

Adoption of Agile Project Management: A Case Study in a Technology Service Company

Aquiles Nogueira

Master Student in the Department of School of Management
Federal University of Paraná, UFPR, School of Management PR, Curitiba, Brazil
aquilesnogueira@ufpr.br

Guilherme Francisco Frederico

Professor in the Department of School of Management
Federal University of Paraná, UFPR, School of Management, PR, Curitiba, Brazil
guilherme.frederico@ufpr.br

Abstract

This study aims to present how agile methods can contribute to the success in developing a new business unit within one of Brazil's largest technology companies. Additionally, it seeks to demonstrate the value of using agile methods in managing and supporting managers during the implementation of new disruptive business ventures. A case study was conducted in a technology sector company that applied agile methods concepts to the launch of a new business unit. The research methodology employed included data collection, document analysis, and interviews. Concepts from prominent agile methods currently in use, such as Kanban, Scrum, and the Scaled Agile Framework (SAFe), were explored. Data were collected from January to July 2023 at the Curitiba, Brazil. The findings highlight that the application of agile techniques in the computer technology services sector, intended to aid in managing and governing transformative projects, substantially influences overall performance. The active engagement of senior management in transformative projects proved indispensable for the successful integration of these strategies, assuring appropriate prioritization amidst daily demands. Propagating an agile ethos across all tiers of the organization and forming a team receptive to innovation and adaptability stand as essential prerequisites for adhering to the established strategy. However, it's crucial to underscore that the absence of task prioritization and inadequate task completion might entail risks. Contemplating the critical factors tackled in this study, companies can adopt preventive actions to curtail the prospects of suboptimal implementation. In conclusion, the study asserts the applicability of agile methodology and its substantial advantages in inaugurating novel business units in the realm of technology services. The present study serves as a pivotal foundation for researchers and professionals vested in this subject. Nevertheless, it's vital to accentuate that the conclusions and insights delineated herein are grounded in a specific scope and data pool collected over a definite timeframe. As such, future research endeavors are warranted to expand and delve deeper into these findings, encompassing alternate vantage points and contexts. Subsequent investigations have the potential to furnish supplementary insights and further augment the evolving knowledge in this domain. The study extends a unique contribution by scrutinizing a fresh causal nexus between essential elements (agile methodologies, computer technology services sector, process performance, and strategic outcomes) germane to project administration within this specific milieu. By exploring the ramifications of agile methods on project administration within the computer technology services sector, this study broadens the existing knowledge base and proffers valuable insights for researchers and practitioners in this arena. This innovative approach engenders a heightened comprehension of the distinctive benefits and challenges characterizing this milieu, thereby fostering the advancement of project administration and agile practices.

Keywords

Agile Methods, Project Management, New Business Unit and Services e Computer Technology.

1. Introduction

In recent years, the application of agile methods and practices has gained significance among companies, particularly those engaged in technology projects. Delivering systems within deadlines and budgets while maintaining quality has posed a significant challenge for software managers. In light of this, choosing an optimized development methodology has become increasingly crucial for project success (Ziellesk 2021; Ananda 2017).

Traditional project management models such as Waterfall and Vee's were utilized in the last century to find better ways of gathering and defining project requirements, analyzing and systematically implementing solutions. Subsequently, agile methodologies were introduced to address the challenges of managing complex projects in their development phase. These methodologies have been employed to tackle new product creation, project complexity, swift shifts in customer expectations, business model uncertainties, complex technological decisions, or other external influences that alter and represent a set of incremental and iterative methods that are more effective. Furthermore, they share common characteristics such as collaboration, reviews, small teams, short release schedules, time-boxing, and continuous testing. Notable among these are Kanban and Scrum, two powerful agile project management approaches in software development (Lei et al. 2015, Zielske 2017; Kadenic et al. 2022).

Various factors must be considered to determine project success, as well as stakeholder satisfaction (Ananda and Dinakran 2017). According to Kadenic et al. (2022), success is a complex combination of factors, including meeting outcome metrics, ensuring stakeholder satisfaction, and maintaining high team performance. The outcome is further influenced by the maturity level of the team in terms of agility.

As stated in the The Second Annual State of Agile Culture Report Launched (2023), there's a lack of engagement and underinvestment in developing leaders, as the agile approach is often delegated to front-line teams. The three levers' leaders can pull to strengthen an agile culture include: fostering a culture of bidirectional feedback, regardless of position, providing clarity on business objectives, including indicators that demonstrate objective attainment, and sponsoring the implementation of agile processes and tools.

The research also revealed significant advancements in various sectors in building strong agile cultures in the 12 months prior to the study. However, significant opportunities still exist for unlocking efforts in building leadership capabilities. While these changes have made a difference, the research demonstrated that organizations that outperformed others had a stronger set of behaviors and culture that enabled greater agility.

Company departments have transformed into environments conducive to promoting innovation, thanks to access to new technologies combined with the interoperability offered by cyber-physical systems and the Internet of Things. With more minds from diverse backgrounds thinking and generating new ideas, opportunities for exponential growth abound. Identifying applicable technologies and effectively implementing them requires more agile development models (Beller et al. 2019).

Project managers who are inclined towards rapid changes or high levels of uncertainty have widely adopted agile project management methodologies. It's crucial to choose a project management approach that corresponds to the flexibility and structure of tasks and best suits one's needs, considering the peculiarities of the company, environment, and team, to ensure project success (Weflen et al. 2022; Fellow.app 2022).

