IMPROVEMENT AGILE METHODOLOGY IN PROJECT MANAGEMENT: CASE STUDY OF A SAAS COMPANY IN INDONESIA

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ABSTRAK

Meningkatkan koordinasi tim untuk kinerja yang optimal adalah salah satu tantangan utama yang dihadapi organisasi ketika meningkatkan praktik *Agile* mereka. Oleh karena itu, banyak perusahaan mengalami kesulitan dalam mencapai kinerja yang diinginkan karena tantangan ini. Penelitian ini bertujuan untuk menjawab tantangan tersebut dengan mengusulkan desain metode manajemen proyek baru untuk salah satu perusahaan *Software as a Service* (SaaS) di Indonesia yang memiliki manajemen proyek yang tidak efektif. dengan menggunakan pendekatan *Agile* yang terukur. Penelitian ini berkontribusi dalam pemberian wawasan tambahan tentang implementasi desain metode *scaled Agile* dalam sebuah organisasi. Penelitian ini menggunakan metode kualitatif berdasarkan metodologi *Design Science Research* (DSR) dan delapan domain *Project Management Body of Knowledge* (PMBOK), yang terdiri dari enam fase dan dua iterasi. Iterasi pertama melibatkan proyeksi kondisi aktivitas perusahaan saat ini dan menghasilkan proposal untuk metode manajemen proyek yang baru. Iterasi kedua melibatkan pengembangan dan evaluasi metode yang diusulkan terhadap standar PMBOK. Berdasarkan temuan, terdapat dua domain yang sejalan dengan PMBOK dan manajemen proyek di perusahaan, yaitu Domain Pemangku Kepentingan dan Domain Kinerja Siklus. Namun, Domain Kinerja Tim, Pendekatan Pengembangan dan Perencanaan Hidup, Domain Kinerja Pekerjaan Proyek, Domain Kinerja Pengiriman, Domain Kinerja Pengukuran, dan Domain Kinerja Ketidakpastian adalah domain lain yang tidak sesuai dengan standar. Pelatihan yang efisien dan memadai untuk kinerja tim, mendorong kolaborasi antara anggota tim, membangun budaya perusahaan, dan menyelaraskan proses bisnis perusahaan dengan metode *Agile* menjadi hal yang penting untuk mengatasi beberapa hasil yang tidak konsisten.
Kata kunci: *Scaled Agile, Design Science Research*, Desain Metode, Manajemen Proyek

ABSTRACT

Improving team coordination for optimal performance is one of the main challenges that organizations encounter when scaling their Agile practices. Therefore, numerous companies encounter difficulties in achieving their desired performance due to this challenge. This study aims to address the challenge by proposing a new project management method design for a Software as a Service (SaaS) company in Indonesia with ineffective project management, using a scaled Agile approach. This paper contributes to providing insight into the implementation of scaled Agile method design in an organization. The research follows qualitative methods based on the Design Science Research (DSR) methodology and the eight domains of the Project Management Body of Knowledge (PMBOK), comprising six phases and two iterations. The first iteration involves projecting the current state of the company's activities and resulting in a proposal for a new project management method. The second iteration involves developing and evaluating the proposed method against the PMBOK standard. According to the findings, there are two domains that align with PMBOK and project management in the firm, namely the Stakeholder and Cycle Performance Domains. Team Performance, Development Approach, and Life Planning Performance Domain, Project Work Performance Domain, Delivery Performance Domain, Measurement Performance Domain, and Uncertainty Performance Domain are the other domains that do not suit the standard. Adequate efficient training for team performance, fostering collaboration among team members building corporate culture, and aligning company business processes with Agile methods are essential to overcome some inconsistent results.
Keywords: Scaled Agile, Design Science Research, Method Design, Project Management

1. INTRODUCTION

The Agile methodology has been popular for the past two decades not only among small teams but also in larger organizations [1][2]. Despite its popularity, the need for significant interdependence between teams in larger organizations often leads to coordination challenges [3]. Organizations must scale their Agile practices to improve coordination between teams to address these challenges [4][5].

Improving team coordination for optimal performance is one of the main challenges that organizations encounter when scaling their Agile practices [5]. Therefore, numerous organizations encounter difficulties in attaining the desired performance as a result of this challenge [3]. This research focuses on a SaaS company based in Indonesia that specializes in enterprise solutions and has experience in developing performance management for multiple organizations in the country. With the organization and its products growing, the company plans to expand into the global market to reach more customers. Many companies prioritize customer success and continuously improve their products to meet customer expectations [6][7]. The organization, being a SaaS company, prioritizes customer success by executing IT projects that align with its product roadmap and fulfill client requests. The prioritized list of requests is executed based on their level of importance, but priorities may change if the expectations of higher management shift during the execution process.

