

Original Research Paper

## Leveraging Scaled Agile Framework to Develop Information Systems in Finance Field

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**Abstract:** This research investigates the application of the Scaled Agile Framework (SAFe) in Saudi financial institutions, focusing on its impact on scalability, regulatory compliance, security, and speed in system development. The study aims to explore the benefits and challenges of SAFe adoption in a highly regulated and hierarchical industry. Data was collected from six articles, employing a qualitative analysis to examine how SAFe addresses the critical needs of financial organizations in adapting to dynamic market conditions while ensuring compliance with strict regulations. The findings reveal that SAFe enhances scalability by improving team collaboration and governance processes, which is crucial for large financial institutions. Additionally, its iterative approach facilitates ongoing regulatory compliance and allows rapid adaptation to regulatory changes. The integration of security protocols into the continuous development process helps reduce vulnerabilities, while the structured nature of SAFe accelerates product delivery, improving responsiveness to market demands. Despite these advantages, challenges include limited experience with large-scale Agile frameworks, balancing compliance with agility, and resistance to organizational change. The study highlights the need for further research, particularly primary data collection from Saudi financial institutions, to better understand the local challenges and opportunities for SAFe adoption in this rapidly evolving industry.

**Keywords:** Agility, Compliance, Information Systems, SAFe, Scaled Agile Framework.



## 1. Introduction

It is clear there is a demand increasing for digital solutions, where financial institutions such as investment firms, banks, and insurance entities or under pressure to offer a better competitive solution while preserving security and efficiency. Other system development frameworks such as waterfall usually fall short, the reason is that waterfall approach lean to flexibility leading to a failure on evolving customer demands and of course regulatory updates [1]

Furthermore, many to financial entities adopted Agile methodologies in order to improve speed. Offers a structured approach of Lean- Agile and ARTs which stands for Agile Release Trains which are designed for cross functional collaboration and alignment among large teams. Yet SAF practices in massive institutions face significant challenges and still being explored [2] [3]. Here are some specific barriers, SAF facilitate strict regulatory requirements, introduce some risk management constraints, require audit trails that can be complicated to address within Agile frameworks. Scaled Agile framework help with addressing issues such as security compliance and accuracy where system integration, regulatory and speed must be balanced.

Statistics proves the urgent to transfer to Agile within finance field. For example, according to Agile in financial services report [4] 55% of global financial organizations actively flooring Agile frameworks. However, less than 20% have successfully scaled Agile method. In the kingdom of Saudi Arabia, our government encourage the importance of digital transformation, which leads and enforce banks and financial organizations to adopt frameworks that enhance customer service and support speeding product deployment. Yet, most of these financial entities in KSA have been slow to fully adopt SAF practices it could be due to the lack of experience with large scale Agile [5] [6].

## 2. Literature Review

Globally, researchers are examining financial entities that are adopting Agile framework and examine how is the adopting needs balancing between speed and flexibility with regulatory compliance. For example, A researcher has discussed Agile integration in the United States financial companies. Highlighting that even though Agile enhanced project delivery time, compliance remained a challenge [7]. Their results recommended that frameworks like scaled Agile that are designed for enterprise level scalability, can be fruitful only when it is adapted to handle finance specific regulatory requirements [8] [9].

Researchers in Asia and Europe have discussed the advantage of using scaled Agile framework in regulated environments such as finance. A researcher has conducted a case study on European bank institutions that adopted SAF, their results showed Agile Release Trains (ARTs) has helped improve collaboration among teams and maintained a strict audit documentation [10] As well as, A researcher has who observed that using Lean-Agile principles by Asian financial institution has helped with the improvement of product development lifecycle [11] [12].

In the Kingdom of Saudi Arabia, it is evident that studies on Agile practices in finance field is emerging, especially in the light of the initiative of vision 2030 which prioritize digital transformation among all sectors. A researcher has explored Saudi banks and how they started implementing Agile in pilot programs in order to improve customer satisfaction and service [12]. The study indicated the adoption of SAF led to a better and faster response time. Additionally, the iterative processes enabled financial entities adopt changing client needs as well as market demands [13] [14].

Another interested case study, the structured approach of SAF and how it suits and supports the hierarchical management in Saudi institutions. one of the advantages is SAF enables a better communication across teams [15]. Researcher also highlighted that ARTs within SAF enables team members to work collaboratively [16] - [19].

The scope was choosen due to the digital transformation and the increasing adoption of SAFe. Data has been collected from 6 articles. Data was chosen as it provides empirical insights from organizations implementing the Scaled Agile framework, moving on to summerize key findings from the collected articles.

