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Agile Project Management Approaches: A Case Study with Respect to Their Application in Finance Technology Projects

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ABSTRACT

The strategy of Financial Services in Libyan pioneer companies has begun to achieve a transformation from providing ordinary services to electronic services through financial services technologies, which necessitates the qualification of employees in Libyan software companies. To facilitate this, recent agile software agile project management strategies and their possible advantages, disadvantages, and possible limitations will be discussed. In the context of improving software development for changing work conditions or requirements, he current state of agile project management (APM) will be studied and enhancement with best APM practices will be implemented within Masarat IT & Financial Services, a pioneer Libyan company. Our findings demonstrate that the application of agile project management best practices has a positive impact on project success. The benefits of agility were immediately apparent, and the advantages of adopting APM methodologies were a crucial factor in successfully completing the project.

منهجية Agileفي إدارة المشاريع: دراسة حالة لتطبيقها في مشروعات تكنولوجيا الخدمات المالية

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الكلمات المفتاحية:
إدارة المشاريع
الخدمات المالية
منهجية Agile
هندسة البرمجيات

الملخص

بدأت الشركات الليبية الرائدة في استخدام استراتيجية الخدمات المالية من اجل تحقيق تحول من تقديم الخدمات المالية اليومية إلى خدمات إلكترونية عبر تقنيات الخدمات المالية. لتحقيق ذلك استدعى الامر ضرورة تأهيل العاملين في شركات البرمجيات الليبية من اجل تقديم هذه الخدمات الكترونياً. في هذه الدراسة ستتم مناقشة استراتيجيات إدارة المشاريع Agile للبرامج الحديثة ومزاياها وعيوبها المحتملة والقيود المحتملة للوصول لأفضل الخدمات المالية الالكترونية. في سياق هذا التحسين لتطوير البرمجيات من أجل تغيير ظروف العمل أو المتطلبات، باستخدام إدارة المشاريع التقليدية. ستتم دراسة استخدام Agile و تحسينها بأفضل ممارسات APM ضمن أحد الشركات الليبية الرائدة وهي شركة مسارات لتقنية المعلومات والخدمات المالية. إن تطبيق نهج إدارة المشاريع Agile كان له تأثير مفيد على نجاح المشروع، وفقًا لنتائج بحثنا. ظهرت فوائد Agile على الفور، وكانت مزايا اعتماد منهجيات APM عاملاً حاسمًا في إكمال المشروع بفاعلية.

Introduction

Traditional project management approaches focus on planning are no longer efficient in today's highly dynamic, unpredictable, and

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constantly changing project environment [1]. Products have gotten more complicated, and customers are continually seeking additional features. As a consequence, Agile project management (APM) approaches have emerged in recent years in order to deal with such dynamic environmental variables [2].

Project management responsibilities and functions have changed dramatically as a result of the adoption of agile approaches. Scrum established the positions of the product owner and scrum master, whereas XP created the job of the role tracker or coach [3]. Project requirements and objectives are changing more frequently as a result of projects' dynamism and complexity, which has a negative impact on the project's success and outcome [4In order to boost project value outcomes through agility, APM was developed in the field of software development [5,6]. To be agile, a project must be organized to adapt pro-actively and quickly to changing demands and embrace possibilities [7,8]. Due to evolving project environments across industry, increasing unpredictability, and shifting project needs, APM is increasingly attracting interest outside of the software development business [9].

A strategy built on a set of principles that aims to make the project management process more straightforward, adaptable, and iterative in order to improve performance while requiring less management work and fostering higher levels of creativity and added value for the client, is how APM is defined in [2]. Hence, the strategy of APM main goals are to reduce project runtimes and improve project quality while being able to respond feasible to changing surroundings and client needs [10]. In addition, APM enables management to adapt to and handle environmental changes [11].

