today becomes irrelevant in the next month or so through digitization. So just we just need to embrace continuous improvement”, Participant 4, TXB.

“I think we're still learning as we're going along like refining and you know, finding something that works for a particular team trying to implement it for another team seeing where that goes. And so, it's very much a journey that we're in the midst of”, Participant 13, Payments.

The second biggest theme was the ease of implementation, in particular, that SAFe needs to be customised to fit organisational needs rather than followed by the book. Participants, including the two executives found that:

“You can never get to a full sort of 100% level of maturity and maybe you only want to mature to certain extent, and you don't want to go further because whatever implementation you have meets the needs for the business at that particular point in time”, Participant 2, TXB.

“There's no turnkey solution. You certainly can't just get everybody in an organisation, just suddenly get this thing and be doing everything. So that's why actually it does become a custom thing”, Participant 1, FX.

"I've never really bought 100% into the SAFe framework…our view was kind of take what is useful at the time. Take what makes sense for us", Participant 5, Executive

"I'm willing to bet there is no two big organisations in the world that have implemented SAFe in the same way", participant 6, Executive.

The remaining categories mainly touched upon team demographics, investment in (refresher) training, standardisation of processes and ways of working, where participants said:

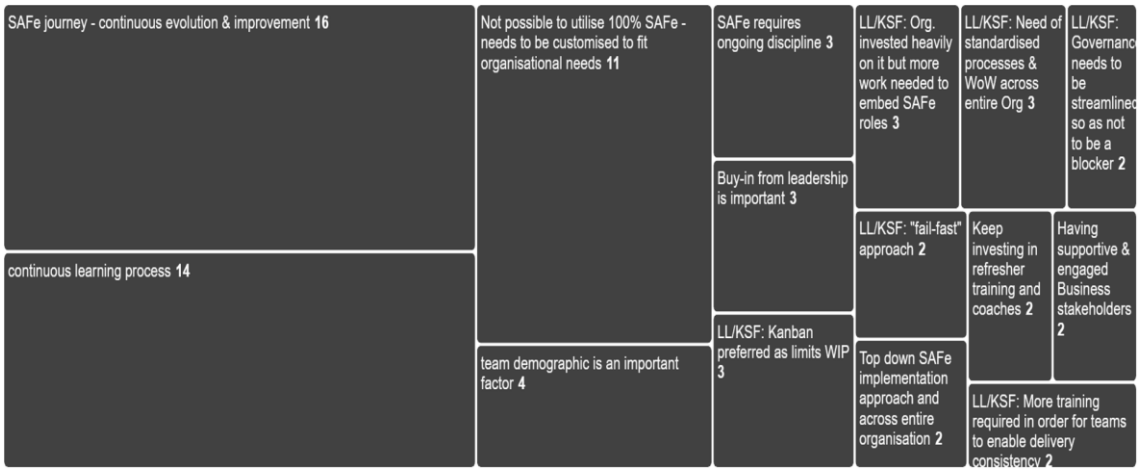
"Culture is a big thing. If you talk about successes, depending on what the demographic make-up of your team is, can also affect how successful this is right?", participant 1, FX.

"Yeah, I think you need to keep investing in refreshing the training", Participant 6, Executive.

"We need standardised processes, standardised ways of working", participant 11, Payments.

"I think the biggest issue is taking things by the back door itself and it's no fault of the methodologies, just application of it, right?", participant 12.

Figure 22: *Summary of interviews: key lessons learned and success factors*



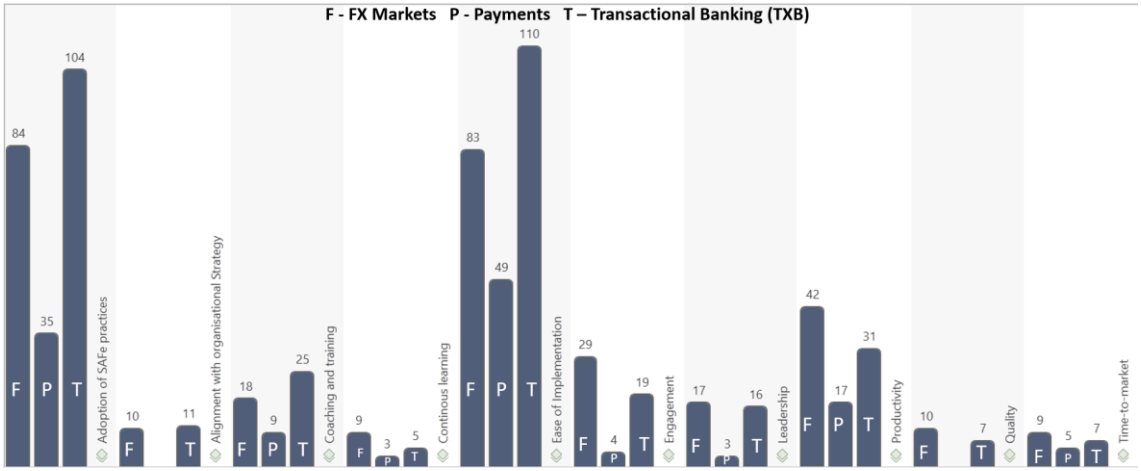
Note. Extracted from Atlas.ti with the numbers representing the code groundedness

Summary of research findings

Presented in this chapter are the findings that lay the groundwork for the subsequent discussion of their meaning in the context of relevant theories as discussed in chapter two. This chapter presented the results of the interviews held and

demonstrates the insight gained on the adoption, application, and overall impact of the SAFe framework in the CIB Business. The findings were summarised and corroborated with quotes from executives and participants across the business units. Figure 23 summarises the themes derived from the interviews per business unit on the basis of codes assigned. Furthermore, a discussion of these themes and their relation to the research questions and existing literature will be presented in chapter six.

Figure 23: *Business unit-based summary of key findings (themes)*



Note. Author's own. Extraction from Atlas.ti, numbers based on total code groundedness.

CHAPTER 6: DISCUSSION OF RESULTS

Introduction

As in the previous chapter, this chapter will be structured according to the research questions. Throughout this chapter, the findings of the participants presented in the previous chapter are compared with key identified systematic literature reviews on large scale agile transformations in order to answer the three research questions. The findings were summarised and corroborated with quotes from executives and participants across the business units. In Table 8, the ten themes derived from the interviews are compared with two key literature reviews discussed in chapter two, with significant similarities found across all three.

Table 8: *Summary of key findings as compared to existing literature - themes*

Key themes from findings on SAFe adoption, application, benefits, challenges and key success factors of CIB division of 1 organisation	**Key Themes from Putta et al., 2018 A Multivocal Literature Review (MLR) of SAFe benefits and challenges from 52 organisations**	**Key themes from Dikert et al., 2016 A systematic literature review of large-scale agile transformations challenges and key success factors from 42 organisations**
Adoption of SAFe practices	Agile Release Train (ART)	Agile difficult to implement
Alignment with organisational Strategy	Alignment	Change resistance
Coaching and training	Autonomy	Choosing and customizing the agile approach
Continuous learning	Backlog Management	Commitment to change
Ease of implementation:	Change Resistance	Communication and transparency
Culture/ mindset shift	Collaboration	Coordination challenges in multi-team environment
Application of non-SAFe / SAFe artifacts, processes and roles	Continuous Improvement	Different approaches emerge in a multi-team environment
Business units at different maturity levels	Controversies with framework	Engaging people
Change Management	Dependecies	Hierarchical management and organizational boundaries
Difficult to implement	Employee Satisfaction	Integrating non-development functions
Regulatory/Compliance projects	Engagement	Lack of investment
Efficiency of governance processes	First PI Planning	Leadership
Inadequate structures	Global Software Development	Management support
Inefficient prioritisation planning	Moving away from Agile	Mindset and Alignment
Lack of alignment between technology and business	Predicitablility	Piloting
Misalignment with other non-Agile units within organisation	Productivity	Provide training on agile methods
Engagement	Quality	Quality assurance challenges
Leadership	Staffing roles	Requirements engineering challenges
Productivity	Time to market	Requirements management
Quality	Transparency	Team autonomy
Time-to-market	Visibility	Training and coaching

Note. Author's own. Categories under the theme "Ease of implementation" have been listed as it was the largest theme in the findings.

Furthermore, the author compares the categories of the findings to those in another key literature paper discussed in chapter two, this is presented in Table 9. This is one of the few academic papers that addresses SAFe adoption practices as opposed to only benefits and challenges. Again, there were significant similarities between the two. Furthermore, a discussion of these categories and themes and

their relation to the research questions will be discussed in the subsequent subsections.