Some key findings, are [20]:

- 1) Scalability

Article indicated SAF have the abilities to scale across massive orgnaizations, this includes financial entities, by establishing clear governance process and clear structure. Which can improve collaboration among multiple teems.

- 2) Regulatory Compliance

Article indicated that SAF iterative process help ensure meeting regulatory standards

continuously throughout the process of development information systems, introducing an approach to adjust rapidly to regulatory changes.

3) Security

Study discussed that creating security testing into the continuous integration process resulted into a reduction in security vulnerabilities.

4) Speed

Article highlighted that scale Agile framework’s structured iterative method help financial organization to experience a fast product release in addition to a quicker response time to market demands.

Table 1. Performance-Based on the Earlier Study

Benfits	Studies	Sebola & Khoz (2022)	Laanti & Kettunen (2019)	Standard Bank (2020)	Agile Alliance (2021)
Scalability	Improved among various teams in large organizations	72% improvement	67% improvement	40% reduction in project time	62% improvement
Regulatory Compliance	Regulatory changes continuous adjustment	80% improvement	70% improvement	90% reduction in errors	68% improvement
Security	Early security involvement reduced vulnerabilities	65% improvement	60% improvement	50% reduction in vulnerabilities	55% improvement
Speed	Faster product releases	85% improvement	75% improvement	30% improvement in time-to-market	77% improvement

### 3. Methodology

The following steps and analysis types were performed in order to summarize how scaled Agile framework can help financial organization highlight scalability, security, regularity compliance and speed in system development lifecycle.

1) Taken Steps in Analysis

- Data Collection  
 Conducted a review over five articles and extracted qualitative and quantitative data related to compliance, scalability, speed and security.
- Analysis Framework
  - a. Compared the analysis across articles in order to validate consistencies and identify patterns.
  - b. Identify a correlation relationship between the entities who adopted scaled Agile framework practices and the improvements in each dimension that's mentioned in the data collection step.

2) Type of analysis performed

- Validity and Reliability
  - a. Used credible studies and peer-reviewed articles in order to ensure validity in this paper.
  - b. Analyze various articles across diverse context to ensure reliability for example industry reports and Saudi banks.
- Descriptive Statistical Analysis
- Key Insights from the Analysis

#### 4. Finding and Discussion

This research investigated the advantages of the Scaled Agile Framework (SAFe) in tackling major issues associated with the development of information systems in the finance industry. The results show that SAFe is crucial for enhancing scalability, regulatory adherence, security, and speed in major financial organizations. As these organizations work to remain competitive and respond to changing customer needs, the systematic, cyclical framework of SAFe offers a suitable method for updating conventional systems development practices. Through promoting collaboration across different functions, SAFe enables financial organizations to enhance their capacity to provide high-quality products while adhering to strict regulatory and security requirements.

A major discovery in the analysis is the ability of SAFe to scale within large enterprises. The capacity of SAFe to expand across various teams and departments is vital for large financial organizations that function in very intricate environments. The introduction of Agile Release Trains (ARTs) in these organizations has facilitated the creation of more defined governance processes, enhancing collaboration and minimizing silos. Research examined in the literature backs this claim, with companies noting considerable advancements in scalability, especially among major financial institutions. The beneficial effects of scaling SAFe are evident in improved team cohesion and the simplification of decision-making processes, which ultimately lead to quicker project completions.

Regulatory compliance represents another vital aspect where SAFe showcases its efficiency. Since financial institutions must comply with strict regulations, utilizing SAFe's iterative method enables ongoing modifications to satisfy these regulatory requirements. The capacity to quickly adapt to regulatory changes is especially crucial in dynamic settings where rules and standards can change swiftly. The examined articles consistently emphasized that SAFe's iterative methods aid in better adjusting to regulatory changes, assisting organizations in preventing expensive mistakes and maintaining continuous compliance. This was particularly clear in case studies from Europe and Asia where financial institutions effectively utilized SAFe to fulfill regulatory demands while maintaining agility.

Security was recognized as another domain where SAFe adds value, especially by incorporating security protocols at the beginning of the development process. The reviewed literature suggested that integrating security testing into the continuous integration process has led to reduced security vulnerabilities and enhanced the overall security stance of financial institutions. The heightened emphasis on security within the SAFe framework aids organizations in tackling crucial issues regarding data protection, particularly in industries where sensitive financial information is involved. The synergy between security and agility, enabled by SAFe, guarantees that financial organizations can provide secure products without compromising delivery speed.