Agile project management has grown in popularity as a useful and flexible project management approach across various industries, according to the 14th Annual State of Agile Report [12]. It also has shown to be one of the best solutions for dealing with complicated challenges and effectively adapting to organizational changes while remaining connected to consumers [13].

The term "scope" in project management refers to a document (specification document) that specifies tasks and procedures necessary to create or accomplish the project's aim [14]. According to its definition, scope management is the process of deciding what should and should not be included in a project. Additionally, it creates a foundation for managing projects, evaluating performance, and clearly communicating responsibilities. The most extensively used project management concepts and frameworks are those found in the Project Management Body of Knowledge (PMBOK), Projects in Controlled Environment (PRINCE2), and agile project management. One element that might directly affect the budget and schedule is the project's scope. However, it seems to be among the most disregarded areas in both agile and traditional approaches [15]. Agile is known for its speed of progress and readiness to embrace change [16]. Agile does not consider scope changes to constitute "creep" because they are acknowledged, expected, and managed throughout the project. Change is regarded a risk in a more conventional approach, such as Projects In Controlled Environments (PRINCE2) [17]. Every modification must be carefully managed since it has the potential to alter the project's timeline and budget, which is why the scope must be precisely established from the start.

Agile approach's five layers are, story mapping planning, release planning, iteration planning, and daily meetings. These are used to decide the project scope [18]. Despite having those five levels, Agile's nature was flexible and dynamic [15], since the customer is involved in the process at the revisit in each iteration planning phase when establishing the scope and definition of done; and keeps confirming the required features to be developed [18]. The first features to be created and released should be those with the highest market impact. These procedures lead to up to 30% final scope modifications in agile during each iteration [15]. It might lead to the project to be delayed and the product's cost to rise. Scope management in Agile is more difficult in some organizations with rigid project requirements and set budgets. Recent studies on project scope management have shown that scope is a critical component of the project's knowledge domain and that, if poorly managed, can result in project failure [14, 15]. According to PRINCE2, scope creep is an uncontrolled scope that will affect the project's budget or timeline [17]. Agile manages this scope because, as previously said, Agile is more open to change. This research attempts to investigate the difficulties in managing scope and contract in projects based on such description.

This study will investigate the deployment of APM in a MASART, a medium-sized fintech business that now provides fintech services to Libya's major government banks. Our main goal is to demonstrate that, instead of employing a whole APM strategy, small and medium-sized businesses may profit significantly from using only a few APM principles without having to fully restructure their current organization. The remaining sections of the paper are structured as follows. In Section 2, a brief review of the APM literature is provided. In Section 3, the research methodology is described. In Section 4, which also includes the study's findings, a brief description of the case company and the project under review is provided. In Section 5, we expand on the study's findings and discuss the key elements that can encourage clients to adopt APM methods. The study concludes with a few final observations and recommendations for more research.

Literature Review

The Project Management Body of Knowledge (PMBOK), Projects in Controlled Environment (PRINCE2), and agile project management some of the most well-known project management frameworks and principles will be covered in this section to help readers better understand the scope definition for project management.

1. Scope in Project Management Body of Knowledge (PMBOK)

The PMBOK was developed by the Project Management Institute (PMI) to specify project management knowledge concepts. A current knowledge base and project management framework are offered to aid project managers in completing their projects [19]. The PMI has made the PMBOK available six times; the most current edition was issued in 2017. The ten knowledge domains included in the PMBOK 6th Edition [20] are project integration management, project scope, project schedule, project cost, project quality, project resources, project communication, project risk, project procurement, and project stakeholder management. The PMBOK Guide 6th Edition defines scope management as "the methods critical to guarantee that the project incorporates all of the work required to achieve it successfully" [19]. The project plan document contains specifics on the project's scope, which was determined upon during the planning phase. This project plan document serves as guidance because it provides a lot of essential project specifics.