Junior et al. (2015), based on the importance of process management geared towards innovation in organizations, pose a significant question: How is the process of developing and implementing innovations structured within organizations? According to Yoel and Gnizy (2022), an agile mindset guides companies to seek and introduce new methods and approaches in management, encouraging participants and managers to be attentive to novel and innovative ways of doing things.

In the computer technology services sector, a distinct gap persists in understanding the precise beneficial effects that agile methods can have on innovation and new business development, representing a critical opportunity to acquire strategic and practical insights.

Therefore, based on the afore contextualization this study aims to present how agile methods can contribute to the success of developing a new business unit in the service sector, applied in project management by one of Brazil's largest technology companies. Additionally, the study aims to demonstrate the value that the use of agile methods can bring to supporting and assisting managers in implementing disruptive new businesses within companies. The contribution of theory in underpinning these practices will be highlighted, as well as its implications for future research in the field of project management and innovation.

This article is divided into six sections. The first is the introduction, which describes the purpose of the study. The second section covers the theoretical foundation and methodology to be used in this research. The third section presents the referenced company and the developed case study. In the fourth section, the findings from the case study application are presented, followed by the fifth section where analysis and discussion are addressed, including visuals and observations regarding the results. Finally, the sixth and final section encompasses conclusions, limitations, and suggestions for future research on the topic.

2. Literature Review

Turner and Cochrane (1993) noted that the definition of project success was always related to timely delivery and staying within the budget, with quality being considered as fixed objectives within their definition. They did not consider whether the product/service inherently provided a benefit to the owners and their stakeholders.

The literature review highlights a wide range of recent studies related to agile methodologies, encompassing Kanban, OKR, Scrum, and SAFe, emphasizing the growing adoption of these innovative approaches for project and team management in various organizational contexts. The Kanban method, with its focus on visualizing workflow, allows for more flexible and adaptable management, while OKR stands out for establishing clear and measurable objectives, promoting strategic alignment throughout the company. Scrum, by providing an iterative and collaborative framework, reinforces agility in product development, while SAFe presents itself as a scalable option for large organizations, facilitating agile implementation across the entire company. These methodologies not only offer distinct management approaches but also share the central idea of promoting collaboration, efficiency, and innovation in an ever-changing business landscape.

2.1 Agile Methods

In 2001, the Agile Software Development Manifesto emerged from a gathering of seventeen representatives who sympathized with the need for an alternative to heavy documentation-driven software development processes. Representatives from Extreme Programming, SCRUM, DSDM, Adaptive Software Development, Crystal, Feature-Driven Development, Pragmatic Programming, and other proponents of an alternative to heavy documentation-driven software development processes came together. Ultimately, the aim was always to "deliver good products" to clients, operating in an environment that does more than just talk about "people as our most important asset," but actually "acts" as if people are the most important and drops the term "asset" (Lei et al. 2015; Zielske 2017; Kadenic et al. 2022; Agile Manifesto 2023). From this gathering, four fundamental values and twelve principles were declared, as shown in Table 1, which have become a guide and reference for professionals and researchers worldwide on agile methods.

Table 1. Values and principles Agile Manifesto. Source: The Author - Based on the Agile Manifesto.

	Values	Principles
1	Individuals and interactions over processes and tools	<ol style="list-style-type: none"> 1. The priority is to satisfy the customer through continuous and early delivery of software with added value. 2. Changes in requirements are welcome, even late in development. Agile processes leverage changes for competitive advantage to the customer.

2	Working software over comprehensive documentation	3. Deliver functional software frequently, with a preference for shorter timescales. 4. Business people and developers must work together daily throughout the project. 5. Build projects around motivated individuals. Provide them the environment and support they need, and trust them to get the job done.
3	Collaboration with customers over negotiation and contract	6. The most efficient and effective method of conveying information within a development team is face-to-face conversation. 7. Working software is the primary measure of progress. 8. Agile processes promote sustainable development. Sponsors, developers, and users should be able to maintain a constant pace indefinitely.
4	Responsiveness and changes over a predetermined plan	9. Continuous attention to technical excellence and good design enhances agility. 10. Simplicity—the art of maximizing the amount of work not done—is essential. 11. The best architectures, requirements, and designs emerge from self-organizing teams. 12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

2.2 Scrum

The most widely used agile method worldwide is Scrum, an iterative and incremental project management methodology based on empirical process control theory. Its focal point is organizing teams in a dynamic and ever-changing environment. Transparency, inspection, and adaptation are three crucial factors in the Scrum process (Remta 2021; LEI et al. 2015; Kadenic et al. 2022).

According to Kadenic et al. (2022), to successfully apply Scrum, individuals must become capable of embodying the five Scrum Values: commitment, focus, openness, respect, and courage.

2.2.1 Scrum Events

Scrum comprises events that aim to facilitate transparency, adaptation, and inspection within the development process. These events are referred to as time-boxed, aligning with project development and project planning phases. They are designed to inspect artifacts and adapt new methods to address project issues (Lei et al. 2015). These events are crucial for providing regularity. The events include Sprint, Sprint Planning, Sprint Review, and Sprint Retrospective (Ozieranska et al. 2016).