Table 9: *Summary of key findings as compared to existing literature - categories*

Key categories from findings on SAFe adoption, application, benefits, challenges and key success factors a CIB division of 1 organisation	**Key categories from Santos & de Carvalho, 2021. A systematic literature review of SAFe adoption practices, benefits and challenges from 76 articles**	
A shift in culture / Adapting to a new mindset	Agile principles and values	Organizational structure
Adoption of Agile framework or methodology	Architecture management	Overcommitment
Adoption of non-Agile framework or methodology	Best financial and performance results	Over-optimism
Adoption of SAFe terminology	Better resource management	People-centric
Application of non-SAFe artifacts, ceremonies, tools and processes	Better risk and failure management	Portfolio management
Better alignment to strategy	Business process integration	Practice community
Better collaboration with leadership	Certification processes	Productivity
Better cross-functional collaboration	Change management	Progress measurement
Business units at different maturity levels	Communication	Project size
Change Management	Compliance	Project/system portfolio
Contradictory to Agile principles	Configuration management	Prototyping and experimentation
Customer collaboration	Contractual criteria	Quality
Customisation of SAFe framework	Control	Regulatory compliance
Difficult to implement	Cooperation	Reliability
Efficiency of governance processes	Cost management	Requirement management
Emphasis on continuous improvement	Customer engagement	Requirements management improvement
Enhanced transparency	Customer relationship	Resource management
Faster time-to-market	Dependency	Responsiveness
Inadequate structures in place	Description	Reuse limitation
Lack of alignment between technology and business	Development cycle	Reward systems
Lack of standardisation	Documentation amount	Schedule management
Leadership training	Effort invested in the planning events	Scope management
Metrics and assessments	Fast cycle time	Sharing the benefits
Misalignment with organisational stakeholder goals	Flexibility	Simplicity
Misalignment with other non-Agile units within organisation	Frequent feedback	Stakeholders management
Negative feedback on outcomes	Geographic distribution	Stakeholders satisfaction
Negative feedback on PI Planning	High level of trust	Strategic management
No formal training	Ignorance to risk awareness	Supplier management and partnering
Non-uniformity on PI Planning cadence	Innovation management	Team coordination
Not using SAFe	Key barriers to large scale	Team maturity
On-the-job coaching and In-house SAFe trainers	Knowledge management	Teamwork
PI Planning importance decreasing	Knowledge of agile methods	Technologies/tools/methods
Positive feedback on outcomes	Leadership	Time zone difference
Positive feedback on PI Planning	Lean features	Traceability
Prior Agile training/certification	Learning	Transition framework
Quarterly PI Planning sessions	Legacy projects	Transparency
Refresher training requirement	Level of competence	Work life quality and team motivation
Regulatory/Compliance projects	Mainly use in software	
SAFe classroom training	Maintenance	
SAFe self-training	Management features	
Self-organising and self-managing teams	Minimal documentation	
Significant Investment in SAFe	Multiple customers	
Strong leadership	Organizational approach	
Team performance	Organizational culture	

Note. Author's own.

Findings in relation to existing literature and research questions

As presented in Table 10, the key findings (themes) from the interviews for each research question are contrasted with the key literature and an African bank SAFe case (Standard Bank), to assess how SAFe has been adopted, applied and how it has impacted the CIB business. As part of the contextualisation process, the author will review what was learned from existing literature review from chapter two and contrast and compare to the findings of this single case organisation

Table 10: *Linkage of research questions to themes and literature*

	Research Question	Themes linked	Key literature (SLR – Systematic Literature Review; MLR - Multivocal Literature Review)
1	How has SAFe been adopted in the CIB business?	• Adoption of SAFe practices • Coaching and training	SLR -Diebold et al., 2018 SLR - Kalenda et al., 2018 SLR - Putta et al., 2021 SLR - Santos & de Carvalho, 2021 SAFe 5.0. guide – Knaster & Leffington, 2020; Scaled Agile Inc, 2021
2	How has SAFe been applied in the CIB business?	• Adoption of SAFe practices • Ease of implementation • Engagement • Productivity	
3	How has SAFe impacted the CIB Business? (benefits, challenges, lessons learned/ key success factors)	• Adoption of SAFe practices • Alignment with organisational Strategy • Coaching and training • Continuous learning • Ease of implementation • Engagement • Leadership • Productivity • Quality • Time-to-market	SLR - Dikert et al., 2016 SLR - Kalenda et al., 2018 MLR - Putta et al., 2018 SLR - Conboy & Carroll, 2019 SLR - Putta et al., 2021 SLR - Santos & de Carvalho, 2021 Tengstrand et al., 2021 Ciancarini et al., 2022 Standard Bank, South Africa case study (Johnstone and Gill, 2017; Scaled Agile Inc, 2017)

Note. Author's own.

Background information of interview participants

The findings was presented in chapter five Table 5 show that most of the interviewees who had been with the company for more than ten years were more accommodating of a hybrid approach, whereas the two interviewees who had been with the bank for less than five years were more passionate about SAFe because they had been exposed to it from day one. According to Santos & de Carvalho (2021), organisational culture is crucial for large-scale agile transformations, especially when trying to overcome conflicts between traditional and agile cultures. This also speaks to the sustainable agility aspect and how culture plays a central role in large-scale agile transformations and thus achieving business agility (Karvonen et al., 2018).

Furthermore, when looking at the participant's background regarding whether they assumed a technology or business role, FX seemed to have more cohesion between business and technology with the majority of participants noting "more collaboration" between the two; whereas the disconnect between business and technology seemed to be more prominent in the Payments space, with one participant even stating that

"*Technology is managing budgets or requesting budgets. You know that should not be the case, that should be run by business.", participant 11, Payments.*

Both situations are not new to agile transformations with literature reviews (Conboy & Carroll, 2019; Paasivaara, 2017; Putta et al., 2018, 2021; Santos & de Carvalho,

2021),) often noting that there is usually an improvement in organisational and stakeholder management when scaling agile frameworks are implemented, but that it may also cause challenges for these two categories, especially in complex environments like banking (Tengstrand et al., 2021).

Reasons for adoption of SAFe

Table 11 summarises the reasons for adoption as stated by the two executives with equal weighting. This is compared to the study by Putta et al. (2021) that gathered responses on adopting scaling agile frameworks from 204 scaling agile practitioners across all six continents.

Table 11: *Summary of key reasons CIB adopted SAFe in comparison to key systematic literature review*

Research findings	Key findings by Putta et al., 2021 (SAFe only)
SAFe adopted post Separation from parent holding company as part of strategy to strengthen internal capabilities	To remain competitive in the market
SAFe adopted to help build inhouse capabilities rather than buy off-the-shelf software	Helps in dealing with the organisation's pain points/needs & current challenges
SAFe introduced to assist large platform teams solve complex projects	To address growth and complexity
SAFe introduced to assist scale-to-fit	To scale agile to more teams or other units
SAFe introduced to help with structure and standardisation	As it is framework that is widely adopted and that is well defined and clearly documented

Note. Author's own.

As shown in the table above, the findings from the interviews as to why the CIB business decided to implement SAFe offer a similar view to what has been reported across in the literature review on why organisations choose SAFe. The Group IT department at Standard Bank SA also implemented SAFe to deal with its pain points primarily, as well as enhance quality, efficiency, and employee engagement (Johnston et al., 2017; Scaled Agile Inc, 2017b). For this research, the CIB business mainly introduced SAFe as a mechanism to build and strengthen its internal

capabilities in a bid to gain business agility as it expands pan-African. They realised that dealing with large software projects required an approach that would not only assist in scaling across cross-functional, geographically dispersed teams, but also provide standardisation across the business.

What is interesting as quoted in chapter five is that one executive initially claimed that CIB did not implement SAFe in its entirety; rather, they believed it was more about finding a framework or methodology that would work for the business at the time, and SAFe offered some aspects of that. A further interesting observation is that most participants in the survey by Putta et al. (2021) chose SAFe because they thought it was well-documented. However, participants in the CIB business did not report this. Participants, including both executives, said it was terminology heavy, sometimes too layered, and that there was a lack of standardisation.

Research question 1: How has SAFe been adopted in the CIB business?

Research question one examined the level of coaching and training that was provided to the CIB business, as well as the agile methods that had been employed. Two key themes that emerged are “adoption of SAFe practices” and “coaching and training”.

Adoption of SAFe practices (agile methods)

When looking at adoption of Agile or non-Agile methods, all units used the two most popular underlying agile methods for SAFe, Kanban and Scrum, as stated in the literature and by Scaled Agile itself (Diebold et al., 2018; Kalenda et al., 2018; Knaster & Leffingwell, 2020). Table 12 presents a summary of the interviews regarding the practices in comparison to the existing literature. This shows that the CIB business followed the foundations required to successfully implement SAFe. However, what was also picked up from the interviews is that respondents either preferred or were forced to use a more hybrid model, especially as other business units and African subsidiaries of the organisation had not adopted SAFe, with some still employing non-Agile practices.

This is often a challenge of frameworks such as SAFe, as large organisations usually implement them in phases or in certain departments or business units only (Dikert et al., 2016; Kalenda et al., 2018; Putta et al., 2018; Uludag et al., 2018). For example, in this research, only the CIB division is utilising SAFe, similarly in the Standard bank case, only the Group IT department implemented SAFe. However, the CIB business units have been able to customise SAFe to fit their business needs, by using some

aspects that they deem fit, contrary to literature (Denning, 2018; Diebold et al., 2018) that criticised SAFe as being the most inflexible scaling agile framework.

Similarly, regarding Agile methods used, Kanban and a Hybrid model were mentioned the most. However, it was noted that all the participants mentioned elements or artefacts of Scrum but were not aware of it and hence only a third of participants mentioned Scrum as an agile method. Lack of knowledge of agile methods is one of the categories identified by Santos & de Carvalho (2021) and presented at the start of this chapter (Table 9). An analysis of the transformation at Nokia revealed that the primary challenges were also related to the implementation of agile methods (Tengstrand et al., 2021). Additionally, it was observed that SAFe and Agile were used interchangeably, implying confusion of the two and the different levels of knowledge on SAFe and scaling agile frameworks, again another challenge that was picked up by the review done by Putta et al. (2018) and Santos & de Carvalho (2021).