2. Scope in Projects In Controlled Environments (PRINCE2)

The Projects in Controlled Environments (PRINCE2) approach is based on hundreds of projects' worth of experience and inputs from a wide range of sponsors, managers, project teams, academics, trainers, and consultants [20]. The Central Computer and Telecommunications Agency (CCTA) created it in 1989, and it is currently known as The Office of Government Commerce (OCGC). The ownership transferred to AXELOS in 2013, resulting in a substantial modification to PRINCE2 and PRINCE2 Agile. The framework and standards for a fruitful project were supplied by PRINCE2, which then classified them into three categories: There are seven principles, themes, and processes to take into account. The project's deliverables were described as the PRINCE2 scope [17]. Prior to beginning the project, the customer and project manager should be on the same level on its scope. The project manager should be aware of the project's scope and should not deliver outside of it to minimize delays, overpaying, and unexpected changes [17]. Since this contract is also dependent on the agreed-upon scope, such procedures should be followed. As a result, there has to be open dialogue between the project manager and the clients. Any substantial adjustments made in the midst of the project run the danger of causing delays and cost overruns.

3. The Scope of Agile Project Management

Agile defines project scope in a different way than PMBOK and PRINCE2. Because Agile encourages the inclusion of new solutions in later phases of a project, project scope flexibility is allowed [14].

At each iteration step, the product owner and the customer collaborated to manage and confirm the scope. This method decides whether iteration phase features are approved or rejected. Because the Agile methodology necessitates tight collaboration with the client throughout the project's development, this considered as a natural process in agile methodology. These processes were set up to prevent reworking, unplanned delays, overspending, and customer dissatisfaction [21]. This method, however, may bring a new risk to the project. Modifications are more frequent throughout the development phase, and there is a possibility of undesirable changes towards the end of the iteration, hence may increase the project's risk. Moreover, the Agile risk mitigation approach is not considered an essential point of view [21]. Despite this requirement, relatively few literary works transcend the Agile constraint on change and scope management.

Related works

According to many academics and practitioners, traditional project management is inadequate in today's corporate climate and unable to handle challenges such increasing complexity, erratic demands, and quick rates of change [22, 23–25]. The answer to this problem, however, lies not in a more precise and comprehensive initial project plan, but rather in a more flexible project management methodology, more often known as APM [2]. The key concepts and guiding ideas of the new, more effective way of thinking and creating software were laid forth in The Manifesto for Agile Software Development, which was developed in 2001 by seventeen leading software practitioners [15]. They listed the following as their fundamental beliefs and principles: emphasizing people over procedures and tools; valuing functioning software over thorough documentation; prioritizing customer participation over contract negotiations; and adapting to change over sticking to a schedule. The following are the additional twelve supporting principles: early and continuous delivery of valuable software; acceptance of changing requirements, even late in development; frequent delivery of working software; daily interaction of business people and developers; motivated individuals; face-to-face interaction; working software as the primary measure of progress; sustainable development, ability to maintain a constant pace; and continuous attention to technical requirements [26].

To encourage flexibility and enable quick reactions to changing situations, APM minimizes planning and documentation [4,27,28]. In the face of changing needs, flexibility increases productivity, lowers market and technical uncertainty, and helps manage complexity [29,30]. APM is an approach that is focused on learning [30]. The project team is always growing as a result of regular testing and ongoing customer input. This ensures that the customer obtains the necessary solution and enables the speedy inclusion of new information and knowledge into the subsequent iteration.

Project management agility is becoming more and more popular, but definitions in this area are still inconsistent, vague, and inconsistent [31,9]. Highsmith [32] identified continuous innovation, product adaptability, quicker delivery times, staff and process adaptation, and consistent results as critical goals. Augustine described agility as "the ability to deliver customer value while coping with inherent project dynamism and unpredictability by detecting and responding to change" [33].

