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# ENHANCING TEAM AND TECHNICAL AGILITY THROUGH SAFe® METHODOLOGY AND A THREE-DIMENSIONAL DIAGNOSTIC APPROACH TO ANTI-PATTERNS IN THE FINANCIAL INDUSTRY

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**ABSTRACT:** This research paper examines the implementation of the SAFe® Methodology in financial institutions to identify and resolve shortcomings in Agile practices. The primary emphasis is on the discrepancies in the responsibilities of Product Owners and how they affect the goals of the organization. The study proposes a new diagnostic approach that focuses on three dimensions: operational, strategic, and cultural. The goal is to improve overall agility and effectiveness. The methodology incorporates a comprehensive examination of Agile methodologies through a literature review, identifying deficiencies in the detection and resolution of anti-patterns. The proposed solution entails a comprehensive framework that incorporates Product Owners, Scrum Masters, and Value Stream Mapping to address these deficiencies. Comprehensive diagnostic analyses entail the use of quantitative self-assessments and qualitative interviews, with a focus on aligning strategic objectives with Agile implementation. The study's findings emphasize the need to reevaluate production owner strategies, increase Scrum Master participation, and optimize Value Stream Mapping to tackle operational inefficiencies. The recommendations prioritize the improvement of Agile processes, fostering team collaboration, and increasing productivity within financial institutions. The paper emphasizes the significance of continuously improving Agile practices to meet the everchanging requirements of the financial sector, thus enhancing adaptability and organizational effectiveness.

KEY WORDS: Anti-Patterns, Organizational Effectiveness, SAFe®.

JEL CLASSIFICATIONS: C58, G32, O16.

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#### **1. INTRODUCTION**

This study examines the adoption of the SAFe<sup>®</sup> Methodology in financial institutions, highlighting notable deficiencies in Agile practices and suggesting a thorough diagnostic approach to improve agility and effectiveness. The Literature Review section provides a thorough analysis of previous studies on Agile methodologies, with a specific emphasis on identifying and resolving Agile anti-patterns and the strategic misalignments that are worsened by the responsibilities of Product Owners. The Three-Dimensional Diagnostic and Antipatterns section delve deeper into the operational, strategic, and cultural effects of the responsibilities of Product Owners, Scrum Masters, and Value Stream Mapping in financial institutions. The purpose of this analysis is to align organizational objectives with Agile implementations to improve both strategic understanding and operational effectiveness.

The Discussion section consolidates the findings from the three dimensions and offers practical recommendations for reorienting Product Owner strategies, increasing Scrum Master participation, and efficiently implementing Value Stream Mapping to identify and address operational inefficiencies. The purpose of these recommendations is to optimize Agile processes and enhance team collaboration and productivity. The Conclusion section summarizes the research findings, highlighting the significance of the integrated diagnostic approach and the alignment of Agile roles and responsibilities with organizational objectives. This section advocates for the ongoing enhancement of Agile practices to align with the changing requirements of the financial sector, resulting in notable advancements in organizational adaptability and effectiveness.

#### 2. LITERATURE REVIEW

The literature review on the SAFe<sup>®</sup> Methodology in financial institutions finds significant gaps in Agile anti-pattern detection and resolution frameworks. To improve team and technical agility, this paper proposes a better diagnostic approach that integrates Product Owner, Scrum Master, and Value Stream Mapping responsibilities. Product Owners struggle to define and execute strategic visions, which misaligns team efforts and organisational goals, according to the literature. Cohen et al. (2003) and Fitzgerald & Stol (2017) stress strategy clarity. Many studies ignore how Product Owner roles can cause strategic misalignments and operational inefficiencies. This research aims to clarify Product Owners' strategic responsibilities within the Agile framework, which has not been thoroughly studied (Conboy, 2009). According to Dingsøyr et al. (2012), many financial institutions still struggle to align their organisational structures with Agile frameworks. This study proposes a model that reduces redundancy and improves Agile strategy (VersionOne, 2024). With limited involvement in defining and facilitating Scrum events, the Scrum Master facilitates Agile practices but is often overlooked (McChrystal, et al., 2018).