Table 12: *Summary of Agile methods.*

Research findings		**Existing literature** (Diebold et al., 2018; Kalenda et al., 2018; Knaster & Leffingwell, 2020)
CIB business unit	**Agile/ non-Agile methods mentioned**	**Underlying Agile method(s) used by SAFe**
FX Markets	Scrum/ Kanban/ Hybrid/ OKRs/ Flow framework	Scrum / Kanban / Lean/ specific extreme programming practices/ OKRs
Payments	Scrum/ Kanban/ Hybrid/ Flow framework	
TXB	Scrum/ Kanban/ Hybrid/ Waterfall (non-agile) /OKRs/ Flow framework	

Note. Author's own.

Coaching and training

In terms of coaching and training, all participants had undergone a foundation agile training course. All participants had prior experience in agile and the CIB unit was following a different agile methodology prior to SAFe, implying that the unit was not lacking in knowledge or experience like many other companies moving from a traditional, plan-driven approach. As highlighted in Kalenda et al. (2018), this speaks to the company culture and how it may have played a role in the SAFe

implementation, given that the benefits presented by the participants outweighed the challenges.

A slightly different picture is painted when we look at formal SAFe training, although nine of the thirteen participants had undergone SAFe training, there were still some that had not, including one executive. TXB and FX once again had more participants that had undergone a two-three-day classroom SAFe certification training and mentioned having hands-on coaching during the first year of the rollout. Once again, it was noted that SAFe and Agile were used interchangeably when participants referred to coaching, with one executive mentioning that they had a coach that wasn't SAFe certified.

Once again, Payments is the outlier, with only one participant having received training and mentioned having a coach. It is also interesting to note that participants in the Payments space also mentioned that they learn better by doing and therefore classroom training was not preferred. This speaks to the units having different levels of maturity and the lack of standardisation across the business units, challenges stated by most participants.

The feedback provided by the participants on the coaching that was initially provided when SAFe was rolled out was extremely positive. Most spoke about how the coaches were very hands-on to guide the teams in terms of principles and values. More importantly, as quoted in chapter five, participants also mentioned how the coaching was "fit for purpose" and customised to fit the company's culture and ways of working. On-the-job coaching also speaks to one of the identified key success factors that respondents stated in the review by Dikert et al. (2016) presented under the theme 'training and coaching' in Table 8, in the introduction of this chapter.

As presented in chapter five, three of the top lessons learned or key success factors spoke to wishing CIB had invested in more continuous coaching and periodic refresher training. This is corroborated in the reviews done by Dikert et al. (2016) and Santos & de Carvalho (2021) that SAFe either requires a significant amount of investment or there is lack of investment when it comes to coaching and training. Given that majority of participants couldn't remember when they had received their SAFe training, it was concluded by the researcher that the lack of continuous coaching and training has led to some of the implementation challenges specifically stated by the participants. These challenges include the lack of standardisation and clarity when defining roles and responsibilities, or the misconception that SAFe does

not require governance. Experience case studies on SAFe from other financial institutions (Tengstrand et al., 2021) also identify challenges pertaining to coaching and training; especially the need to tailor training to meet the needs of different groups within the organisation. Standard Bank (Scaled Agile Inc, 2017b) reported difficulty in aligning teams due to gaps in training during the scaling transformation.

Research question 2: How has SAFe been applied in the CIB business?

Table 13: *Summary of interview responses compared to SAFe 5.0 guide*

Research findings					SAFe at Porfolio level (Scaled Agile Inc, 2021)		
CIB unit	**Roles interviewed**	**Tooling systems mentioned**	**Events mentioned**	**Artefacts / processes mentioned**	**Roles**	**Events**	**Artefacts**
FX	**SAFe roles** Scrum Master; Product owner; Release train engineer; Solutions analyst **Traditional roles** Business analyst; Project manager; Portfolio manager; Programme manager; Head of PMO	Miro; Microsoft Azure; Conflulence; Microsoft Visio; Gtmhub	PI Planning; sprints; daily scrum; retrospectives; system demo; backlog grooming (refinement) session	Team backlog; epics, features; user stories; lean canvas	Team: Scrum Master Product Owner Agile Teams Agile Release Train (ART): Release Train Engineer System Architect/Engineer Product Management Business Owners Portfolio level: Lean Portfolio Management team Epic Owners Enterprise Architect	Team: Iteration Planning Iteration Execution Iteration Review Retrospective Backlog refinement ART: Program Increment (PI) Planning System Demo Inspect & Adapt (I&A) Scrum of Scrums Product Owner Sync ART Sync Portfolio level: Portfolio Sync Participatory Budgeting Strategic Portfolio Review	Team: User stories PI objectives Iteration goals Team backlog ART: Features Program Epics PI objectives Program Backlog Program Kanban Vision Roadmap Architectural Runway Solution / Solution context Portfolio level: Capabilities Solution Epics Nonfunctional Requirements (NFRs) Solution Backlog
Payments		Microsoft Azure; JIRA; Confluence	PI Planning; sprints; scrum of scrums; daily scrum; retrospectives	Epics, user stories; backlog; lean canvas; Business requirement document (BRD) - *non agile artifact*			
TXB		Miro; Microsoft Azure; Confluence; JIRA; in-house PM tooling system; Gtmhub	PI Planning; sprints; daily scrum; retrospectives; scrum of scrums; portfolio meetings	Lean canvas; user stories; epics (portfolio level); features; backlog; Business requirement document (BRD) - *non agile artifact*; New Product Approval (NPA) process - *non agile process*			

Note. Authors own.

Application of SAFe involved looking at roles, events, artefacts, tooling systems and processes. Four themes emerged on how SAFe is being applied by the CIB business. In order of code groundedness, these themes are ease of implementation (393), adoption of SAFe practices (165), productivity (154), and engagement (50). Only three of these themes will be discussed in this subsection as adoption of SAFe practices is interlinked with research question one.

Table 13 presents a summary of the responses linked to this research question and contrasted to the Scaled Agile Framework itself. It is very evident that the organisation, albeit saying they are operating SAFe at the portfolio level, are in fact utilising SAFe at the essential level (teams' level) and are also not applying majority of the SAFe artefacts or events. Many participants mentioned the customisation aspect, especially that SAFe cannot be applied a hundred percent, and this comparison confirms it. A very limited amount of literature exists regarding how SAFe artefacts, roles, and processes are being applied in organisations, with Kalenda et al. (2018) finding only eight common practices in their study of SAFe and

LeSS. There is no comparison on tooling systems used as the author has not found any existing academic literature that has examined this element and thus offers a good contribution to existing literature on scaling agile frameworks.

Ease of implementation

One of the key findings under this theme was that most participants felt that they were juggling multiple roles or performing tasks that were not part of their job description. Further confirmation of this was provided when one executive mentioned that they "*didn't change everyone's role profiles and descriptions of what they do*". This has been noted across literature as one of the challenges of SAFe as it is heavy and complex, with many roles, guidelines, and artefacts (Digital.ai Software Inc., 2021; Ebert & Paasivaara, 2017).

Looking at how practices are applied, TXB, the unit that was first to adopt SAFe five years ago, reported the use of the most hybrid mix of agile or SAFe and non-agile/SAFe practices. The flexible nature of how the CIB units have adapted SAFe and customised it to work for them contradicts much of the literature that found SAFe to be inflexible and semi-rigid (Conboy & Carroll, 2019; Ebert & Paasivaara, 2017; Putta et al., 2018). However, it was noted that SAFe is not as flexible or effective with the different types of projects. Participants in TXB stated that most times, when it comes to regulatory or compliance projects, "the iterative agile methods didn't work" or were not as effective due to regulatory protocols mandated to be followed; thus, forcing teams to revert to a plan-driven (Waterfall) approach or combine the two to work in a hybrid manner. Lean-Agile practices appear to be in direct opposition to traditional compliance and regulatory processes at first glance, as they have conflicting goals however Scaled Agile incorporation addressed this in their version 4.6 white paper (Scaled Agile Inc, 2017a), emphasising that SAFe has the necessary features to meet the requirements of compliance and regulation. The review by Santos & de Carvalho (2021) was one of the only few to note this challenge of regulatory-compliance projects (Table 9).

Geographically dispersed teams, a key theme from the meta-analysis done by Dikert et al. (2016) was another challenge mentioned by participants across all three business units. The fact that technology teams are primarily based in Cape Town meant that there was need for frequent travel between Johannesburg and Cape Town for PI Planning. Participants were quoted as saying that planning for these quarterly ceremonies was complicated as it sometimes involved more than 200

people prior to the coronavirus pandemic. Moreover, since the organisation is a pan-African bank, the teams also have to interact with African subsidiaries (ARO), a theme that was particularly prevalent among the Payment's participants. The CIB units found a way to deal with this challenge differently. FX still have the central PI planning events which are now conducted virtually, whereas TXB and Payments run smaller PI events within teams rather than centrally, which participants in TXB described as 'naturally evolving' into self-organising teams. Team autonomy and team empowerment have been recorded as major benefits of SAFe and other large-scale agile transformations (Kalenda et al., 2018; Knaster & Leffingwell, 2020; Paasivaara, 2017; Putta et al., 2018). This leads to the next subsection, in which the themes of productivity and engagement have been combined.