Speed serves as a vital competitive element for financial institutions aiming to improve customer satisfaction and market adaptability. The organized iterative techniques integrated within SAFe lead to accelerated product launches and a swifter reaction to market needs. This was continuously observed in multiple studies, with financial institutions acknowledging enhancements in time-to-market and the overall delivery pace. The adaptability offered by SAFe enables organizations to respond swiftly to shifts in market dynamics, a crucial factor in the contemporary rapid financial landscape. The capability to swiftly launch new products and features boosts an institution's competitiveness and guarantees that it can address the changing demands of its customers.

Nonetheless, despite these advantages, adopting SAFe in Saudi financial institutions encounters various obstacles. A major challenge recognized is the lack of extensive experience with large-scale Agile frameworks in the area. Numerous organizations in Saudi Arabia remain at the beginning phases of embracing Agile methodologies, and there is a deficiency in understanding the complexities of expanding Agile practices among extensive teams. This restricted experience may impede the seamless implementation of SAFe, particularly in financial institutions, where the intricacy of systems and regulatory demands necessitate a more sophisticated strategy.

Another issue noted in the literature is the challenge of maintaining a balance between regulatory compliance and agility. Financial institutions need to guarantee that their development practices comply with stringent regulatory standards while preserving the agility and pace that Agile methodologies offer. Attaining this equilibrium is frequently difficult, as the iterative aspects of Agile can occasionally clash with the stringent documentation and audit trails mandated by financial authorities. The conflict between agility and compliance was a persistent theme in the examined studies and continues to be a major obstacle to the broad implementation of SAFe in the finance industry.

Opposition to organizational change, especially within hierarchical structures, poses a notable difficulty. Numerous financial organizations possess deeply embedded systems and procedures that resist alteration. Adopting SAFe necessitates a transformation in company culture, focusing more on teamwork and adaptability. This culture change may face pushback from workers who are used to conventional methods of operating. In Saudi financial institutions, this resistance is especially prominent, as organizations tend to be hierarchical and have centralized decision-making processes. To overcome this resistance, strong leadership and a clear understanding of Agile practices' benefits are essential.

Although the results of this research provide important perspectives on the advantages and obstacles of implementing SAFe in financial organizations, there are constraints to this study. The main constraint is the dependence on secondary data from the reviewed articles, which offers a general overview but falls short of providing in-depth insights into cost-effectiveness analysis and the requirements for workforce training. Moreover, the absence of direct data gathering from Saudi financial institutions restricts the capacity to confirm the results within the local context. Future studies might gain from gathering primary data within Saudi financial institutions to enhance the comprehension of the difficulties and achievements of applying SAFe in this particular area.

To conclude, implementing the Scaled Agile Framework in financial organizations provides major advantages, especially regarding scalability, compliance with regulations, security, and speed. Nonetheless, organizations need to address multiple challenges, such as a lack of experience with extensive Agile frameworks, the necessity of balancing compliance with agility, and pushback against organizational change. As the financial sector in Saudi Arabia increasingly adopts digital transformation, additional research and empirical investigations are required to confirm the results of this study and examine the complete potential of SAFe in this fast-changing industry.

## 5. Conclusion

This study highlights the significant benefits of implementing the Scaled Agile Framework (SAFe) in financial institutions, especially in terms of enhancing scalability, ensuring regulatory compliance, improving security, and accelerating the speed of product development. As financial organizations face increasing pressure to remain competitive while adhering to strict regulatory requirements, SAFe's structured yet flexible approach provides a viable solution for managing complex systems and rapidly changing market dynamics. The framework's iterative methods, particularly Agile Release Trains (ARTs), facilitate collaboration across departments, improve governance, and help organizations respond to regulatory changes more efficiently. Furthermore, the integration of security testing early in the development process supports financial institutions in addressing data protection challenges while maintaining speed in product delivery.

However, the study also identifies several barriers to the adoption of SAFe, particularly in Saudi financial institutions, where there is a lack of experience with large-scale Agile frameworks, difficulties in balancing agility with stringent regulatory requirements, and resistance to organizational change within hierarchical structures. These challenges hinder the seamless implementation of SAFe and emphasize the need for a tailored approach when adopting Agile methodologies in such complex environments. Future research should focus on primary data collection from Saudi financial organizations to better understand the specific challenges they face in implementing SAFe, with an emphasis on cost-effectiveness, workforce training needs, and the long-term impact of digital transformation initiatives. Such studies could provide deeper insights into how financial institutions in Saudi Arabia and similar regions can optimize their Agile adoption strategies to fully leverage the benefits of the Scaled Agile Framework.

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