The current development process of this company lacks a precise framework. Instead, some stages are adapted from various existing project management frameworks and adjusted to the company's culture. For example, some Agile practices have been adopted into the process using different terminology, such as Backlog Preparation for prioritizing tasks and Reviews for displaying the product [8]. The product and engineering teams also lack clear guidelines for developing products due to inadequate documentation. To address this issue, the company plans to create a documentation that provides step-by-step instructions for team members to execute tasks [9]. To address this issue, this research is conducted with the aim of providing recommendations for new project management methods in accordance with the PMBOK standards that the company can adopt.

Previous studies have been conducted examining the challenges and success factors of implementing scaled Agile in organizations. One of challenge implementing Agile is resistance of project managers involved in a software development [10][11]. The fundamental issue, however, is that it is difficult to preserve the essence of Agile, which is to "collaborate", "(iterative and frequent) inspect and adapt", and "deliver customer value" [12]. Traditional decision-making processes can clash with the ideas and management practices required to support Agile SDM [13][14][15]. Based on the problem and challenges for Agile adoption, this research will look at how organizational memory develops and how teams in Agile organizations adapt at the same time within an ecological structure that includes a changing environment [16]. Also this research has specifically addressed the discussion of scaled Agile project management that is a hybrid project management methods design that combines Agile and waterfall project management [17]. This method is rarely used in previous studies, so this study uses the hybrid project management methods design to identify challenges within the company from different perspectives.

This paper is divided into five sections structured as follows: Section 1 provides the background of this study, Section 2 highlights previous studies and the plan and steps of the study, Section 3 presents the study results and discussion, and Section 4 concludes the paper.

2. THEORY AND METHODOLOGY

Scaled Agile Development

Agile development mainly focuses on intra-teams, which makes it challenging to coordinate between units in one organization with minimal guidance [4]. Two frameworks commonly used for scaled Agile development are the Scaled Agile Framework (SAFe) and Large-Scale Scrum (LeSS) [18][19][20]. They are suitable for scrum methodologies and larger-sized projects [20]. The 2022 State of Agile survey revealed that SAFe is the most popular scaling framework which offers flexibility as one of its advantages [21]. Previous studies suggest that organizations should assess their as-is condition and plan their transformation accordingly [22].

Scrum

Agile methodology is best suited for projects requiring rapid change during development and for organizations prioritizing innovation and valuing outcomes such as customer loyalty [2]. The organization that is the object of this study is focused on continuous improvement and customer satisfaction, making

Agile an appropriate methodology for their development process. They have adopted Agile methodologies to achieve continuous improvement. One of the most widely used Agile techniques is scrum [23]. Scrum can assist individuals, groups, and organizations (including third parties) in developing adaptable solutions to challenging issues [23][24].

Research Method

The purpose of this study is to provide recommendations for new project management methods using a scaled Agile approach to replace the ineffective ones. The data for this study was collected from two sources: primary data and secondary data. Primary data was collected through observations and informant interviews within the organization, while secondary data was collected from the organization's documentations and literature reviews. All the information gathered will be used as input to gain a better understanding of the current condition of the organization.

The methodology employed in this study is Design Science Research (DSR). This framework is used to solve problems based on technology and scientific knowledge through innovative artefacts [25]. Previous studies have defined the steps for this methodology, which will be adopted in this research as a framework. These steps in Figure 1 will be explained in detail later [25].
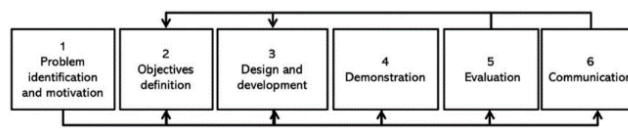

Figure 1. Flow of Research

This research follows all six steps mentioned above consecutively, and iteration occurs at certain stages to solve the problem. The details of each stage will be elaborated later.