Productivity and engagement

The themes of productivity and engagement are where the most benefits of SAFe were felt in the CIB business, according to the interview participants. The most noted benefit as was presented in Figure 20 in chapter five was that participants thought there was more transparency now than before the implementation of SAFe. Transparency is one of the core values of SAFe (Knaster & Leffingwell, 2020; Scaled Agile Inc, 2021b), and a theme that has been stated in numerous literature as both a benefit and a key success factor (Dikert et al., 2016; Putta et al., 2018; Santos & de Carvalho, 2021). Furthermore, all participants stated that there had been more collaboration within their immediate teams as well as cross functional teams, again, another key benefit stated in literature (Dikert et al., 2016; Putta et al., 2018; Santos & de Carvalho, 2021), and one that has encouraged autonomy and empowerment of teams.

Research question 3: How has SAFe impacted the CIB business?

As all ten themes apply to the third research question, only the top three themes will be discussed, based on the weighting of codes assigned. These themes in order of code groundedness are ease of implementation (393), adoption of SAFe practices (165) and productivity (154).

Ease of implementation

The key highlights were: (1) that there are varying levels of SAFe maturity, not only across the CIB division but also within different agile teams or value streams of a business unit. Chapter 5 highlighted how the case organisation adopted SAFe three to five years ago across three business units. As the organisation division is still

adopting SAFe, the author concludes that they are less mature in their SAFe adoption. As a result, the noted varying and lack of maturity across the business units was reflected in the identified implementation challenges.

Moreover, TXB, the unit that was the first to adopt SAFe, seemed to have naturally evolved to self-organising and self-managing teams, one of the key concepts of SAFe (Dikert et al., 2016; Putta et al., 2018). FX appeared to closely adhere to SAFe, while Payments appeared to partially adhere to the framework. Interestingly, participants identified lack of standardisation as their greatest challenge, which is interconnected with the teams being at different levels of maturity as well as the variety of management or leadership styles within CIB. Dikert et al. (2016) found that different approaches arise in multi-team environments during their study of 42 organisations in various industries.

The second key highlight is the lack of alignment between technology and business, especially when it came to PI planning outcomes for the quarter. Participants noted that although they had been improvements in terms of collaboration, there was still more work that needed to be done on alignment of outcomes between the two. This was especially highlighted in the Payments space which is unsurprising as they were the only unit to report more challenges than benefits during the interviews (Figure 18). One Payments participant was quoted as stating:

> "*You still get business still pushing very hard in terms of what are your deliverables, what are your end dates and all of that. So, I do think it's still a journey that everyone still has to go through*", participant 13, Payments.

Adoption of SAFe practices

In terms of adoption of SAFe practices, as has been described above and presented in chapter 5, the results have been mixed and varied across the three units. There seems to be flexibility in choosing which SAFe practices to follow, as well as customisation to meet the needs of individual teams. Although this seemed to have worked for CIB, it has also led to confusion in roles and responsibilities, challenges in standardisation, and conformance with a hybrid way of working. Publications that launched frameworks such as SAFe provide an excellent explanation of the fundamental basics. Once they are applied outside the context of a specific framework, however, many tend to find that they quickly lose their usefulness and become confusing. Academic publications (Conboy & Carroll, 2019; Dikert et al.,

2016; Putta et al., 2018; Tengstrand et al., 2021) have reported inconsistent meanings and interpretations of SAFe.

One of the more concerning findings was that only two participants, one of whom was an executive, discussed metrics or assessment. It has been noted by many that there is no assessment model that provides guidance on critical decisions regarding the adoption of specific scaling agile frameworks (Conboy & Carroll, 2019; Turetken et al., 2017). Accordingly, CIB has recently started implementing the flow framework, an agile methodology that measures the effectiveness of agile implementation. It also provides better alignment between the business, finance, and technology teams.

Productivity

The majority of participants also stated that PI Planning has made a significant positive impact or worked well and that they are seeing more ownership and accountability, as well as more autonomy. This has translated into higher levels of productivity with participants mentioning quicker releases to the market, less refactoring, and quicker fixes to post-production issues; similar to what has been highlighted in the literature review (Putta et al., 2018; Santos & de Carvalho, 2021) as well as the Standard bank case (Scaled Agile Inc, 2017b). Interestingly, some participants found that this shared responsibility was counterproductive since there was still a hierarchy on who made the final decision, with one participant stating:

"And then within the value stream, the decision making is shared. The responsibility is shared. And at the same time, because it's shared, then you've got too many cooks in the kitchen. Everybody wants to give input into a decision and then there is an ultimate accountable person, which is usually the product owner … So there's there's a shared responsibility, but then within that also a one man dependency", participant 4.

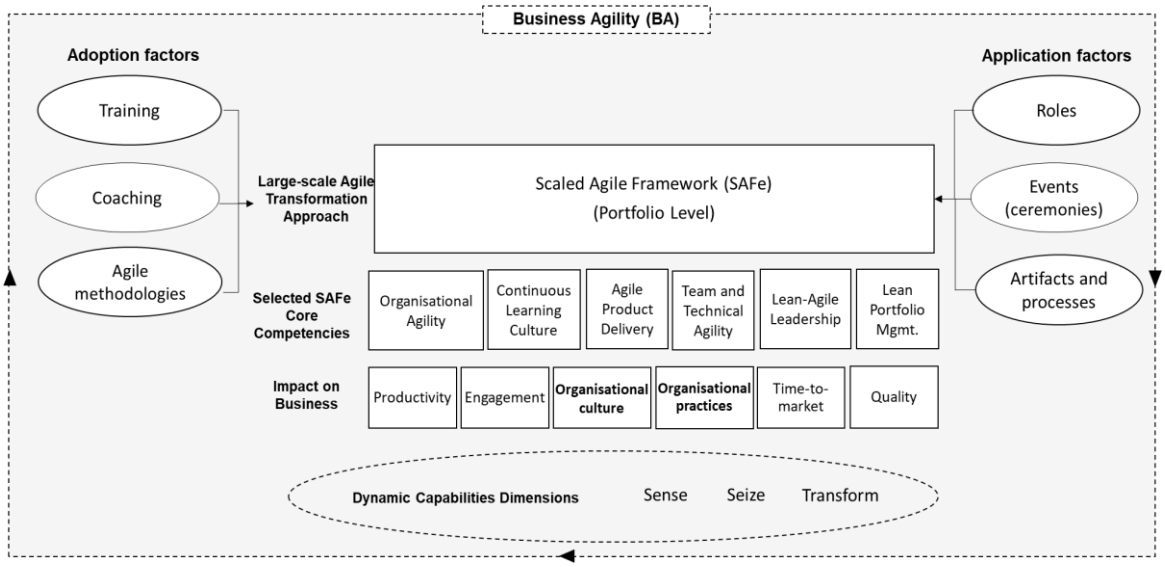
Conclusion

In conclusion, SAFe's core values are alignment, program execution, quality, and transparency (Scaled Agile Inc, 2021b). Many of the participants mentioned that they had gained these benefits as a result of adopting SAFe with special emphasis on transparency and alignment. Furthermore, SAFe assesses business agility based on its seven core competencies, six of which are relevant to this paper. These competencies are lean-agile leadership, team and technical agility, agile product delivery, organisational agility, lean portfolio management and a continuous learning culture. It is evident from the data provided that the categories and themes that

emerged address each of these competencies in both a negative and positive manner.

The conceptual model has thus been updated to reflect two key additional factors that impacted the business because of the SAFe implementation. These factors are organisational culture and organisational practices (Figure 24). The two biggest themes of this study were ‘adoption of SAFe practices’ and ‘ease of implementation’, of which code groundedness for both was rooted in challenges in adapting to new ways of working, lack of standardisation and the need for customisation of SAFe. A company's culture is expressed through the practices it employs. As a result, the rate or lack of adoption of SAFe practices speaks to the organisation's embedded Agile culture.

Figure 24: *Updated conceptual model*



Note. Author’s own.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

Introduction

In response to the success of agile methods for smaller teams, large organisations have begun to implement them at a large scale by means of scaling agile frameworks to achieve agility. While the number of organisations using these frameworks continues to grow, there is limited academic literature that examines these frameworks in depth. This study aimed to fill this gap by providing a case study regarding the adoption, application, and impact of SAFe across three business units in a corporate and investment banking division of a top South African financial services provider.

Principal conclusions

Research question 1: How has SAFe been adopted in the CIB business?

Overall, the key conclusion for this research question is that SAFe requires investment in continuous training, coaching and workshops to facilitate adoption and guide participants to understand new practices and responsibilities. Given that there are different approaches and methods used, both agile and non-agile, across the entire organisation, there is need for customisation of SAFe in order to follow a hybrid approach. Furthermore, it is important to involve employees as early in the change process as possible to increase knowledge sharing, alignment (Kalenda et al., 2018) and to minimise resistance to change across different teams.

Research question 2: How has SAFe been applied in the CIB business?

Based on the SAFe application factors, the following three key findings emerged. As a first point, even though the PI Planning event has been successful for the CIB business in terms of fostering collaboration, alignment and transparency, the cadence and format of this event continues to be a point of discussion. Each business unit has adopted a different cadence and a centralised or decentralised approach to the event.

