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PROJECT METHODOLOGIES AND THEIR IMPACT ON THE PROJECT SUCCESS

Mirjana Jokanović Đajić¹, Soukaina El Hajjaji², Ranka Gojković³

Abstract: It is very difficult or even impossible to know precisely at the initial planning stage what are all the activities that need to be carried out in order to complete the project and what their cost and duration parameters are. Also, this could be less or more complex, depending on the project methodology. Traditional approach consists of five phases, which include the planning phase or activity, which means that with this approach planning is imperative. On the other hand, through agile methodology, projects are typically completed in cycles with the next cycle returning to the planning phase. Nowadays it isn't unknown that many organizations are using a combination of both agile and traditional methods (hybrid model) which may introduce more overhead in regards to additional project documentation. The purpose of this paper is to qualitatively express, based on a literature review, the influence of different project methodologies on the project success, with an emphasis on the application of the project methodologies in different branches of the economy. The results of this work should show which project methodology is best to use in which economic area, in order to more easily ensure the success of the project.

Key words: projects, project methodologies, project success

1 INTRODUCTION

The paradigm of traditional project management says: "Plan first, execute second." On the other hand, in the center of increased globalization is the need for project managers to have flexibility in a project system in order to be able to adjust constantly to emerging challenges and opportunities. The need to distribute responsibility and initiative in support of adaptation to change is familiar territory to agile approaches to projects. The paradigm of agile methodology is "Adapt to change

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as you iterate.” These competing and completely different methodologies represent two ends of a spectrum between linear and non-linear project management processes. Nowadays many development projects use combination of the previous mentioned two methodologies so-called hybrid methodology.

The paper analyzes the connection between project methodologies (traditional, agile, hybrid) and the project success. Also, the paper presents which methodology will easily and better lead project to its success, depending on the field of application, based on the literature review. The methods used in the processing of secondary data are analysis method, comparative method, synthesis and deduction.

2 PROJECT METHODOLOGIES

Since the end of the 1980s, project management has profoundly transformed the practices and performance of organizations. It has spread internationally in various sectors: services, mass industries, public companies, SMEs, Research & Development... Companies are always looking for new and improved ways to complete their projects more efficiently. This has led to the development of many new methodologies of project management, from traditional methodology to Agile and hybrid methodology. The essential objective of all these project management styles is to be able to bring value to the customer more quickly. It promotes adaptive planning, evolutionary development and early delivery and encourages continuous improvement. In this article, three different methodologies are presented (traditional, agile and hybrid) and the difference between them regarding project planning. According to Serrador P. [1], different industries may require different types of projects and have different project management needs which is may have an impact on the need for planning and the effect of planning on success.

2.1 Traditional Methodology

Traditional, or waterfall, project management is a legacy of industry and building construction, and its main phases were first modeled in 1956 by Herbert D. Benington. Traditional project management is an established methodology where projects are conducted in a sequential cycle. It follows a fixed sequence: initiation, planning, execution, monitoring and closure. The traditional approach to project management emphasizes linear processes, documentation, up-front planning and prioritization.

Due to its predictive nature, the traditional methodology has the advantage of offering a complete planning of the project from the start: clearly defined objectives, fixed execution times and deadlines, and a precise budget. From the traditional perspective, the goal of the planning phase of a project is to prepare the structure for project execution and control.

The impact of the planning process on project success has been demonstrated by various authors who have explored that planning and determination of the ideal project lifecycle for the project being embraced can significantly affect the success of that project [2] [3].

Al Nasser and Aulin [4] highlighted and identified the following factors as enablers of successful project planning activities;

1. Proper understanding of the interrelationship between scope (alignment), Schedule
2. Rapid re-planning and recovery from unforeseen Baseline Schedule
3. Good recording of timetable delays in progress

4. Availability of alternate preparation approaches to fix problems with current methods
5. Maintain Quality Control schedule by eliminating unwanted organizational actions
6. Asset levelling performance in Scheduling
7. Efficiency of the motivational and educational programs administrative help
8. Focusing on a holistic approach rather than individual task completion
9. Detailed schedules are accurate
10. Cost-efficiency in the development and reworking of timetables and tasks
11. Unit expertise in handling planned operations, delays and remedial measures
12. Inputs, milestones and deliverables are recorded

2.2 Agile Methodology

Agile project management is defined by Wysocki as a non-linear, iterative or adaptive approach to project management. APM projects are typically completed in cycles with the next cycle returning to the planning phase prior to launching [1].