AMP is "an approach based on a set of principles, whose goal is to render the project management process simpler, more flexible, and iterative in order to achieve better with less management effort and higher levels of innovation and added value for the customer," according to Conforto et al. in [2]. APM approach is also defined as "a microplanning or project management tool meant to include a development team, including the client, in getting to a workable final product fast," according to Cooper et al. [34].

Conforto et al. (2016) used a frame semantics method in conjunction with a thorough literature review to provide a comprehensive definition of agility. To achieve excellent project and product performance in a creative and dynamic project environment, they describe APM as "the project team's flexibility to promptly alter the project plan in response to customer or stakeholder expectations, market or technical demands" [9]. They emphasized that rather than a strategy or practice, the effectiveness of a project team should be used to evaluate agility. This revelation led to the adoption of agility by non-software industries. Additionally, their study identified active client participation and the ability to quickly change the project plan as the two main criteria of APM.

Azanha et al. state that while there are many different definitions of APM, most researchers view it as "a strategy that aims the flexibility, simplicity, iterations in short periods of time, and gradually develop value" [31].

Research Methodology

In this research, we will investigate on how APM methodologies were implemented in a mid-sized Libyan fintech business. Our research, which is based on an action-research approach [35], aims to evaluate the company's agile project management implementations. By outlining the benefits, drawbacks, and future directions of APM for software businesses, it will also add to the limited body of literature available on this subject.

The study process was divided into five steps: The key obstacles to APM implementation in small-to-medium-sized organizations were examined in a review of the literature.

A case project for the evaluation of APM practices will be selected after analyzing the case company's present project management procedure. The proper team, together with the project manager, will receive the case project. Then, in the case project, the approach for merging APM methodologies with the customary corporate management process will be applied. Last but not least, the case project will be looked at and evaluated to address the four main research questions (Q):

Q1: Has the use of APM methods been successful?

Q2: Has the company taken advantage of these practices?

Q3: Has the project been successfully delivered?

Q4: Has the project's success been affected in any way—positive or negative—by APM practices?

Together with the project manager and the project team, we worked with the company to gather all the data. The project manager's main objective was to finish the project successfully, but he also carefully watched the procedures and kept the other contributors updated on its development. After carefully going over all the information and materials that have been supplied.

The project team's perceptions of how APM approaches have influenced the project's development should be taken into consideration when implementing APM principles (Q1). The project team should also be aware of changes and make the necessary adjustments to the project plan to maximize project success. The case project's level of agility was assessed using the company's regular project management methodology and the Agility Measurement Questionnaire(Q2). Customer and team integration, delivery frequency, customer validation, decision-making process, and project plan update cycle are the five factors used to evaluate agility. The questionnaire was derived from Conforto et al., who recommended using a 6-point Likert scale for evaluation [36].

Measurement of agility questionnaire:

1. Customer and team integration: the regularity of the client and project team's interactions (communications) to discuss projects.
2. Delivery frequency: How frequently the group provided the client with incomplete findings.

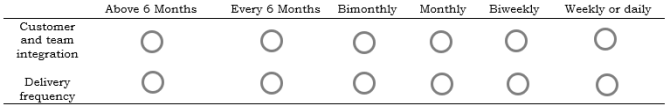

Fig. 1: Customer and team integration and Delivery frequency Likert scale.

3. Customer validation: The project's intermediate results were frequently presented, debated, and validated by the partial.

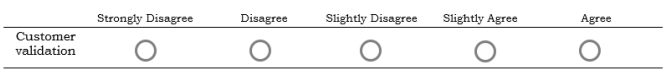

Fig. 2: Customer validation Likert scale.

4. Decision time: In the case that the project's scope changed, how long did it typically take the team to acquire information, evaluate it, and reach a decision?
5. Project plan updating cycle: When did the team typically update the project plan and notify all people involved if the project's scope changed?

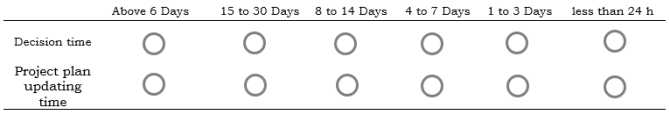

Fig. 3: Likert scale for decision time and project plan update time.