Problem Identification and Motivation

The first step in DSR is to identify the problem by assessing the current state. The data was gathered through observation, informant interviews, and organization documentations. Defining the current state is important to understand the initial condition of this organization (see Table 1). The current state of this SaaS company has been analyzed and classified into different groups to give a better understanding of the company's current conditions. One of the main findings is the lack of documentation in the organization, including the absence of a standard for project management and principles for managing the current workflow. The use of standard documentation can be beneficial for organizations to ensure that their output meets certain requirements in accordance with defined processes [26][27].

The company has two divisions whose members are all assigned to specific projects. In this company, the higher management defines multiple processes to adjust the speed of the project's progress. The first step in the development process is product planning, which involves conceptualizing and constructing the product while ensuring that it meets the needs of customers [28][29]. Solution architecture is also a crucial aspect that aims to ensure the safe and efficient operation of the products by analyzing issues, problems, and potential opportunities [30]. The following Table 1 as a project in the organization.

Table 1. Current State of the Organization

Criteria	Current State	Current Code
Principles	• No main standard organization guideline for developing the products/projects. • No standardized principle to manage the current workflow of development teams.	CPR1
Organization	IT project development is carried out directly by a development team consisting of two main divisions: • Engineering Team o Back End Developer o Front End Developer o Android Developer o iOs Developer o Devops • Product Team	CBR1

	o Product	
	• Front End Developer	
Business Requirement	The documentation carried out in the development process includes:	COR1
	• Product Requirement Document (PRD)	
	Product Backlog	
Process	The multiple processes carried out by the development team are as follows:	CPO1
	• Product Requirement	
	• Product planning	
	• Product Design	
	• Backlog Grooming	
	• Solution Architecture (SA)	
	• Development	
	• Product Review	
	Product release	
Work Product	Work Product outputs:	CWP1
	• Product Requirement Document (PRD)	
	• Product Backlog	
	• Design and Product Backlog	
	• What's New (informing the output of projects or new products)	
	Increment	
Implementation Approach	Implementation in the project divided into 3 three levels:	CIA1
	• Project Level The product team leads the projects and coordinates with the engineering team.	
	• Product Level The development teams, which include both the product and engineering teams, are working on the development of two main applications in parallel.	
	• Business Level The projects are implemented based on client requests or for business improvements.	

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The project in this SaaS company has two steps that are adapted from Agile practices (Backlog Grooming and Review) which are aligned with the Agile practice guide [8]. Outputs were listed cumulatively in the Work Products at each of these steps. Despite following the current process, some projects were identified as 'at-risk' in the first quarter of 2023 due to missed deadlines and shifting priorities. A project is considered 'at-risk' when it faces critical challenges that require prompt actions from the project team due to various factors.

3.   RESULTS AND DISCUSSION

The DSR framework can provide researchers with opportunities to evaluate artifacts in iterations to optimize the results. In this study, the process is divided into two iterations. The first iteration involves creating a standard project management method design to explain the project cycle in this organization, and the second iteration involves implementing the design and evaluating its effectiveness. The development of the proposal design is based on observation, literature study and interview with stakeholders. It also refers to the practice guide published by PMI related to process groups [31]. At the end of the first iteration, the result is demonstrated to stakeholders for gaining some feedback as inputs for the second iteration. The proposed workflow applying Agile manifesto's principles explained in Table 3 [32][33].

The findings from the initial stage are used to develop the design in the next phase. To validate the result, PMBOK is used to guide all project stakeholders to follow the standard [34]. This study assesses parameters in later phases using the eight domains of PMBOK, including Stakeholder, Team Performance, Development Approach, Life Cycle Performance, Planning, Project Work, Delivery, Measurement, and Uncertainty Performance.

The design stage is the highlight of the first iteration that will be proposed in the future. Therefore, it is important to map the company's existing activities with the design proposal. The detailed breakdown is in Table 2 below.