The principles of agile project methodology begin with the underlying principles and values of the Agile Manifesto and Declaration of Interdependence. Of particular importance are the emphases on people and the desire to remain flexible and adaptable in the fact of uncertainty and complexity. Agile project management approaches also emphasize a generative approach where only what is needed (processes, tools, procedures, documentation, etc) is required to be used in project [5].

Critical success factors of agile methods include [6]:

- culture,
- communication,
- people,
- delivery strategy,
- software engineering techniques,
- team capabilities,
- management support,
- customer involvement and
- strength of the process.

On the one hand, traditional project management is capable to cover the entire product life cycle, while on the other hand, agile project management typifies an alternative paradigm. "Agility is the project team's ability to quickly change the project plan as a response to customer or stakeholders needs, market or technology demands in order to achieve better project and product performance in an innovative and dynamic project environment" [7].

2.3 Hybrid Methodology

Besides traditional and agile methodology, a third approach combining both methodologies is emerging and has been reported in various domains of literature by academics and practitioners. At its most general level, a hybrid project management approach combines methodologies and practices from more than one project management approach. To date, the combination of agile and traditional approaches and practices has been discussed in the software engineering, information systems,

and practitioner literature [8], but the effects of this hybrid approach on performance have only rarely been explored empirically in the literature [9].

In the context of hybrid project management, projects are planned using the traditional approach and a work flowchart known as the Water-Scrum-Fall [10]. This allows teams to better understand the tasks involved and the overall scope of the project. The projects are then executed using the Agile method, which provides enough leeway to manage changes and reassess the workload after short sprints. In addition to this approach, different other hybrid combination could be identified, such as Waterfall-Agile [11], Hybrid V-model [12] and Agile-Stage-Gate [13].

The aim of the hybrid project management approach is to bring together the best of the agile and traditional approaches. This is supposed to lead to achieving flexibility without unsettling project planning and to avoid the disadvantages of one approach with the help of positive elements from the opposite approach. An upstream project planning phase takes place in which the agile realization is prepared and plans for time, budget and scope management are set up [14].

The hybrid methodology requires specific planning according to the chosen approach, it is based on a complete project plan but the specific details of each sprint is not defined until the first sprint is completed [15].

2.4 Project Methodology Application

For decades, projects have been managed using collections of practices and methodologies that we refer to as the traditional approach, The Waterfall model is still the most commonly used project management method with goal oriented projects (clear goals) with no possibilities for future changes and can be implemented in **small and complex projects** such as **construction** [1]. The results of a study done by Faraji et al. [16] show that traditional project management principles and performance domains can be utilized for various types of projects in the **construction industry**.

Different industries may require different types of projects and have different project management needs. This may have an impact on the need for a specific management his impact project's success. Traditional project management is very comprehensive, and it has been proven to work in diverse project situations and fields.

There is wide evidence that traditional project management methodology is widely recognised and applied in companies' managerial practice in many industries besides IT, like **R&D, governmental, transportation, construction, higher education or power** [17].

In the last decade the research on Agile Project Management and its adoption beyond software industry has emerged expeditiously due to the fact that projects are being more complex with uncertain outcomes and goals changing over time. Generally, today's business environment increasingly changes in every aspect. Competition is global, opportunities are dynamic, and business processes are highly complex. These circumstances were traditionally dealt by project experts that would attempt to predetermine every possible detail prior to implementation, but project managers are becoming aware of the relative shortcomings of traditional project-based structures to deal with the need to effect change and to take advantage of new or emerging opportunities. In order to be competitive organizations are forced to recognize changes and to be more flexible when they meet them. In this context, extending agile methods beyond software community is becoming desirable response to fast-changing and challenging business environment. Agility turned out to be a buzzword in a modern business world [18].

Baird and Riggins [6] say that while agile methods, including one particular agile method referred to as “Scrum” have been shown to be beneficial when used on projects where requirements changes are unavoidable, it is often reported that Agile works best with skilled developers working on small to medium sized projects in **environments** that facilitate communication.

Lehnen et al. [7] conclude that agile project management, in particular, turns out to be very effective in **lead user projects**. As Scrum is mostly used among agile methods, following model relies upon it.

The authors emphasize that the agile methodology is applicable in the following areas: **innovation management and product development, construction and real estate, education, services** [17].