Scrum Methodology - Sprint

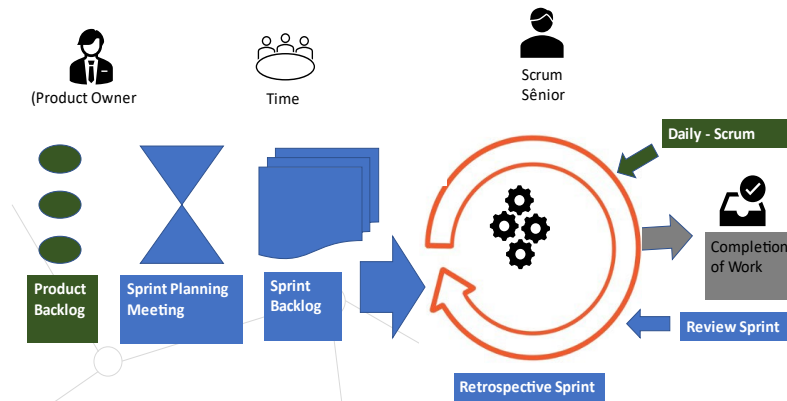


Figure 1. Components - Scrum Methodology. Source: The Author –Adapted from Components of a Scrum Event (LEI et al. 2015).

Schwaber et al. (2020) defines Sprint as the heart of the Scrum process, representing a time-box to create a finished and usable product. The Sprint is considered a project for a specific period with a plan for what and how needs to be built. The objectives of each Sprint cannot be changed during its course, including the Development Team. However, as needs arise, the Product Owner and the Development Team can redefine the project scope. If changes occur in the company's direction, market needs, or technology, the Product Owner can also cancel Sprints. The Scrum Team is responsible for planning the objectives of each Sprint, as well as planning the product implementation process in the Sprint Planning Meeting, which aims to establish the scope of work to be done during the iteration. During this planning, items from the Sprint Backlog are selected for implementation to ensure the creation of a usable and potentially releasable product, deemed "Done." A Sprint Review Meeting is conducted to discuss what each team member did during the product development iteration, inspecting the delivered functionality, focused on inspection and refinements. A Sprint Retrospective Meeting is held to inspect how the last Sprint was in terms of communication, human resources, processes, and tools, and to identify potential improvements for future Sprints through reflection on the completed Sprint. The Development Team and the Scrum Master focus on inspecting completed tasks and devising improvement plans for the next sprint, as shown in Figure 1 (Schwaber et al. 2020; Ozieranska et al., 2016).

2.3 Kanban

Kanban is a software development project management methodology that emphasizes "Just-in-time" delivery, using a simple, efficient, and direct approach to demand management. Its main focus is doing the right thing at the right time, considering developers' skills, prioritizing tasks, defining the workflow, and setting delivery deadlines. Kanban employs visualizing the workflow, limiting work in progress, and continuous improvement to achieve a streamlined process. It highlights the most critical tasks that require greater attention to reduce the risk of incompleteness and enhance flexibility among other project tasks, with a concentration on having the right work done at the right time, considering developers' skills, while eliminating waste in all stages. (Schwaber et al. 2020; Lei et al. 2015; Zielske 2017).

According to the Totvs website (2023), the Kanban system forms the structure of well-known management applications worldwide. Its popularity is grounded in a specific reason: Kanban is a straightforward method to implement, yielding rapid results, and is based on techniques that control and manage production flows for companies, with a focus on increasing productivity and process optimization. Its objective is to avoid procrastination and enhance day-to-day output. The entire system is structured in an organized manner to make the workflow more productive, defined by the following components:

- The Visual System: A process defined on a board with separation columns, enabling the division of work into segments or by status. Each item is fixed onto a card and placed in an appropriate column to indicate its position throughout the workflow.

- Cards: These describe the actual work that traverses this process.
- Limiting Work in Progress: This allows the assignment of limits to how many items can be in progress in each segment or state of the workflow.

In essence, Kanban is a workflow that seeks to indicate (and limit) work in progress — also known as WIP, Work In Progress.

2.4 DevOps

The term 'DevOps' was coined in the early 2000s to combine software development and Information Technology (IT) practices with the aim of enhancing and accelerating overall performance in processes and software development delivery. It constitutes a set of software development and operation practices and a recent addition to a vast family of diverse types of agile software process models, focusing on improving overall performance in processes and operations (Tanzil 2023, Azad 2023).

As found in the 2021 State of DevOps Report, DevOps is not merely automation, and being good at automation does not necessarily make a company adept at DevOps. (Translation and emphasis ours). It's crucial to understand the challenges engineers face when using DevOps tools and practices for a successful DevOps adaptation (Azad 2023).

Further from the 2021 State of DevOps Report, 97% of respondents with highly evolved DevOps practices agree that automation enhances the quality of their work, and 62% of organizations stuck midway in their evolution report high levels of automation. The report underscores that DevOps is not just about the cloud. While two out of three respondents report using the cloud, only one in four is utilizing the cloud to its full potential. Beyond these significant aspects such as cloud utilization and automation, organizations also need to address organizational aspects, aiding teams in clarifying their mission, customers, and interfaces, thus contributing to healthy interactions.