Secondly, the application of artefacts, processes, and tooling varied between the three units, indicating both an absence of standardisation within the CIB division as well as a high degree of flexibility that is allowed. Both are an indication of the leadership styles that are within the business. Furthermore, most of the artefacts and events mentioned by the participants were those at team level rather than at a portfolio level.

Lastly, due to the organisational structure, many employees appear to be juggling multiple roles or performing tasks that are not part of their job descriptions. In addition to slowing down processes, many interviewees indicated that this situation created confusion regarding accountability and ownership.

Research question 3: How has SAFe impacted the CIB business?

The key conclusion is that continuous learning and improvement are critical, particularly since SAFe and agile methods seem to be evolving every few years. It is important that the organisation has a strong culture of leadership that understands lean-agile principles and the need to customise SAFe or any large-scale agile framework to meet the organisation's specific environment and needs.

Theoretical contribution

The purpose of this study was to examine how SAFe is adopted and applied as well as its benefits and challenges within a large South African bank. Majority of the findings have substantial overlap with existing literature regarding the benefits and challenges of implementing a SAFe agile transformation, thus adding to the limited literature that is available on SAFe and large-scale agile implementations. As a result of this research, a gap has been filled in the existing literature on scaling agile frameworks, in particular, SAFe. Furthermore, this study provided new insights into what practices are adopted and how they are applied within teams, as well as what types of tooling systems can be utilised in SAFe agile transformations. Accordingly, the author considers the findings to be relevant to other banks, in particular pan-African banks, who are preparing for a SAFe transformation journey. Providing new insights for research agendas on large-scale agile approaches is a practical contribution to the field.

Implications for management and other relevant stakeholders

As a result of the presented findings, other large organisations can gain valuable insights of the agile practices that can be applied when adopting the framework. Prior to maximising utilisation, large-scale Agile transformations require coaching and training, strong leadership, and holistic organisational cultural support. In other words, Agile transformations require a significant investment because training is costly, and the time spent collaborating does not directly contribute to revenue generation. Although the single organisation used for this research is still in the early stages of its agile journey, it has reported more benefits than challenges and has received innovation awards (see Appendix E) after implementing SAFe, which

means that if the above factors are well embedded at full maturity, the benefits will greatly outweigh the costs incurred.

This research as well as existing literature (Turetken et al., 2017) infer that there is currently no well-structured gradual approach to establishing and more importantly assessing the SAFe implementation journey. To measure the progress of the project, management should establish a uniform model before and during the adoption of SAFe, as this will be highly beneficial.

In conclusion, the interviews emphasised the need of a hybrid approach and customisation of SAFe. It is recommended that management seek a balance between agile and plan-driven methods and ensure that a SAFe agile transformation is customised to fit the organisation's needs.

Limitations of the research

This study examined a division of a pan-African financial services provider that operates software-intensive projects. One limitation of this study would be the inability to apply its findings to other industries, particularly those that do not have a high level of software dependency. Since the research conducted was an exploratory single case study, additional empirical research is needed.

The second limitation is that, because the questions regarding the application (artefacts, tooling, events) were open-ended, some artefacts or practices may have been overlooked, as participants may have forgotten to mention them. Due to the open-ended nature of the exercise, participants may have interchanged the terms "Agile" and "SAFe", which may have impacted the data findings.

Another limitation is that due to the nature of a qualitative case study and the limited number of participants, results may not be generalisable to the entire African corporate population, especially because the South African economy and organisational culture differ greatly from majority of Africa.

Additionally, the researcher had a limited timeframe within which to complete this academic paper. For a more comprehensive investigation of adoption and application, a longitudinal study would have been the most appropriate approach.

Lastly, this researcher is experienced in the field of project management, including the management of Agile and hybrid project management offices. One limitation of qualitative research is that it is subjective in nature, making it difficult for objectivity to be maintained.

Suggestions for future research

In light of the findings of this study, several implications for future practice can be drawn. To develop scientific evidence, further research is required in order to validate and expand upon the findings presented. This is particularly true when investigating which SAFe or agile practices facilitate transitions more efficiently. Additionally, it is important to clarify which practices have contributed to the realisation of benefits and challenges, as well as how this relates to the financial statements of the company. Finally, it is key that we understand how to quantify and define the success criteria for a SAFe implementation journey. The author, therefore, recommends a similar longitudinal study be conducted with multiple case studies across different African organisations in order to provide a more robust empirical analysis.

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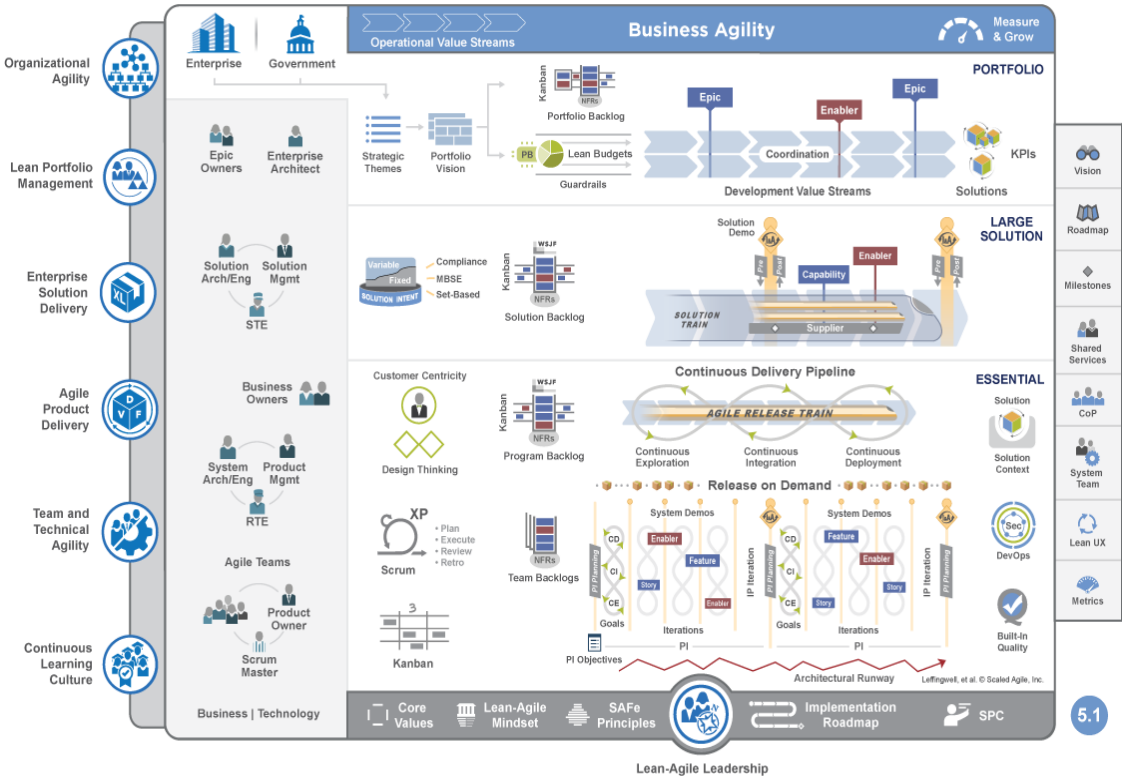
APPENDICES

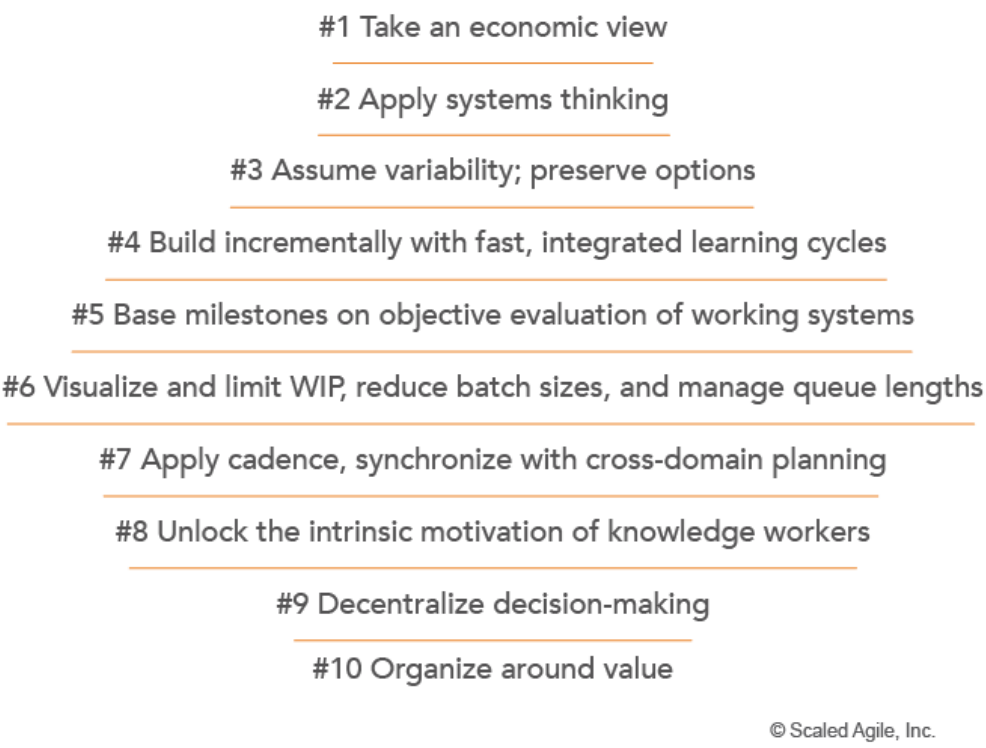
Appendix A: SAFe overview

Figure A 1: *Overview of the SAFe 5 framework for Lean Enterprises*



Note. Retrieved from https://www.scaledagileframework.com/safe-for-lean-enterprises/. Copyright 2021 by Scaled Agile, Inc.