Serrador and Pinto's definition for measuring the project's success [37] have been adapted to evaluate (RQ3). By comparing actual project costs to the planned project budget, adopting the project's success, and adopting the satisfaction of all significant project stakeholders, it evaluated the project's performance [37]. In order to estimate the projected efficacy, the project execution time has also been compared to the project deadline, and the scope has been evaluated in accordance with customer needs and product characteristics, as well as satisfying software development and security standards. Information regarding the project team and stakeholders' satisfaction was gathered through a series of internal discussions and interviews.

Table 1: Stakeholder success and efficiency factor.

Stakeholder success factors measurement questions	Efficiency factors measurement questions
ratio of the project success (in the senior manager point of view)	The successes ratio of project' goals achieves its financial objectives
ratio of the project team's satisfaction	The successes ratio of project' goals achieves its time goals
ratio of the project customer's satisfaction	The successes ratio of project' goals achieves its scope and requirements goals

The project manager was requested to assess the project's development in relation to (RQ4) and in accordance with Serrador and Pinto's [37] standards by utilizing a 5-point Likert scale (unsatisfactory, goals not entirely fulfilled, fully meets goals, exceeds goals, and exceptional). These responses were used to calculate the two success factors. The evaluation of success criteria was based on actual data; however, no information on actual costs may be published owing to the sensitivity and security of the material.

Case study

1. Company Environment

A company provides Fintech services for Libya's major government banks which is a medium-sized Fintech-focused business have been selected to conduct our research. By 2022, they had 150-200 people and produced revenues that were 20% higher than in 2018. Based on ISO 27001 and other information security management standards, they developed their methodology.

Project management is necessary since financial software development is the most demanding. Thus, the business created the project life cycle. The company schedules a meeting with the clients it serves, which are banks. Furthermore, the schedule for executing the planned course of action within the duration of the contract must be determined.

Dedicated project managers are employed by the business (often a member of the project management department). Each project manager has a team, based on the team's area of expertise for the project type. Project managers and company representatives meet for the first time during this initial meeting (sprint meeting). What tasks will be performed during the sprint period, which is typically two weeks to one month, is outlined. Following that, the team members assemble, and tasks are assigned to them based on their areas of competence. This meeting lasts for 10 minutes each day until the sprint is over to review what has been accomplished.

2. Case Project

A Libyan bank appointed the company in 2022 for a project that covers the expansion of its financial technology activities. The first assessment found that the project was quite risky because the company had never used Agile project management and there were several novel materials and processes. Since the project offers a significant strategic potential, it was agreed that agile project management should be used to handle it. However, in order to handle possible risks efficiently, several changes need be made to the company's conventional agile project management and collaboration. With the use of specific APM approaches linked to agile software development, the project team should be able to adjust to changes or deviations more rapidly.

3. The Selected APM Practices

Following are some of the APM approaches that have been used by the company: iterative and adaptive planning, active customer collaboration meetings every two weeks, and specialized project teams that stay stable for each type of project. The significant variations between the company's normal project management process and the project management process utilizing APM approaches are summarized in Table 2.

Table 2: Key distinctions between traditional approaches to project management and those employed in APM.

Project management scope	conventional management process	Implementing APM Practices
Project team	committed upon request	committed and co-located upon request (still working on multiple projects)
Team meetings	It has, but it takes a lot of time, sometimes hours.	stand-up meetings every day
Participation of the clients	Upon request	Flexible cooperation for assessing partial outcomes
Supplier involvement	Except in difficult times	Flexible cooperation
Project planning	planning twice a month using template	flexible and incremental, planning using template

The project team was medium in size and made up of highly motivated individuals from diverse professions. It consisted of two front-end developers, two back-end developers, two QA engineers, and an account manager. Team members may give a project their full attention when working in a multi-project environment, and other employees are not allowed to come in and assist with other projects unless it is truly necessary. Furthermore, the majority of cooperation is performed within the same building, which facilitates and improves communication.