2.5 Scaled Agile Framework (SAFe)

The Scaled Agile Framework (SAFe) is a comprehensive framework that incorporates and amalgamates various agile practices to scale Agile in large-scale enterprises, spanning various organizational levels: team, program, and portfolio. At the program level, agile teams are organized to optimize value delivery from requirements. The portfolio level aligns programs with business strategy and employs value streams to provide continuous value. It offers prescriptive guidance for implementing Lean-Agile development at an enterprise scale. At the team level, agile teams are responsible for defining, building, and testing software in fixed-duration iterations and releases, utilizing agile project management practices such as Scrum and agile technical practices like XP. It defines additional roles like the Product Manager or System Architect, collaborating with the Product Owner. There are different configurations of SAFe, such as Essential SAFe, Large Solution SAFe, Portfolio SAFe, and Full SAFe, tailored to various enterprise environments. However, SAFe is considered complex by some practitioners, and concerns about its top-down approach and process emphasis over people are raised. Companies that have adopted SAFe have reported significant improvements, including higher return on investment, reduced time to market, and increased productivity. However, challenges are mentioned, such as the need to maintain release capacity throughout the development cycle and the difficulty of coordinating geographically distributed teams (Turetken 2016; Remta 2021; SAFe 2023).

2.6 OKR

The OKR (objectives and key results) is a management methodology that propels organizations to efficiently and effectively achieve their business objectives through active employee participation in goal definition. It fosters focus, prioritization, and transparency among teams, enabling cross-functional alignment and the creation of high-quality products. Objectives are set for a specific period, while key results are defined to track gradual progress through tangible tasks. When applied within the context of the SAFe (Scaled Agile Framework), OKR reinforces values of transparency and alignment between the company's strategy, portfolio, and agile team work, while also measuring organizational improvement activities. However, it's crucial to implement OKRs in a conducive environment with incremental planning and delivery to fully harness their benefits. Companies that still adhere to traditional development methods with an initial commitment to significant work volumes may face challenges in reaping the desired outcomes from OKRs. Therefore,

adopting a cautious approach and creating a conducive environment are necessary to achieve the desired effectiveness of this methodology (Stray et al. 2022; SAFe Scaled Agile Framework 2023).

2.6.1 Product Owner

The role of the Product Owner in SAFe is an evolution of the original Scrum role. They are responsible for maximizing product value, managing the agile team's backlog, and collaborating with the development team, Scrum Master, and Product Manager. In large-scale projects, the scope of activities goes beyond the capabilities of a single individual, leading to the need for teams of Product Owners. They act as the team's primary customer advocate and the main link between business strategy, technology, and the team. This allows the team to balance the needs of multiple stakeholders while continuing to evolve the solution. These teams share responsibilities with the Product Manager in working with customers. SAFe uses the program backlog as an analogy to the product backlog. Limited specific research has been conducted on the role of the Product Owner in the context of SAFe, but preliminary studies suggest closer collaboration between Product Owners and Product Managers, while the Product Owner's responsibility for product leadership in SAFe might be diminishing (Remta 2021; SAFe Scaled Agile Framework 2023).

3. Research Method: Case Study

This study is classified as a practical (applied) case study, and according to Dresh et al. (2015), it aims to provide an in-depth understanding of specific phenomena. It is quite common in empirical studies and involves a literature review, as well as interviews with professionals who have practical experiences with the investigated problem.

"A case study is a kind of history of a phenomenon, drawn from multiple sources of evidence where any relevant fact to the chain of events describing the phenomenon is a potential data for analysis," (Miguel 2007).

The guidelines of a qualitative methodology were observed, encompassing subjective phenomena and their complexity, as well as the analysis of the case in order to phenomenologically teach what is general for numerous cases. There is no need for the use of statistical methods, but such combination might be possible, as described by Turato (2008), Dresh et al. (2015) and Miguel (2007). According to Yin (2001), the case study always attempts to clarify the reason behind a decision (or set of decisions), how it was implemented, and the achieved outcomes. Yin also states that the strategy is used in the following situations:

- a. How and Why.
- b. When having little control over events.
- c. Focusing on a contemporary phenomenon in a natural context.

Stake (2007) defines the case study as a bounded system and emphasizes the unity and comprehensiveness of this system, focusing on the aspects relevant to the investigation problem, allowing for a clear view of phenomena through in-depth description. The result encompasses one or more of the following aspects: the nature of the case, the case's history, the context (physical, economic, political, legal, aesthetic, etc.), other cases by which it is recognized, and the informants by whom it can be understood.

The application of the exploratory case study, which, according to Miguel (2007), is one of the first criteria to be taken into consideration in terms of the depth of exploration, is relatively extensive when using exploratory cases. The level of exploration should occur when the theory is not well formulated or when it is an emerging theory. In the case at hand, it involves the application of agile methods outside the strictly software context, while also considering an emerging theory.

This research aimed to analyze the application of the agile methodology in launching a new business unit for technology services, with a focus on technical assistance for computers in corporations across Brazil. This study aimed to understand the best practices and challenges of this approach, providing insights for professionals and companies interested in adopting agile methodology in this context.

As the unit of analysis of this case study, this genuinely Brazilian company positions itself as one of the leading technology companies in the national market, including international presence in Argentina, Rwanda, Kenya, China, and Taiwan. It seeks to work with portfolio complementarity and diversification to cater to all customer profiles, which grants it the status of a multi-brand company. In a market announcement, the Company

introduced the launch of a new Services brand, aiming to provide technical assistance for multi-brand devices, covering all brands available in the national market. It's the first 100% Brazilian company to offer technical support services beyond its own devices. With a multisectoral strategy, the company plans to serve both the public and private sectors, offering installation and maintenance services for devices, including customized projects, data migration, and remote or on-site assistance. (Moneysites.com 2022; Positivo Tecnologia 2022)

3.1 Data Collection

In the data collection process, exploratory interviews were conducted with three employees from the mentioned company who actively participated in the management of creating the new business unit. These interviews aimed to explore the perspectives, experiences, and opinions of the participants. One of the participants held a decision-making position, providing an overall view of the flow and dynamics adopted for project management. The other interviewees were operational personnel at an elevated level, offering more specific insights into the dynamics of activities and deliverables.