Figure A 2: *SAFe Lean-Agile Principles*



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Appendix B: Interview guide

Gordon Institute of Business Science
University of Pretoria

Hi <<participant name>> How are you? I am an MBA student at the University of Pretoria's Gordon Institute of Business Science (GIBS) conducting an exploratory study on the adoption and application of the scaled agile framework (SAFe) in large organisations. The aim of the interview is to understand the SAFe implementation journey particularly what impact, if any, it has had on the business. Interviews are recorded, I will start off by getting through the housekeeping to ensure I have your consent and then proceed to start the interview.
Consensual Housekeeping ● The interview will be semi-structured in nature. The first 6 questions are quick background questions whereas the latter half require more discussion. ● The interview shouldn't last longer than 30 - 45 minutes and all interviews are confidential, the final data will contain no personal identifiers. ● As per the consent form, I am required to inform you that your participation is voluntary, and you can withdraw at any time without penalties. Are you happy to proceed?

For all participants (excl. executive)

Background questions
1. What is your current role title?
2. How long have you been in this role?
3. How long have you been working with the company?
4. Have you completed any Agile training or SAFe certification training?
5. Was the training provided by your current employer/ former employer/ self-study?
Interview questions
6. Are there any Agile Release Trains (ARTs) in your value stream/unit?

(Group of Agile teams that incrementally develop, deliver, and operate a value stream alongside other stakeholders.)
7. What is your experience of the SAFe coaching and training that has been provided to you?
8. How have you incorporated SAFe roles, artefacts, and processes into your value stream or unit? *e.g., lean canvas, Release train engineers (RTE), PO, BO, Scrum master*
9. The Programme Increment (PI) planning process is crucial to SAFe. Are you familiar with the term, and if so, what has been your experience of this event?
10. One of the characteristics of the SAFe program increments or iterations is that it is longer than most (~ 8 weeks). What impact has this had on your team's culture and ways of working?
11. What has been your experience of the SAFe agile ways of working in CIB? *We're talking about the main challenges, what has worked well / success factors & lessons learned*

Note. Adapted from "Investigating SAFe implementation in Railway industry: A case study at Alstom DC Sweden", by B, Ahmad, 2021; and "Investigating the Adoption and Application of Large-Scale Scrum at a German Automobile Manufacturer", by O. Uludag, M Keehaus, N. Dreymann, N. Kabelin and F. Matthes, 2019, *Proceedings - 2019 ACM/IEEE 14th International Conference on Global Software Engineering, ICGSE 2019*, pp. 22–29. https://doi.org/10.1109/ICGSE.2019.00019.

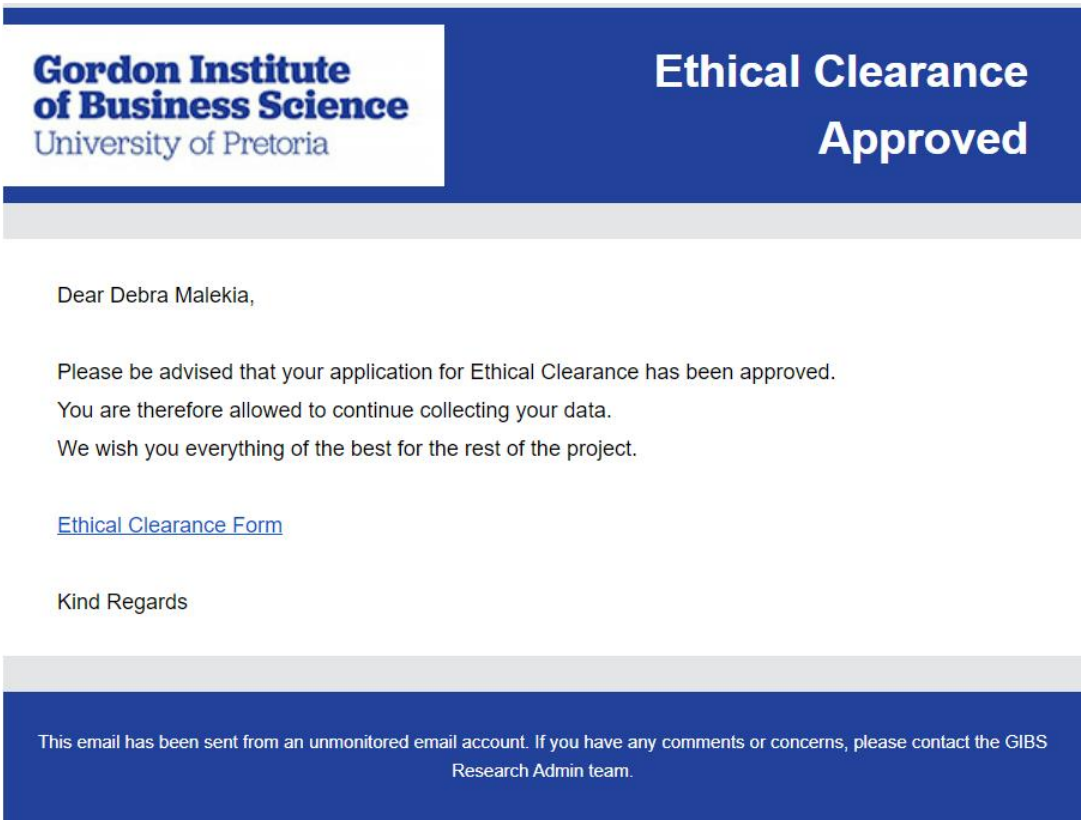
For executives

Background questions
1. What is your current role title?
2. How long have you been in this role?
3. How long have you been working with the company?
4. Have you completed any Agile training or SAFe certification training?
5. Was the training provided by your current employer/ former company/ self-funded?
Interview questions
6. What motivated the business to consider implementing SAFe?

7. What approach was taken to implement SAFe across the business?
8. What is your experience of the SAFe coaching and training that has been provided to you as a leader?
9. Are there any Agile Release Trains (ARTs) in your value stream/unit? 10. *(Group of Agile teams that incrementally develop, deliver, and operate a value stream alongside other stakeholders.)*
11. The Programme Increment (PI) planning process is crucial to SAFe. Are you familiar with the term, and if so, what has been your experience of this event?
12. What has been your experience of the SAFe agile ways of working in CIB? *We're talking about the main challenges, success factors, lessons learned*

Note. Adapted from "Investigating SAFe implementation in Railway industry: A case study at Alstom DC Sweden", by B, Ahmad, 2021; and "Investigating the Adoption and "Application of Large-Scale Scrum at a German Automobile Manufacturer", by O. Uludag, M Keehaus, N. Dreymann, N. Kabelin and F. Matthes, 2019, *Proceedings - 2019 ACM/IEEE 14th International Conference on Global Software Engineering, ICGSE 2019*, pp. 22–29. https://doi.org/10.1109/ICGSE.2019.00019.

Appendix C: Ethical clearance approval



Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear Debra Malekia,

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.

Appendix D: Informed consent letter

Gordon Institute of Business Science
University of Pretoria

Informed consent letter

I am currently a student at the University of Pretoria's Gordon Institute of Business Science and completing my research in fulfilment of an MBA.

I am conducting research to understand the adoption and application of the Scaled Agile Framework (SAFe) as a mechanism for scaling agility in large organisations.

The interview is expected to last about forty-five to sixty minutes and will help me understand the opportunities and challenges of implementing SAFe in the South African and to some extent, African banking industry The study aims to increase literature on scaling agility in large organisations and provide a foundation for organisations to assess how to scale enterprise wide.

Your participation is voluntary, and you can withdraw at any time without penalty. All data will be reported and stored without identifiers. If you have any concerns, please contact my supervisor or me. Our details are provided below.