Table 2. Proposal Project Management Method Design

CS Code	Proposal	Description	PR Code
CPR1	• Propose workflow for project works align with Agile principles • Applying Agile Manifesto's principles [32][33]	Implement workflow that are in line with the company's vision and mission which are also in line with Agile principles	PPR1
COR1	Applying the SAFe principle [19]	Applying SAFe principles to integrate coordination between teams	POR1
	Adding roles of Quality Assurance	Quality Assurance can support the development team with Product Review by running various test scenarios.	POR2
CBR1	Adding Sprint Backlog according to Scrum Guideline using scrum board	Artifacts of the sprint; To define the list of tasks in the sprint. Put the backlog on the scrum board to make them easier for the development team to know which phase the stories are in.	PBR1
CPO1	Adding some practice that aligns with SAFe, LeSS and Scrum Guide [18][19][24]: • Portfolio Planning • Sprint Planning • Daily/weekly sync • Sprint Review • Retrospective [19]	Every step in this phase will be implemented as day-to-day development process	PPO1
CWP1	Adding some work products: • Test Document • Test Scenario • Lesson Learned • Portfolio Roadmap • Product Roadmap	As documentation for organization knowledge	PWP1
CIA1	Adopting team structure based on LeSS framework [10]: • Self-managing teams • Cross-Functional Teams • Dedicated teams • No resource allocation	• Each team has the power to manage its own team • Each member dedicates to ongoing projects • Each member is dedicated to running the project from start to finish	PIA1

The first iteration of this research involved constructing the design, followed by a demonstration stage involving leaders from the project management team at the SaaS company. This phase included conducting interviews and presenting design results, which were the findings processed from various data sources in the previous phase. Then the results were validated and evaluated through discussion. The feedback collected during this stage was used as input for the next iteration. The design proposed is represented in Figure 2.
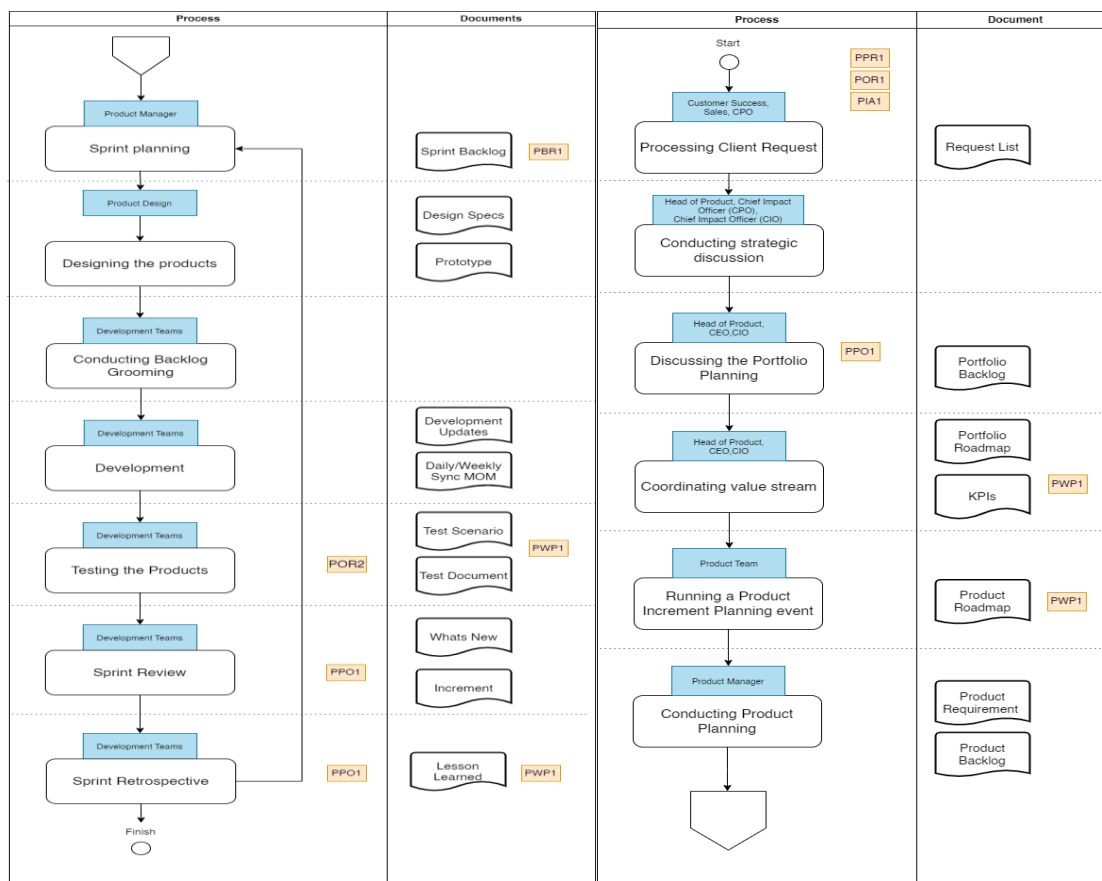
Figure 2. Workflow for Project Management Method Design

Demonstrations were carried out again after the construction in the second iteration. In this phase, evaluation was performed by running through the eight domains of the PMBOK to check if the current flow has met the standard. Almost all the criteria were met except one point. This happened because not all the external factors that were mentioned were considered in the company culture. The domain of PMBOK is represented in Table 3.