In this case, the tool used for data collection was the semi-structured questionnaire interview, allowing participants to share their views openly, while the researcher could also guide the conversation towards specific topics to gain detailed insights into the management of the project to create the new business unit. Following Yin's (2001) recommendations, interview skills were observed, considering factors such as the ability to ask appropriate questions and interpret responses, being a good listener to eliminate biases, adhering to the theoretical foundation of the topic, being receptive and sensitive to divergent or contradictory evidence, and being flexible in unforeseen situations (opportunities/threats).

The dimensions used in the questionnaire encompassed the following areas: encountered difficulties, theoretical foundation for project implementation, information system used, utilization of progress tracking reports, involvement of the workgroup, support received from top management, timeframe, and level of accountability for the results.

4. Findings from the Case Study Application

The dimensions explored in the questionnaire enabled a comprehensive and in-depth analysis of the various factors that influenced the project and its implementation. This thorough examination allowed for a detailed investigation of the project's planning and construction stages, including the assessment of the utilized system. These analyses yielded significant insights that contributed to a thorough and well-founded understanding of the adopted strategies and the outcomes achieved in this specific context.

4.1 Use of Azure DevOps System

To support teams during the planning, monitoring, and discussion phases of work, the company uses the Azure Boards tool, an autonomous service of the Azure DevOps pact - Microsoft. This tool offers a flexible and customizable platform for managing work items, histories, bugs, tasks, and issues throughout the project's development lifecycle. According to Azure Boards (2023), the platform supports agile methodologies, including Scrum and indirectly Kanban, providing various features and integrations to help teams collaborate and stay organized with dashboards, reports, and notifications. It allows tracking work using standard or custom work item types and system standard fields and managing these work items with interactive backlogs, boards, lists, and calendar views. It includes roles such as Work Item Lists, Cards for work, product and portfolio backlog lists - grouping work into features and epics, Sprints, Queries, and Release Plans. Additionally, it supports agile planning methods like Scrum (tracks work using PBIs - product backlog items) and Kanban (using and tracking bugs and indirectly tasks on the Kanban board).

4.2 Establishment of Deployment Waves

Based on the strategic plan and the decision to launch a new business unit in Services, aiming to offer multi-brand technical assistance with national coverage and service at any location, the company defined priorities for building this business. To define the objectives and identify key results, the company applied OKR along with other agile methodologies: Scrum, Kanban, and SAFE, which brought greater agility and accuracy in the definition process. This process involved analyzing the current situation (AS IS) and defining how the company aims to be in five years (TO BE). From this initial mapping, priorities and areas of action were established, considering strategic points where efforts should be concentrated. Waves of growth were outlined, aligned with

the expansion and market penetration strategy, including gradual portfolio expansion over the years. This strategic approach will allow the company to achieve its goals in a planned and sustainable manner, expanding its presence and offering comprehensive and convenient multi-brand technical assistance services to customers (Figure 2).

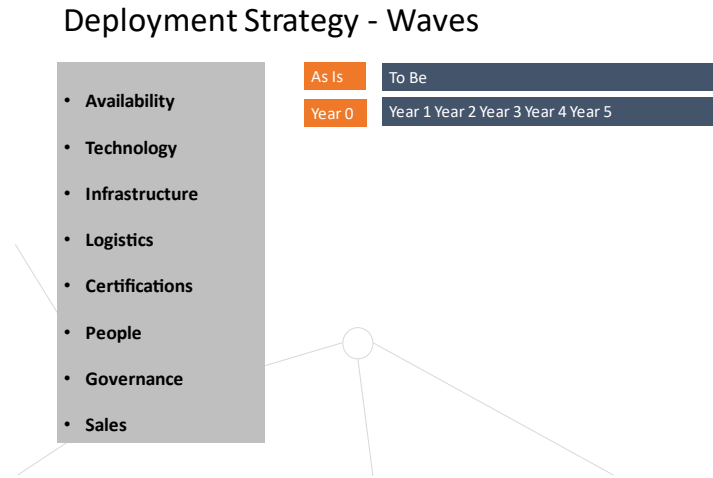


Figure 2. Sequence - Research. Source: The Author. Based on Observations. Case Study.

4.3 Sprint Planning and Construction

Based on the defined development needs and expectations set by top management, prioritized competencies are identified. These adaptations are divided into quarters (quarterly Release Plans), aligned with annual goals. Next, Sprints are created, consisting of short periods, usually two weeks, and are broken down into smaller actions called PBIs (Product Backlog Items). These short-term tasks allow monitoring and tracking each delivery appropriately. This process of division and breakdown into Sprints and PBIs provides more detailed control and efficient monitoring throughout the project.

Top management, engaged in the project, designates the Product Owner, who can be one of the directors with the most involvement in deliveries. Additionally, the Senior Scrum role was selected, responsible for supporting execution and meeting deadlines, as well as ensuring understanding and standardizing information, and defining dates to achieve these deliveries. After assigning responsibilities, Release Planning is conducted to define and plan the project's deliveries over time. It is the responsibility of the Product Owner to determine which features, requirements, or increments will be included in each release, defining specific deliveries to be made in each release, as well as the schedule to achieve these deliveries. This plan serves as a guide for the work team, helping ensure the project progresses in a structured and controlled manner, with incremental and iterative deliveries over time.