Anderson and Carmichael (2019) acknowledge this gap and suggest increased engagement, but they offer few specific solutions. This paper presents a comprehensive framework for fully integrating Scrum Masters into Agile processes to address widely reported inefficiencies like ineffective daily stand-ups and non-collaborative review sessions (Rubin, 2012). Value Stream Mapping can identify operational inefficiencies, but Rother & Shook (1999) and Keyte & Locher (2004) focus on manufacturing contexts and are not relevant to financial sector challenges. Value Stream Mapping is applied to financial services to create metrics like the North Star Metric and DORA metrics. These metrics are crucial but underutilized for Agile and DevOps team evaluation (Forsgren, et al., 2018).

## 3. THREE-DIMENSIONAL DIAGNOSTIC AND ANTIPATTERNS

#### **3.1.** First Dimension: Strategies, operations, and culture for Product Owner

This dimension is analysed using quantitative self-assessments and qualitative online interviews (see Figure 1). Align organizational goals with implementation. Six Product Owners, four Managers, five Scrum Masters, and five team members self-assess quantitatively. Additional qualitative interviews were conducted with 5 Product Owners, 4 Managers, 5 Scrum Masters, and 3 Team Members. These interviews were used to understand the organization's diverse perspectives on advanced Agile methodology implementation in complex settings like financial institutions (Leffingwell, 2018).



Figure 1. SAFe® Product Owner Assessment

This integrated approach links strategy and operations. Company operations include strategic planning and success metrics. Product Owners' long-term strategies are unclear, making team alignment difficult. Medium- to long-term planning often overlooks expectations and results because annual planning focuses on problems rather than goals. This limits team experimentation and proactive action.

Organizational structure should boost value delivery. Strategic IT committees and Change Advisory Boards discuss priorities and changes, but they may not act quickly. Team organization by channels rather than products causes duplication, dependencies, and strategic misalignments. Multiple workflow Scrum teams may struggle to define responsibilities, and misaligned dependencies cause delays. The fast-paced financial industry requires teams to be flexible and responsive, so practical guidelines on combining project management methodologies are provided (Kniberg & Skarin, 2019). Teams lack transparency about user interaction and needs. Pre-analysis rarely involves technical experts, reducing solution practicality.

The User Experience Rare designers and architects limit specialized input and innovation across all teams. Operations should prioritize clarity, organization, and validation. Still, many issues remain. Due to limited priority control, Product Owners have a backlog of waterfall projects and requirements. Due to a lack of data analysis, sprint priorities change, causing delays and demoralization.

Initial project requirements are often too large to complete in a sprint and unclear to the team. Product Owners usually ignore stakeholder demos. Existing methods don't test solutions before development. Scrum Masters and Product Owners are necessary for agile work, but challenges remain. Product Owners spend little time thinking strategically or exploring new opportunities due to daily operations. Designing products efficiently requires empathy and understanding of user needs, but time is limited.

Decision-making and learning should be decentralized, feedback-driven, and evolving. Learning and improvement are desired. Product Owners have limited problem-solving and prioritization power. The focus is on timely functionality delivery over business problem-solving and needs fulfilment. Time and waterfall project frameworks' linear structure limit experimentation, but strategic Agile transformations can avoid common issues.

This approach supports SAFe<sup>®</sup>'s goals of technical and team agility while minimizing organizational disruption (Rigby, et al., 2020). Product owners have ambiguous responsibilities because they are not responsible for the entire product. Anti-patterns that disrupt Agile workflow include bringing stories into the sprint without removing unfinished ones of equivalent size, not using user stories effectively, Product Owners not using MVPs and iterative deliveries, a mix of water-fall projects and other requirements, lack of objective follow-up, and discussing deadlines too late with teams.

#### 3.2. Second Dimension: Scrum Master Assessment

The second dimension evaluates the Scrum Master (SM) using the SAFe<sup>®</sup> SM Assessment and online workshops (see Figure 2). Six SMs participated in self-

assessments and workshops. This dimension examines Scrum Masters' duties and responsibilities, their participation in Scrum events, typical negative patterns in Scrum teams, and areas for improvement based on assessment results or new rules of engagement in complex environments like finance (McChrystal, et al., 2018).