It has been decided to have brief standing meetings every day at the same time and place. The team as a whole was updated on the project's development, daily tasks, and any upcoming obstacles at these regular standing meetings.

The normal APM scrum approach appears to be fairly comparable to this. The project manager keeps track of key information in an excel file for future use, such as tasks that need to be finished, open items, and deadlines. As a result, all open issues and possible difficulties were resolved, along with the entire new content. The project planning process has undergone significant alterations and new requirements have been identified for development. A thorough work plan is made and the project plan is adjusted accordingly.

4. Evaluation of Project Success and Study Finding

The case project was one of the most challenging projects the business has encountered. The company has benefited from the adjustments made to the company's conventional management

strategy. Therefore, despite all of the challenges and pressure that the project team had with regard to the organization of daily operations, the team was able to effectively complete the project in terms of stakeholder satisfaction and project efficiency. Figures 4, 5, and 6 demonstrate the degree of agility in the application of APM methods as described in the research methodology section using a 6-point Likert scale.

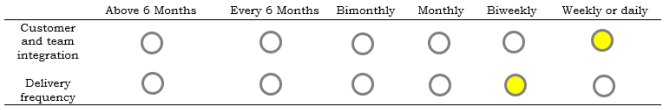

Fig. 4: Final results of several iterations in customer and team integration and delivery frequency.

Fig. 5: Final results of iteration in decision time and project plan update time.

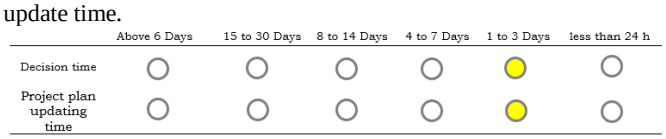

Fig. 6: Final results of several iterations in customer validation.

The advantages of using APM methods and agility were both immediately clear and essential to completing the project effectively. After the project was concluded, questions evaluating its success were posed to the project manager, who was requested to respond using a 5-point Likert scale. Figures 7 and 8 provide the assessment results for the efficiency component and the stakeholder success element.

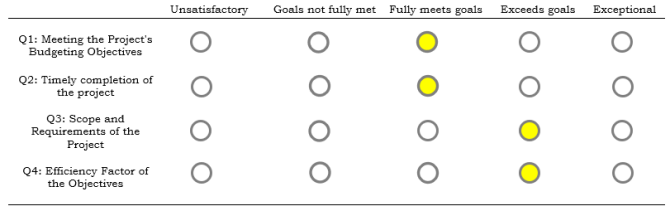

Fig. 7: Final results of efficiency factor evaluation.

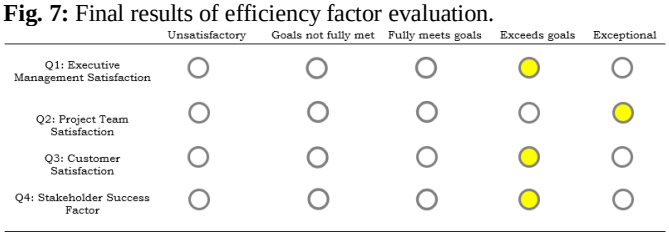

Fig. 8: Final results of the evaluation of the stakeholder success factor.

Researchers can now react to the primary research assertions based on our case study findings. Even though the company did not fully implement the APM methodology and only applied a few of its best practices, the level of flexibility significantly increased, which benefited the management process. Some of the biggest benefits included better customer and team communication, more efficient problem-solving, and a quicker reaction to change.