Researcher Name: Debra Malekia
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Phone: +27 63 608 7415

Research Supervisor: Hugh Myres
Email: Myresh@gibs.co.za
Phone: +27 83 302 3802

Signature of participant: _____
Date: _____

Signature of researcher: _____
Date: _____

Appendix E: Final coding scheme

Theme 1: Adoption of SAFe practices		
Codes	**Grounded**	**Categories**
○ Kanban framework used	10	Adoption of Agile framework or methodology
○ Hybrid framework used (agile/waterfall)	9	
● lesson learnt - Kanban preferred as limits WIP	3	
○ CIB was already using Agile methodology prior to SAFe	2	
○ Flow management	2	
● Lessons learnt - "fail-fast" approach	2	
○ SAFe is just a conglomeration of a different agile methods	2	
○ scrum of scrums (SoS) used	1	
○ Spotify framework tried and failed prior to SAFe	1	
○ Adoption - Has never incorporated SAFe processes and artefacts	1	Adoption of non-Agile framework or methodology
○ adoption - no longer using SAFe due to nature of project	1	
○ Agile prior to SAFe but it felt more like waterfall	1	
○ waterfall methodology used	1	
○ adoption - SAFe terminology adopted	4	Adoption of SAFe level or terminology
○ SAFe applied at a portfolio level	3	
○ SAFe applied at a team's level	3	
● challenge - quarterly central PI Planning contradicts agile principle as execution needs change more frequently	3	Contradictory to Agile principles
○ Teams confused on SAFe processes - find them contradictory	3	
○ Adoption - Pockets of SAFe adopted as seen fit for purpose rather than entire framework	14	Customisation of SAFe framework
○ Not possible to utilise 100% SAFe - needs to be customised to fit organisational needs	11	
○ Flexibility on types of tools, processes & artefacts used	5	
● Challenge - feels watered down/blended SAFe applied	3	
○ FX Markets - not all teams adopted the same processes	1	
○ Not utilising some SAFe prescribed metrics	1	
○ SAFe applied differently across different units/value streams	16	Lack of standardisation
○ lack of SAFe standardisation across CIB Division	12	
● Lesson learned - need to have standardised processes & WoW across entire Org	3	

○ no standardization on training across portfolios	2	
● Application - not strictly using the SAFe constructs.	1	
○ PI Planning no longer quarterly or on a regular cadence	8	Non-uniformity on PI Planning cadence
○ Application - Flexibility on PI planning cadence	4	
● Challenge - PI Planning frequency may not be sufficient for business needs	4	
● adoption - Grown out of using SAFe	1	Not using SAFe
● Tech. Exec does not think the company really implemented SAFe	1	
○ No longer have a centralised portfolio PI planning - TXB	6	PI Planning importance decreasing
○ PI planning become less important in TXB & Payments	4	
○ PI Planning process has evolved - TXB	2	
○ quarterly PI Planning sessions	12	Quarterly PI Planning sessions
○ application - pre-covid days - PI Planning offsite for a full day	2	
Theme 2: Alignment with organisational Strategy		
○ Better alignment to strategy	7	Better alignment to strategy
○ Better understanding of strategy from Tech personnel	7	
○ Bridging of strategy to tactical delivery	5	
● challenge - companies always cut training/coaching budget as quick-win	2	Misalignment with organisational stakeholder goals
● Challenges - banks are too ROI focused, inhibits experimentation & innovation	2	
● challenge - companies always cut admin roles as quick-win - scrum master seen as admin by some	1	
● SAFe adopted post Separation from parent holding company as part of strategy to build internal capabilities	1	Reasons for SAFe implementation
● SAFe adopted to help build inhouse capabilities rather than buy off shelf software	1	
● SAFe introduced to assist large platform teams solve complex projects	1	
● SAFe introduced to assist scale-to-fit	1	
● SAFe introduced to help with structure and standardisation	1	
Theme 3: Coaching and training		
○ Feels never really had Agile coaches	1	Agile coaches
○ Had agile coach - not SAFe certified	1	
○ adoption - some team members certified as trainers	1	In-house SAFe trainers
○ training a team member to be a coach is one of the KSF	1	

● Lesson learnt - leadership need to go on SAFe training	1	Leadership training
○ informal training provided	2	No formal training
○ adoption - Exec did not find SAFe training necessary	1	
● Challenge - not everyone in CIB was trained or uses SAFe	1	
○ Adoption - had a coach /full time coach no longer there	8	On-the-job coaching
○ Lots of hand-holding during coaching to ensure SAFe principles understood	6	
○ coaching based on organisational needs rather than framework	2	
○ adoption - prefers practical than theoretical training	1	
○ coaches initially helped with PI Planning Sessions	1	
○ Also certified in other agile frameworks	3	Prior Agile training/certification
○ Had previous agile training	1	
○ no refresher training provided	4	Refresher training requirement
○ SAFe training was completed a while ago	4	
○ KSF - keep investing in refresher training and coaches	2	
● Lesson learnt - more training required for teams to enable delivery consistency	2	
○ adoption - feels classroom training was adequate but refresher training should have been provided	1	
○ Completed SAFe training	8	SAFe classroom training
○ Training provided by employer	7	
○ Adoption - Feels adequate training provided	5	
○ Not completed SAFe training	4	
○ Adoption - 2–5-day training programme	2	
○ SAFe classroom training not as effective	1	
○ Training founded good foundation on SAFe ceremonies and practices	1	
○ SAFe principles self-taught	3	SAFe self-training
○ training content is intuitive	2	
○ Adoption - Feels self-training was sufficient	1	
○ Made use of SAFe website free content	1	
Theme 4: Continuous learning		
○ SAFe implementation journey is one of continuous improvement/evolution	16	Emphasis on continuous improvement and evolution
○ continuous learning process	14	
○ agile is about evolving ways of work	2	
○ Clients / people's needs are continually evolving	1	
○ increased agility and resilience	1	
○ SAFe framework has evolved	1	

Theme 5: Ease of Implementation		
● Challenge - Mindset shift/ culture/ WoW change	11	A shift in culture / Adapting to a new mindset
● Challenge - teams reverting to default behaviour/old ways of working	5	
○ For MNCs different countries have different cultures thus need to adapt to environment	2	
○ increased attrition rate due to changing ways of working	2	
○ fundamental change to ways of working	1	
○ SAFe lean-agile mindset shift generally accepted	1	
○ Use of BRD - non-SAFe/Agile artifact	3	Application of non-SAFe artefacts, ceremonies, tools, and processes
○ Adoption - feels juggling multiple roles / role not as per JD	10	
○ Retrospective event applied	10	
○ application - TXB used to have quarterly portfolio meetings before PI	7	
○ features used	7	
○ Microsoft Azure used as a tooling system	7	
○ sprint planning used	7	
○ use of team backlog	7	
○ Adoption - ART(s) present in Value stream/Unit	6	
○ user story used	6	
○ scrum master - facilitates PI planning, delivery and adherence to governance	5	
○ artefact - lean canvas used as a tool strategic investment management	4	
○ ARTs mainly owned by Tech.	4	
● Challenge - Business has not maintained / reinforced SAFe disciplines & practices	4	
● challenge - roles & responsibilities not reassessed/reclassified	4	
○ Miro tooling system used for collaboration	4	
○ smaller increments make it easier to respond more quickly to incidents/defects	4	
○ some SAFe roles used	4	
○ Adoption - not (officially) aware of ART(s) in Value stream/Unit	3	
○ backlog grooming or refinement event	3	
● Challenge - hard to ascertain how small stories and features should be	3	
○ Confluence used as a tooling system	3	
○ demo event applied	3	
○ epics used	3	
○ JIRA used as a tooling system	3	
○ Objective and Key Results (OKRs) on Gtmhub used at a portfolio level	3	
○ Roles or role titles not important	3	

○ travelled to Cape Town for PI Planning quarterly	3	Application of non-SAFe artefacts, ceremonies, tools, and processes
○ Use of OKRs via Gtmhub makes process transparent	3	
○ 6–8-week increments - TXB	2	
● Challenge - confusion between Scrum master and product owner roles - some are doing both	2	
● challenge - Scrum master role has seen as becoming more admin less facilitator/coach	2	
● Challenge - still difficult to explain missing committed targets	2	
● challenge - too many artefacts and tooling systems	2	
○ DevOps practice domain being used	2	
○ Feels full adhere hence to SAFe is for less agile mature organisations	2	
○ iteration planning used	2	
● lean portfolio management still a challenge	2	
○ longer (6-8 week) increments have no impact on team structure	2	
○ Scrum framework used	2	
○ some teams do not have a scrum master or someone who does preparation for PI Planning	2	
○ some teams do not have a scrum master or someone who understands the SAFe or Agile principles and mindset	2	
● Strategic investment management process still a challenge	2	
○ 12–13-week increments - NOVO FX	1	
○ Application - 80 - 100 people who are doing the PI planning	1	
○ Application - agile ceremonies standardised across TXB	1	
○ Application - string mapping used in PI	1	
○ artefacts shared across teams (cross-functional)	1	
○ business case template renamed but format remained the same initially	1	
● Challenge - current funding process does not cater for smaller pieces of work	1	
● challenge - How to handle business expectations for system demos when developers are still working on code	1	
● Challenge - lost rigor of properly documenting	1	
● challenge - only one central PO - should be multiple	1	
● Challenge - SAFe did not explicitly help with non-functional requirements	1	
○ company role titles retained instead of SAFe roles	1	