The person helps facilitate Scrum events and solve task challenges. Product vision is unclear. Providing capacity and velocity information is complicated. The product's SDLC (Software Development Life Cycle) is uncertain. Teams struggle to understand Scrum values and artefacts. SM roles and responsibilities are unclear, and they have limited involvement in event definition. Compliance with the Definition of Done is lacking. The Burndown Chart, Burnup Chart, and Velocity can be improved. Few efforts are made to boost team performance. Teams have not fully embraced cross-functionality and interdependencies.



Figure 2. SAFe® Scrum Master Assessment

Incomplete team self-organization facilitation. Market delivery time is being reduced and a flexible architecture is being established, but only partially. Extreme Programming and quality-integrated activities like Agile Testing, BDD (Behavior Driven Development), TDD (Test Driven Development), and others are not used by teams. Daily Stand-Ups are often seen as status updates. Scrum Master responsibilities vary for non-autonomous teams in conflict, establishment, and standardization. Iteration planning sessions generally prioritize testing over multitasking or should refine practices such as Kanban, essential to improving flow and responsiveness in financial operations (Anderson & Carmichael, 2019). Analysis sessions are sometimes omitted or unfocused. Planning sessions may be unimportant, the Sprint Goal may be absent, or business or Product Owners may be too demanding. Reviews are part of Demo sessions, not separate ones. These sessions only seek Product Owner approval and do not involve other stakeholders. In some teams, retrospective sessions are a formality without a culture of constructive feedback or Scrum Master facilitation. There are also a few honest discussions about team deadlines and requests.

#### 3.3. Third Dimension: Value Stream Mapping

The third dimension focuses on Value Stream Mapping, which is carried out through an in-person workshop involving 15 participants who analyze 6 samples. This approach offers a comprehensive analysis of the operational flow within the organization, emphasizing notable inefficiencies and opportunities for enhancement.

When evaluating performance indicators, the analysis takes into account metrics such as the North Star Metric, which encompasses different aspects such as amplitude (number of active users, number of new users), frequency (number of sessions per user per day, number of orders per user per month), and depth (number of services used per user, number of products per order). Efficiency metrics assess the rates of successful task completion, the speed at which tasks are completed, and the amount of cost savings achieved.



Figure 3. Map of Discovered Delays

On the other hand, customer satisfaction is evaluated using metrics such as Net Promoter Score (NPS) and Customer Satisfaction (CSAT). The evaluation of development practices is conducted using DORA metrics to assess the performance of DevOps teams in various aspects, such as deployment frequency and mean time to recovery. The assessment of operational efficiency is conducted by analyzing metrics about the resolution of incidents, consumption of resources, and availability of the system. Process agility is quantified by evaluating the rate at which items are delivered within predetermined timeframes, the time it takes for an item to be delivered, and the precision of planned feature delivery.

The delays in the workflow have been identified as significant, with extended waiting times observed at multiple stages of the process chain. As an illustration, the process of moving from evaluating and validating an idea to obtaining approval takes 45 days. Similarly, it takes 65 days from approval to opening the requirements, and 48 days from development to testing. These timeframes indicate the presence of significant bottlenecks in the process (see Figure 3).

# 4. IMPACT OF INDIVIDUAL KPIS ON AGILE PRACTICES IN AN INTERCONNECTED TEAM ENVIRONMENT

When implementing Agile methodologies in a complex banking institution with multiple interconnected and interdependent teams, it is important to take a careful and detailed approach to measuring performance metrics. Improperly designed individual Key Performance Indicators (KPIs) can result in actions that hinder the overall objectives of Agile teams, particularly in a complicated banking setting involving multiple teams.

Developers evaluated based on the quantity of finished user stories may give higher importance to tasks that hinder the smooth combination of development and testing stages. This frequently results in adopting a Water-Scrum-Fall approach, which goes against Agile's focus on uninterrupted integration and delivery.

Testers who are evaluated based on the number of defects they find may choose to implement excessively strict testing methods to guarantee releases that are free of errors. However, this can lead to delays and hinder the overall flexibility of the organization. These practices hinder the overall effectiveness and collaboration among teams in a banking environment, where departments heavily depend on each other, by promoting local optimization and Agile anti-patterns.