The selection of project team members took into consideration their level of involvement in delivery and the necessary hierarchy to ensure proper activity fulfillment and establish priorities regarding deadlines. These teams were formed temporarily, with the aim of dealing with specific actions and meeting the expected demands in the project as a whole. This responsibility and hierarchy structure was established to ensure efficient and timely project execution, allowing for a clear distribution of tasks and effective coordination among team members.

Once the teams are defined, which are usually multiple due to interdependencies between sectors, all are invited to participate in planning meetings, called "Sprint Planning.", as shown in Figure 3:

You are invited to participate in the Planning ceremony that takes place on the first day of the Sprint.

The participation of everyone is essential; please adjust your schedules accordingly.

Figure 3. Sequence - Research. Source: The Author. Based on Observations. Case Study.

In this meeting, priorities and development needs are defined, including the duration of each Sprint and the team involved in the deliveries. Using Microsoft's Azure Boards system, all delivery demands are created and managed within the tool. This includes the complete description of activities, setting deadlines, involving teams, assigning the Sprint number, defining acceptance conditions for delivery, and the approver responsible for validating effective completion. The system also provides a comprehensive view of activities in epic format, as well as the decomposition into smaller tasks within the Sprint and very short-term PBIs. All details follow standardized criteria, from deadlines to acceptance and approval criteria, ensuring consistency and clarity in delivery management.

In the context of the company in question, the concept of "daily" was adapted for meetings held on consecutive or alternating days, as needed. These meetings aim to monitor the status and progress of activities (PBIs and Sprints), identifying potential barriers and obstacles that could impede delivery proactively before any delays occur. In case of any deviations from expectations, the responsible agilist, together with the activity manager, escalates the issue following the hierarchy established in the planning meeting to alert about potential delays.

Weekly, the Senior Scrum, responsible for certain tasks or a set of tasks, holds Backlog Refinement meetings. The purpose of these meetings is to investigate and evaluate whether the planned tasks make sense at that moment and to verify the alignment of these tasks with the ultimate development purpose. This approach encourages the team to constantly question and reassess tasks, ensuring coherence and adherence to project objectives.

Generally, at the end of each sprint (at a shorter frequency), a Sprint Review and Retrospective Meeting is conducted, organized by the Scrum Master and the responsible agilist. This meeting aims to review the work completed during the sprint, analyze the achieved results, and identify opportunities for improvement for the next cycle (continuous improvement). In this meeting, the team reflects on the positive and negative aspects of the sprint, shares lessons learned, and discusses strategies to enhance the development process. This constant practice of review and retrospective contributes to the ongoing refinement of the work performed by the team.

The dynamics adopted by the company rely heavily on SAFe, which employs a blend of various agile approaches aimed at maximizing return on investment, reducing time to market, and increasing productivity. A significant challenge was

observed, such as the effort required to maintain the team's focus, considering the geographical distribution of team members and the need to sustain concentration even amidst various other initiatives and activities across different areas, all while ensuring the completion of daily operational tasks. After all, the teams are multifunctional, meaning they participate in projects while fulfilling their responsibilities for day-to-day outcomes.

5. Analysis and Discussion

As evidenced by the findings from the case study, the company demonstrated a considerable level of audacity in employing agile approaches for the launch of a new business unit in services. The data collected through interviews and observations were meticulously analyzed and compared with the existing literature review. This process enabled the identification of inconsistencies, the supplementation of prior knowledge, and the addressing of crucial points in implementation and management, in order to support managers in the effective use of agile methods for launching new ventures. The pillars emphasized by Turner and Cochrane (1993)

regarding project success were diligently observed throughout the conception and implementation of the agile methodology from the very beginning: time, cost, and quality.

The adoption of DevOps demonstrates a remarkable alignment with the theory previously discussed by Tanzil (2023). Given the day-to-day dynamics of companies, the proper selection of tools to manage work items such as tasks and monitor project indicators is essential. Figure 4 illustrates the Azure DevOps "Boards" menu, displaying the real project evolution, including the total completed Initiatives (epics), completed Release Features, overdue deliveries, diagrams of completed, in-progress, and new activities, as well as all changes made during the period, necessitating agile adjustments. The introduction of implementation waves adds value to the theory, representing a critical dynamic for gradually consolidating activities in alignment with actual deployment efforts over time. This approach establishes execution priorities in harmony with the delivery expectations of senior executives in the company. Adherence to Scrum practices and phases, such as sprint planning, backlog management, and reviews, demonstrates maturity in the company's application of the methodology, embracing discipline in tasks.



Figure 4. Azure DevOps – Boards Menu. Source: The Author. Based on Observations. Case Study.