The agile **software development** methodology is being widely accepted within the software development community. Agile provides multiple benefits over the previously used waterfall methodology. Agile attempts to simplify the software planning and estimation process by decomposing large requirements into small individual tasks. Analyzing small tasks allow the software development team to more accurately predict the level of effort required in order to implement the change. This allows the project manager to accurately depict the percentage complete of the software which allows them to continually track overall project progress against the originally planned progress [19].

Authors apostrophize that it can be concluded that Agile can and should be used in **information technology and research**. The key benefit of Agile is time, and as a consequence, the absence of lost profits [20].

In the paper [21], authors say that it is possible to identify that there is still a concentration of study on Agile Project Management in **software development activities**; however, it has become more widely used in different sectors recently.

To date, the combination of agile and traditional approaches and practices has been discussed in the **software engineering, information systems**, and practitioner literature [8], but the effects of this hybrid approach on performance have only rarely been explored empirically in the literature.

In the project management domain, analysis of the large, diverse sample of projects showed that 62% of projects were neither fully agile nor fully traditional [9]. They stated that the hybrid approach consisted of, “by far, the majority of projects and this phenomenon should be further investigated.” Hybrid approaches combining agile and traditional that stretch beyond software development are an important emergent methodology in **non software industries** [22], **education** [6] and **construction projects** [23].

Research done by Lalmi and al. [23] showed that a hybrid project management model for construction projects based on lean, agile and traditional approaches and the use of best practices from these approaches to increase the chances of project success by reducing costs, shortening project schedules, optimizing results, eliminating waste and increasing project satisfaction. This model aims to extract best practices from the three traditional, agile and lean design and construction approaches, the benefits that flow from the structure and predictability of traditional methods, adaptability and waste reduction to an agile model based on lean design and construction tools and methods and agile practices [5].

Table 1. Application of different project methodologies in different fields

<i>METHODOLOGIES APPLICATION</i>		
<i>TRADITIONAL</i>	<i>AGILE</i>	<i>HYBRID</i>
<ul style="list-style-type: none"> • <i>IT projects [24]</i> 	<ul style="list-style-type: none"> • <i>Projects in software industry,</i> • <i>Innovation</i> • <i>Management and product development,</i> • <i>Construction and real estate,</i> • <i>Education,</i> • <i>Services [18]</i> 	<ul style="list-style-type: none"> • <i>Non software industries [22]</i>
<ul style="list-style-type: none"> • <i>Software</i> • <i>Production</i> • <i>Communications</i> • <i>Services</i> • <i>Government [1]</i> 	<ul style="list-style-type: none"> • <i>Projects in environment [6]</i> 	<ul style="list-style-type: none"> • <i>Education [6]</i>
<ul style="list-style-type: none"> • <i>Construction and engineering [1]</i> 	<ul style="list-style-type: none"> • <i>lead user projects [7]</i> 	<ul style="list-style-type: none"> • <i>Construction projects [23]</i>
<ul style="list-style-type: none"> • <i>R&D</i> • <i>Transportation</i> • <i>Higher education</i> • <i>Power [5]</i> 	<ul style="list-style-type: none"> • <i>Software development [19]</i> • <i>[21]</i> 	<ul style="list-style-type: none"> • <i>Various industries [25]</i>
	<ul style="list-style-type: none"> • <i>Information technology and research [20]</i> 	

3 CONCLUSION

Whether it is the traditional, agile or hybrid methodology with all their forms and models, project management has been proven to improve project success. Good project management enables a company to achieve the desired objectives and results; hence the importance of applying it appropriately, especially in this highly competitive context strongly marked by globalization. Nowadays, the increased use of the agile management method can be observed within companies. However, traditional methods that have existed for decades continue to be used until now.

This research set out to appraise the impact of project management methods on the performance and success of the project or project management based on literature review. All this depends on the type of organizations and the type of activities. A given method may have an influence on performance, but the level of influence may depend on the type of organizations or the type of activities in question.

Through the writing of this article, other research questions have emerged regarding whether the use of a traditional method in the context of a decentralized organization have a positive impact on performance? And will the application of agile methods in decentralized environment have the same impact? Depending on the circumstances, the question arises whether to be “agile” or not. These are the main questions we will further explore in our future research as it has been proven that an inappropriate choice of methods can have a negative impact on project performance, or even lead to project failure.

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