The key to reducing the negative impacts of individual KPIs is ensuring that the performance metrics are transparent. Transparency and alignment are essential in a multi-team setting to promote trust and collaboration. This alignment facilitates understanding how individual performances influence the broader team dynamics and institutional objectives.

Role	КРІ	Formula		
Developers	Stories Closed/Story Points Closed	$Ratio = \frac{Number of stories closed/iteration}{Story points closed}$		
	Code Coverage	Percentage covered by automated testing		
	Work-in-Progress	Number of concurrent stories being worked on <u>Total time spent on bug fixing</u> <u>Total development time</u> Start Date – Open Date		
	Bug Fixing Time Ratio			
	Time to Story Opening			
	Time to Story Closure	Closed/Ready for Test Date - Start Date		
Testers	UAT Defect Rate	$\frac{Total \ Defects \ in \ UAT}{Total \ Defects \ before \ UAT} \times 100$ $\frac{\sum(Number \ of \ Defects \times Severity \ Level)}{Total \ Defects}$ Number of concurrent stories being tested		
	Weighted Defect Severity			
	Concurrent Stories Testing			
	Test Case Effectiveness	$\frac{Total \ detected \ defects}{Number \ of \ active \ test \ cases} \times 100$		
	Requirement Coverage Percentage	$\frac{Total \ requirements \ covered}{Total \ requirements} \times 100$		

Fable 1. Key	Performance	Indicators fo	r Developers	and Testers
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#### **5. DISCUSSION**

Product Owners should prioritize workshops to develop company-aligned product strategies. Setting goals and responsibilities for each team improves focus and accountability. Strategies with goals, values, and success metrics are advised. Also, consider a Value Stream Mapping workshop. In SAFe<sup>®</sup>, transparent team synchronization and integrated work analysis improve coordination and understanding. Improving initial analysis, perfecting the Definition of Ready, and holding ideation workshops with stakeholders and users to study real needs through empathy and Design Thinking is crucial.

User experience and technical architecture must improve. Product Owner accountability for setting priorities and product success metrics is also important. Sprint Reviews must occur frequently. Minimal idea validation and user story-slicing prototypes reduce risks and focus on value. Scrum Masters must closely monitor all Scrum events to maximize productivity and meet deadlines. Maintaining Agile requires the team to understand and use SCRUM. Scrum Masters must prevent Sprint Goal obstacles and ensure every sprint meets the Definition of Done. To maintain team cohesion, they must oversee sprint implementations and resolve conflicts. Enhancing Scrum Masters' role in team formation, storming, and norming will help teams selfmanage during performance. Product Owners and Scrum Masters set Sprint Goals, manage the Product Backlog, and coordinate product delivery stakeholders. Learn the company's product vision and collaborate to remove barriers. Key delivery indicators support workflow analysis, development, and implementation and impact business value. These indicators help evaluate the organization's progress and guide improvement. Throughput, Lead-time, and PI Planning Accuracy should be used as delivery indicators at the portfolio and ART (Agile Release Train) levels. If measured properly, these metrics can improve processes, reduce delays, and deliver client value faster.

#### 6. CONCLUSION

This study investigated the application of the SAFe<sup>®</sup> methodology in financial institutions, with a specific focus on identifying and addressing significant Agile antipatterns. The study presented an innovative three-dimensional diagnostic method that combines the functions of Product Owners, Scrum Masters, and Value Stream Mapping to improve strategic, operational, and cultural frameworks.

The primary novelty of this study lies in its comprehensive methodology, which tackles both strategic misalignments and operational inefficiencies by incorporating essential Agile roles. This research offers a holistic approach to addressing these challenges across various levels within an organization, unlike other studies that only examine specific aspects.

The results of our study emphasize that Product Owners frequently encounter difficulties in aligning strategic visions with organizational goals, resulting in inefficiencies. This is consistent with other research, but it provides a more comprehensive solution by merging role clarification with performance alignment. Similarly, the study highlights the significance of Scrum Masters in advocating for efficient Agile methodologies, in line with previous research but introducing a more comprehensive diagnostic framework to minimize inefficiencies.

Research has demonstrated that Value Stream Mapping has a substantial positive impact on process efficiency and product delivery, which aligns with the existing literature. Nonetheless, this study provides a unique illustration of how integrating this tool with Agile roles can improve an organization's overall performance.

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