One of the most noteworthy observations pertains to team composition, aligning with the theory. This is demonstrated by the intelligent adaptation of the concept of daily meetings into alternate-day gatherings, taking into account factors such as availability and the necessary time to ensure effective deliveries. This point demonstrates a significant adaptation, as discussed by Lei et al. (2017), who established the daily 15-minute meetings. It was observed that, for the researched company, these "mandatory" daily meetings became unproductive, considering that the team involved also had other tasks and daily progress was inconsistent. At this pivotal juncture, the application of the SAFe framework becomes particularly evident. By amalgamating various agile practices, this framework flexibly caters to the company's specific needs, resulting in the generation of substantial value for the workflow. This further corroborates the theory that companies embracing this methodology, especially larger ones, manage to uphold higher levels of purpose and discipline in their activities and tasks. This remains true even when the process involves multiple departments and dispersed teams across long distances. The company celebrated in its latest Results Report (RR) the successful expansion of its Services business unit, as demonstrated in Figure 5. This expansion led to a significant increase in the services portfolio and revenue growth. Furthermore, the company highlighted to its investors the achievement of securing two of the country's largest banks as exclusive clients of its services, demonstrating the project's effectiveness. This success is the result of the implementation of agile methodologies which provided flexible and transparent project management. The company also emphasized the crucial role of top management involvement, leading the adoption of these agile approaches and ensuring proper activity prioritization. This successful integration of agile practices, supported by advanced computerized systems like Microsoft's Azure DevOps, enabled better information monitoring, informed decision-making, and, consequently, drove innovation and success throughout the organization.

Introduction of the New Business Unit



Figure 5. Results Report (RR) – The Author. Based on Observations. Case Study

6. Conclusion

In the computer technology services sector, a distinct gap persists in understanding the precise beneficial effects that agile methods can have on innovation and new business development, representing a critical opportunity to acquire strategic and practical insights. This study not only identifies this gap but also addresses it by exploring the successful implementation of agile methodologies such as Kanban, Scrum, and SAFe. By investigating the integration of these methodologies and their adaptability to the specific needs of different projects and companies, this research offers a response to the problem. The study emphasizes the pivotal role of top management involvement in disruptive projects, shedding light on the importance of their leadership in

adopting these agile approaches, which in turn ensures proper prioritization amidst the demands of daily operations.

Furthermore, the study underscores the significance of a skillfully executed adaptation strategy that seamlessly blends diverse methodological approaches such as Kanban, Scrum, and SAFe. This astute fusion not only addresses the varied needs of companies but also enables a more streamlined and flexible project management methodology. The successful amalgamation of these methodologies, facilitated by sophisticated computerized systems like Azure DevOps - Microsoft, amplifies data storage, monitors information, and informs decision-making. This all-encompassing project management approach enhances day-to-day operations with heightened transparency and well-informed decision-making, nurturing innovation and success throughout the organization.

By considering the critical factors addressed in this study, companies can adopt preventive measures and reduce the chances of inadequate implementation. Furthermore, it is essential to emphasize the significance of disseminating the agile culture at all levels of the organization and forming a team open to innovation and flexibility to ensure the successful implementation of agile methods and achieve the desired benefits in launching new business units in technology services. However, it is crucial to recognize that the lack of activity prioritization and inadequate task fulfillment can pose serious risks to delivering expected results.

It is important to note that this work represents only a starting point, and further research is needed to broaden and deepen the presented findings. The author acknowledges the opportunity to conduct more comprehensive studies on the practical applicability of agile methods in the information technology services segment, filling the gaps identified throughout this study. These future research endeavors will contribute to advancing knowledge in this specific area, providing a more comprehensive and enhanced understanding of the benefits and challenges of agile methods in this context.

This article is expected to have provided a comprehensive overview of the utilization of agile methods in technology companies, sparking readers' interest and encouraging further discussions and research in this field. A thorough understanding of these methodologies is fundamental to achieving effective results, promoting flexibility, process control, team engagement, and a focus on customer needs.

References

- Ananda, R. V. and Dinakaranb, M., Handling stakeholder conflict by agile requirement prioritization using Apriori technique. *Computers and Electrical Engineering*, vol 61, pp. 126-136, 2017.
- Asseraf, Y. and Gnizy, I., *Translating strategy into action: The importance of an agile mindset and agile slack in international business*, *International Business Review*, vol. 31, no. 102036, 2022.
- Azad, N. and Hyrynsalmi, S., Devops Critical Success Factors – A Systematic Literature Review. *Information and Software*, vol 157, pp. 107150, 2023.
- Azure Boards. Available: <https://learn.microsoft.com/pt-br/azure/devops/boards/>, Accessed on May 22, 2023.
- Beedle, M., Bennekum A. V., Cockburn, A., Cunningham, W., Fowler M., Highsmith, J., Hynt, A., Jeffries, R., Kern, J., Marick, B., Martin, R.C., Shwaber, K., Sutherland, J. and Thomas, D., Agile Manifesto. Available: <https://agilemanifesto.org/history.html>, April 2023.
- Beller, C.S., Francisco, R., Loures, E., Deschamps, F. and Pinheiro, L.E., Guidelines for a More Agile, Productive and Integrated New Technologies Employment, *Proceedings of the 25th International Conference on Production Research Manufacturing Innovation: Cyber Physical Manufacturing*, Chicago, USA, August 9-14, 2019, pp. 913-922.
- Fellow App. Available: <https://fellow.app/blog/meetings/scrum-vs-kanban-strategies-differences-and-comparison/>, Accessed on April 22, 2023.
- Kadenic, M.D., Koumaditis, K. and Jensen, L.J., Mastering scrum with a focus on team maturity and key components of Scrum. *Journal Information and Software Technology*, vol. 153, no. 107079, 2023.
- Lei, H., Ganjezadeh, F., Jayachandran, P.K. and Ozcan, P., A statistical analysis of the effects of Scrum and Kanban on software development projects. *Robotics and Computer-Integrated Manufacturing*, vol 43, pp. 59-67, 2017.