Table 3. PMBOK 8 Domains

Domain	Outcomes	Status	
		As is	Proposal
Stakeholder	A productive working relationship with stakeholders throughout the project	✓	✓
	Stakeholder agreement with project objectives	✓	✓
	Stakeholders who are project beneficiaries are supportive and satisfied; stakeholders who may oppose the project or its deliverables do not negatively impact project results	✓	✓
Team Performance	Shared ownership	✓	✓
	A high-performing team	✓	✓
	Applicable leadership and other interpersonal skills are demonstrated by all project team members	✗	✓
Development Approach and Life Cycle Performance Domain	Development approaches that are consistent with project deliverables	✗	✓
	A project life cycle consisting of phases that connect the delivery of business and stakeholder value from the beginning to the end of the project	✓	✓

Domain	Description		
Planning Performance Domain	Project life cycle phases that facilitate the delivery cadence and development approach required to produce the project deliverables	✓	✓
	The project progresses in an organized, coordinated, and deliberate manner.	✓	✓
	There is a holistic approach to delivering the project outcomes.	✓	✓
	Evolving information is elaborated to produce the deliverables and outcomes for which the project was undertaken.	✓	✓
	Time spent planning is appropriate for the situation.	✗	✓
	Planning information is sufficient to manage stakeholder expectations.	✗	✓
	There is a process for the adaptation of plans throughout the project, based on emerging and changing needs or conditions.	✗	✓
Project Work Performance Domain	Efficient and effective project performance	✗	✓
	Project processes that are appropriate for the project and the environment	✓	✓
	Appropriate communication and engagement with stakeholders	✓	✓
	Efficient management of physical resources	✓	✓
	Effective management of procurements	✓	✓
	Effective handling of change	✓	✓
	Improved capability due to continuous learning and process improvement	✓	✓
Delivery Performance Domain	Projects contribute to business objectives and advancement of strategy	✓	✓
	Projects realize the outcomes they were initiated to deliver	✓	✓
	Project benefits are realized in the time frame in which they were planned	✓	✓
	The project team has a clear understanding of requirements	✗	✓
	Stakeholders accept and are satisfied with project deliverables	✓	✓
Measurement Performance Domain	A reliable understanding of the status of the project	✗	✓
	Actionable data to facilitate decision making	✓	✓
	Timely and appropriate actions to keep project performance on track	✗	✓
Uncertainty Performance Domain	An awareness of the environment in which projects occur, including, but not limited to, the technical, social, political, market, and economic environments	✗	✗
	Proactively exploring and responding to uncertainty	✓	✓
	An awareness of the interdependence of multiple variables on the project	✓	✓
	The capacity to anticipate threats and opportunities and understand the consequences of issues	✓	✓
	Project delivery with little or no negative impact from unforeseen events or conditions	✗	✓
	Realized opportunities to improve project performance and outcomes	✓	✓
	Cost and schedule reserves used effectively to maintain alignment with project objectives	✓	✓

4. CONCLUSION AND SUGGESTION

Based on the above results, it is known that out of the identified 8 domains, there are 2 domains that align with PMBOK and project management in the company: the Stakeholder and Cycle Performance Domains. However, not all points can be met due to the organizational culture not aligning with the standard. There are 6 other domains: Team Performance, Development Approach and Life Planning Performance Domain, Project Work Performance Domain, Delivery Performance Domain, Measurement Performance Domain, and Uncertainty Performance Domain.

The challenges occurring in the company are known to be due to a lack of experience in implementing Agile practices. There is insufficient support from management, and differences in decision-making regarding project technical aspects within the organization exist. To overcome the domains with some outcomes that don't align, there is a need for sufficient Agile training for the team's capabilities, enhancing collaboration among team members, building a company culture, and adjusting the company's business processes to align with Agile methodologies. The use of PMBOK and practice guide are beneficial in obtaining project management method design recommendations for the company that meet the standards as optimally as possible. To further develop this research in the future, including expert reviews and quantitative methods such as conducting sample assessments of all employees involved in the organization may be beneficial. This would facilitate a more comprehensive evaluation of the project management method design's effectiveness and identify potential areas for improvement.

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