One disadvantage was the unusually fast pace of work, which the team had to adjust to, especially when working on other projects. Another issue was that the expenditures were unimportant and were not addressed, and the major goal was to satisfy a client. Despite having no prior APM experience, the case study indicated that the team was able to successfully embrace the new processes and implement them into their usual working procedures without any major complications. When APM methodologies were utilized, the company also offered fully committed team members for the project, although this did not appear to be a substantial disadvantage in the project management process.

The case study's findings cover the four major APM research themes mentioned by Conforto [36] in terms of how using APM methodology enhanced the project team's capacity to react to changes in a timely and efficient manner. This domain might be defined as adjusting APM practices to a changing environment, evaluating the example project's level of agility, effectiveness, and, ultimately, the satisfaction of all significant project stakeholders. Nevertheless, we saw during the case study that the company applied a range of APM approaches to guarantee project success. The adoption of APM methods has been effective (Q1), according to Conforto's research who evaluated the opportunities for small and medium-sized organizations to apply APM [2].

Without a strong project team, APM methods might be difficult to implement since they are people-oriented. APM approaches were used thanks to the project team's heterogeneous composition and the experience and expertise of industry specialists from a range of fields (Q2).

Even though the customer made an attempt to attend project team meetings and consistently engaged, there are many situations when the customer is not prepared to contribute at the same time. The team was given additional responsibility, which made them feel more in charge and motivated them to overcome challenges and finish the project on schedule (Q3). They were willing to participate in daily meetings, worked overtime when necessary, and some even worked on holidays. The staff remained upbeat throughout the project.

Stakeholder satisfaction and project effectiveness were measured for project success. The project's efficiency in terms of the project's budget, timeline, scope, and needs was reasonably similar to what the company had anticipated. Additionally, everyone involved in the project acknowledged pleasure with its advancement and outcomes. According to stakeholder comments and the project success review, the team was able to successfully adopt APM methods (Q4).

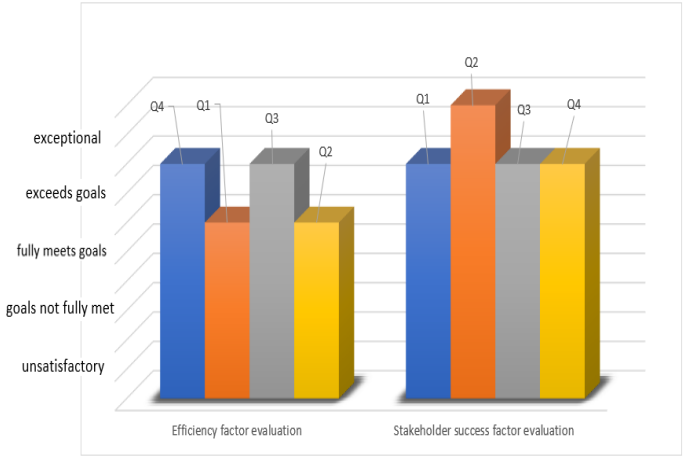

Fig. 9: Examination of the efficiency factor and the stakeholder success factor.

Conclusion

APM has received a lot of attention in recent years, and companies from many different industrial sectors have started to realize the enormous possibilities in merging different APM aspects. Agile project management is ideal for helping project managers and software development teams control risk, scope, costs, and timelines to produce successful, worthwhile products.

As part of this research, we investigate how APM was implemented at MASART, a medium-sized financial technology company that currently provides fintech services to Libya's major government banks as well as offering a review of the literature on the fundamentals and best practices of APM. The initiative's main objective is to demonstrate how small and medium-sized businesses may benefit significantly from using a few APM best practices without having to fully restructure their current organization.

Our research's findings indicate that APM procedures are beneficial to a project's success. We also discovered over the course of our inquiry that the case company had processes in place for an APM deployment, which contributed to the project's success. Three key factors contributed to the project's success: complete management, outstanding leadership, and the team's willingness to actively engage in the endeavor. Also, important to note is the possibility that APM approaches will benefit all projects inside the organization.

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