○ daily stand-ups (TXB)	1	Application of non-SAFe artefacts, ceremonies, tools, and processes
○ in-house PM tooling system used	1	
● Lesson learned - how to prioritise non-feature work - use of Tasktop and Project2Product framework	1	
○ Never attended a PI planning session	1	
○ PMs have to be fluent with multiple systems as dependency on the team they are delivering for	1	
○ PowerPoint used to communicate priorities	1	
○ some mature self-managing teams feel they do not need coach or scrum master - removed the role	1	
○ systems - started with Azure then discontinued	1	
○ Teams / Leadership at different maturity levels	11	Business units at different maturity levels
○ Experience - feels Org. not mature yet	5	
○ Change management key in implementing SAFe	1	Change Management
○ implementation needs more awareness	1	
○ SAFe is hard to implement	6	Difficult to implement
● Challenge - many dynamics that can affect the ways of work	2	
○ SAFe framework is huge - lots to cover	2	
● Challenge - Agile ways difficult for some Regulatory/Compliance projects	4	Regulatory/Compliance projects
● Challenge - as banking is highly regulated, releasing MVPs sometimes not feasible	1	
○ Compliance projects still use traditional / waterfall approach	1	
○ SAFe requires a depth of understanding to implement successfully	6	Extensive planning and preparation required
○ PI Planning requires a lot of preparation	5	
○ PI Planning is extremely layered	4	
○ SAFe requires ongoing discipline	3	
● challenge - a big misconception is that SAFe does not require governance	6	Efficiency of governance processes
○ SAFe has streamlined burdensome governance processes	6	
● Lean budgeting governance process rigidness still a challenge	5	
○ risk reduction for release mgmt. process	1	
● Challenge - value stream setup run risk of bleeding (funding wastage)	1	Inadequate structures
● Challenge - value stream setup run risk of some members being idle during discovery phase	1	

● Challenge - value streams not structured properly	1	
● Challenge - for big integrated complex environments PI Planning is difficult as it will be >500 people	1	
○ PI Planning effectiveness varies across teams	1	
● challenge - better alignment needed between business and tech	5	Lack of alignment between technology and business
● Challenge - Disconnect between Tech and business on outcomes	5	
○ Business/product team were not part of planning process prior to SAFe	3	
● Challenge - unrealistic expectations from business/product management	3	
○ Feels Tech is more agile than business	3	
○ SAFe mainly followed by Tech in Payments	3	
● Challenge - Disconnect between Tech and business on prioritisation of non-feature work	2	
● Challenge - Disconnect between Tech and business on quarterly PI Planning cadence	2	
● Challenge - frustration with Tech - Payments	2	
○ Disconnect between Tech and business prior to SAFe	2	
○ Application - Doesn't attend PI Planning, tech partners do - payments	1	
● Challenge - feels Tech. control budgets when it should be business	1	
○ PI Planning owned by Tech when it should be Business - Payments	1	
○ Projects Tech-driven prior to SAFe	1	
○ Rest of the bank is still using traditional project management practices which impact/slow down agile ways of working	4	Misalignment with other non-Agile units within organisation
● challenge - as SAFe not adopted across units/bank - teams had different WoWs (ceremonies, practices, processes)	3	
● Challenge - bank is an integrated complicated complex org - some divisions adopted SAFe, others did not	2	
● challenge - countries not on SAFe which causes confusion on outcomes	2	
● Challenge of having subsidiaries not on SAFe/Agile	2	
● Challenge - core banking team still very much Waterfall	1	
○ face-two-face still considered important in African subsidiaries	1	
○ adoption/ embedment takes time	7	Overall SAFe embedment
○ SAFe implementation is a transition / happened in phases across CIB	6	

○ Introduction of SAFe successful to some extent	3	
○ Application - Change SAFe brought is the pull system instead of push	2	
○ created sustainable ways of working	2	
○ KSF - Top-down SAFe implementation approach and across entire organisation	2	
○ SAFe adopted 4 - 5 years ago	2	
○ SAFe implementation approach used federated model	2	
○ SAFe provided more flexibility in product development and deployment	2	
○ SAFe started with TXB	2	
○ Tech team originally was based in Cape Town	2	
○ TXB - Business followed SAFe practices by the book initially before evolving to fit org needs	2	
● adoption - strategy was to start small then expand	1	
○ Application - executive never really embraced SAFe 100%	1	
● Doesn't feel there are any challenges in FX Digital currently	1	
○ Feels org is on higher level of agile maturity now	1	
● lesson learned - need to be fully on agile and not WAgile	1	
● lesson learned - need to involve countries to SAFe/Agile	1	
● lesson learnt - for Mature agile orgs, SAFe does not necessarily add much value	1	
● Lesson learnt - SAFe is a good starting point	1	
○ SAFe is controlled chaos	1	
○ Worked well - Consistency with ceremonies and practices	1	
○ worked well - SAFe has proven to save unit money	1	
○ Been with the company >5 years	5	Participant length with Company
○ Been with the company >20 years	4	
○ Been with the company <5 years	2	
○ Been with the company >10 years	2	
● Lesson learned - Org invested heavily on it but more work needed to embed SAFe roles	3	Significant Investment in SAFe
○ significant investment made by Org on SAFe	2	
Theme 6: Engagement		
○ Better communication and collaboration across cross-functional teams	15	Better cross-functional collaboration
○ Better collaborative rship between Tech and Business	7	

○ FX Markets - fairly good at getting alignment across teams	2	
○ KSF - encourage more cross functional collaboration and knowledge sharing	2	
○ Allowed better collaboration & feedback from customers/clients	3	Customer collaboration
○ building more client/customer driven products	3	
○ Better collaboration and engagement across teams	11	PI Planning has improved collaboration and engagement across teams
○ PI Planning helps build team relationships	5	
○ horse-trading and negotiations happening upfront	2	
Theme 7: Leadership		
○ better interaction with executives and product management	1	Better collaboration with leadership
○ direct engagement with leadership	1	
○ strong leadership is key	10	Strong leadership is key
○ Hands-on leadership who are involved in the process	7	
○ Buy-in from leadership is important	3	
○ benefits - less command and control	2	
○ KSF - having supportive & engaged Business stakeholders	2	
● leaders letting go of command & control is a challenge	*2*	
○ Leaders need to be open to bad news / failure	2	
● Challenge - disconnect at executive level filters down impacting how things should be done	1	
○ good relationships between executives is key to ensure buy-in	1	
○ leadership understand strategy	1	
○ product owner ultimate decision maker	1	
Theme 8: Productivity		
○ More transparency	19	Enhanced transparency
○ some governance processes not agile hence a hinderance	3	Efficiency of governance processes
○ streamlined governance has accelerated deployment process	3	
● challenge - technical solutions / requirements not documented properly	2	
○ Lax governance increases delay in delivering value to client	2	

● lessons learnt - governance needs to be streamlined so as not to be a blocker	2	
○ FX had a metrics dashboard to track output	3	Metrics and Assessment
● Challenge - inadequate skillsets and resource constraints	2	
● challenge - needs someone monitoring metrics all the time	1	
○ KSF - key to measure everything	1	
● Challenge - PI prioritisation is difficult when dealing with multiple countries	5	Negative feedback on PI Planning
○ application - no change in PI cadence pre and post SAFe	3	
● Challenge - Follow up on actions/dependencies post PI Planning was not being done properly	3	
● Challenge - quarterly PI Planning did not help manage capacity expectations	2	
○ PI Planning not adding value - payments	2	
○ PI Planning has made a significant impact	8	Positive feedback on PI Planning
○ PI Planning - better planning and prioritisation	7	
○ PI Planning gives people more focus and access to info and decision-making	7	
○ Experience - There is value in PI Planning	3	
○ PI Planning - creates structure	3	
○ PI Planning - helps with measurements to ensure team is delivering business value	2	
○ PI Planning worked well	2	
○ PI Planning helped resolve issues quicker	1	
○ seeing more ownership and accountability	10	Self-organising and self-managing teams
○ TXB has naturally evolved to self-managing teams	8	
○ seen more autonomy and team empowerment	6	
○ self-organising teams	5	
● Challenge - self organising teams means too many cooks in the kitchen	1	
○ self-managing teams hinders decision making	1	
○ Adoption - team dependency is key element on adoption	5	Team performance
● challenge - team dependency makes it hard to predict done work	5	
○ team demographic is an important factor	4	
● Challenge - Failure on delivering on agreed items	3	
● Challenge - inefficient dependencies management slowed down execution	3	
○ PI Planning - better dependency mapping	3	
○ success of implementation dependent on each person in a team	3	

○ better team performance	2	
● challenge - having geographically dispersed teams for PI	2	
○ KSF - cultivating a safe space for agile teams	1	
○ KSF - do not optimise for busyness - busy vs productive	1	
○ KSF - having the right people with a positive mindset	1	
○ KSF - team should be <10 people otherwise you lose focus	1	
○ KSF - teams having a sense of purpose	1	
○ more respect	1	
○ SAFe introduced shared responsibility in teams	1	
Theme 9: Quality		
● challenge - less detailed business requirements in user stories which increases refactoring	1	Negative feedback on outcomes
○ more training required to obtain quality user stories	1	
○ people understand the value	3	Positive feedback on outcomes
○ biggest value of SAFe is the quality	2	
○ Can see tangible benefits	2	
○ higher adoption rate from customers	1	
○ more accountability has enhanced quality	1	
○ more innovative products	1	
○ received awards and recognition for innovation	1	
○ teams delivering best value	1	
Theme 10: Time-to-market		
○ Improvement in time to market	9	Faster time-to-market
○ Agility - continual evolution to respond to market quicker	5	
○ small releases so as to deploy weekly	2	

Appendix F: Certification of additional support

(Additional support retained or not - to be completed by all students)

Please note that failure to comply and report on this honestly will result in disciplinary action I hereby certify that:

• I DID NOT RECEIVE any additional/outside assistance (i.e., statistical, transcriptional, and/or editorial services) on my research report:

……**YES**……