- Miguel, P. A. C., Estudo de caso na engenharia de produção: Estruturação e recomendações para sua condução. *Produção*, volume 17, pp. 216-229, 2007.
- Ozieranska, A., Skomra, A., Kuchta, D. and Rola, P., The critical factors of Scrum implementation in IT project – the case study. *Journal of Economics and Management*, vol 25, pp 79-96, 2016.
- Positivo Tecnologia - Investor Relations, Available: <https://ri.positivotecnologia.com.br/>, Accessed on April 22, 2023.
- SAFe - Scaled Agile Framework, Available: <http://www.scaledagileframework.com/>, Accessed on June 09, 2023.
- Stake Re. *Investigación com estudio de casos*. 4ª ed. Madrid (ES): Ediciones Morata; 2007
- State of Devops Report. 2021, Available: <https://circleci.com/resources/state-of-devops-report-2021/>, Accessed on May 14, 2023.
- TOTVS, Available: (<https://www.totvs.com/blog/negocios/kanban/>). Accessed on April 22, 2023.
- Techno-pm, Available: <https://www.techno-pm.com/2017/05/scrum-board-example.html>. Accessed on April 22, 2023.
- The Second Annual State of Agile Culture Report Launched – State of Agile Culture Report – 2021-22, Available: <https://jcurv.com/2022/02/agile-culture-agile-behaviours-agile-leadership/>, Accessed on April 22, 2023.
- Moneytimes, Available: <https://www.moneytimes.com.br/positivo-posi3-anuncia-novo-servico-de-suporte-tecnico-em-todo-o-pais/>, Accessed on April 21, 2023.
- 16th State of Agile Report, Available: <https://digital.ai/resource-center/analyst-reports/state-of-agile-report/>, Accessed on June 09, 2023.
- Remta, D. and Buchalceva, A., Product Owner's Journey to SAFe(R)-Role Changes in Scaled Agile Framework(R), MDPI, vol 12, pp. 107, 2021.
- Stray, V., Gundelsby, J., Ulfnes, R. and Moe, N.B., How agile teams make Objectives and Key Results (OKRs) work. *Proceedings of the International Conference on Software and System Processes and International Conference on Global Software Engineering (ICSSP'22)*. Association for Computing Machinery, New York, NY, USA, May 20-22, 2022, pp. 104–109.
- Schwaber, K. and Sutherland J., The Scrum Guide, the Definitive Guide to Scrum: The Rules of the Game, Available: <https://scrumguides.org/docs/scrumguide/v2020/2020-Scrum-Guide-US.pdf>, Accessed on April 17, 2023.
- Tanzil, M. H., Sarker M., Uddin G., Iqbal A., A mixed method study of DevOps challenges, *Information and Software Technology*, vol 161, pages 107244, 2023.
- Turetken, O., Stojavov, I. and Trienekens, J.J.M., Assessing the adoption level of scaled agile development: a maturity model for Scaled Agile Framework, *Journal of Software: Evolution and Process*, volume 29, Issue 6, 2016.
- Yin, R. K., Case Study Research and Applications, *Sage Publications*, Sixth Edition. Los Angeles, 2018.
- Zielske, M. and Held, T., Agile methods used by traditional logistics companies and logistics start-ups: a systematic literature review, *The Journal of Systems & Software*, vol. 190, pp. 59-67, 2017.
- Weflen, E., Mackenzie, C. and Rivero, I.v., An influence diagram approach to automating lead time estimation in Agile Kanban project management. *Expert Systems with Applications*, vol. 187, no. 115866, 2022.

Biographies

Aquiles Nogueira holds a bachelor's degree in accounting and is a Specialist in Production and Logistics Management from University Unisaesiano São Paulo - SP. He also holds an MBA from Fundación Getulio Vargas - São Paulo - SP, and he is currently pursuing a master's degree in operations at the Federal University Federal of Paraná – UFPR – School of Management. With over 15 years of experience in Service and After-Sales management, he stands out as a dynamic leader and management expert. His career includes positions in both national and multinational companies, contributing to organizational growth and success. His focus on challenges, innovation implementation, and achieving results has led him to lead large teams. His passion for driving positive changes, combined with his management expertise, makes him a highly capable professional committed to the ongoing development of teams and organizational success.

Guilherme Francisco Frederico is a Professor of Operations, Supply Chain and Project Management at Federal University of Paraná – UFPR – School of Management, Curitiba, Brazil. He works by teaching and leading research in the graduate programs (PhD and MSc in Information Management and Master in Business

Administration) and undergraduate programs (Business Management) at UFPR. Also, Prof. Frederico has been working in collaboration with the Centre for Supply Chain Improvement at University of Derby – UK as a Visiting Professor and affiliated Researcher. His research interests and expertise on Supply Chain Management field are related to Maturity and Performance Measurement, Project Management, Knowledge Management, Strategic Sourcing and Impacts from Industry 4.0 and Industry 5.0. He has published his research outcomes in international journals such as Supply Chain Management an International Journal, Journal of Cleaner Production, Business Process Management Journal, International Journal of Productivity and Performance Management, Operations Management Research Journal, Benchmarking an International Journal, International Journal of Logistics Management and Knowledge and Process Management Journal. Prof. Frederico is an Area Editor of Operations Management Research - OMR – Springer Journal and member of the Editorial Board of the Computers & Industrial Engineering Journal – Elsevier, Sustainable Manufacturing and Service Economics – Elsevier and International Journal of Industrial Engineering and Operations Management – Emerald.