

THE BENEFITS AND CHALLENGES OF AGILE PROJECT MANAGEMENT – LITERATURE REVIEW

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Abstract: Over the last few decades, there has been a significant increase in project management research. There is a new and different approach to project management known as agile project management (APM). Project management in the twenty-first century may well be APM, according to some industry insiders. However, APM has not had the expected impact on project management to date. Research in areas other than software development is still needed in APM literature, which is still in its early stages. As a result, this paper conducts a literature review about agile project management. The study's goals are to examine the benefits and drawbacks of APM, as well as to identify the main obstacles to overcome. Iterative and incremental delivery, increased performance, design flexibility, adaptability to changing environments, reduced development risks, working software, ensuring customer satisfaction, and avoiding overproduction are all advantages of APM systems. The inability to handle large projects, customer interaction, ambiguous requirements, difficulty performing integration testing, frequent release of new features, and the resulting lack of documentation, as well as relying on inexperienced resources, a traditional waterfall development mindset, and lack of familiarity with agile are all significant drawbacks of APM systems. Recommendations to address the issues raised have been discussed. The implications for both researchers and practitioners have been discussed.

Key Words: Agile Project Management, Projects, benefits, challenges.

1. Introduction:

1.1. Background

Agility nowadays is becoming an interesting topic. It concentrates on flexibility, acceptability of change, ongoing improvements and solid interactions. Mainly it is found in the software development field. But it is becoming an emerging subject in projects management (Ciric et al, 2019).

More iterative, incremental project management gained momentum in the 1990s and becoming the norm for developing and introducing new products, systems, and services, gradually replacing the traditional waterfall model (Dourado, Silva and Silva 2011). These iterative/incremental methods also formed the basis for a wide spectrum of contemporary management systems, ranging from Concurrent Engineering to Stage-Gate (Cooper 2008), and starting in 2001 to include Agile plus its derivatives, such as Extreme, Lean and Guerilla Project Management. These iterative approaches are also known as iterative lifecycle or adaptive project life cycle or change-driven methods, intended to facilitate change and require a high degree of ongoing stakeholder involvement.

The focus that all of these iterative applications have in common is the effective, integrated, and often concurrent multidisciplinary project team effort toward specific deliverables which is the very essence of what we define today as Agile. There are many methodologies to manage projects where different and various factors affect the decision

which approach to use. Factors such as size, complexity, diversity of the project and other factors have an impact on which approach to use. As every project is unique and different, there is no one standard project management system is suitable for each project (Špundak 2014).

Agile Project Management (APM) is one of the famous and growing approaches. Some experts already shared their views that it will become the project management approach for the 21st century (Bergmann and Karwowski 2019).

1.2. Research Importance

With the huge and tremendous growth of projects in addition to the desire of companies to be as competitive as they can be in such volatile and changing environment, the need and necessity to manage projects in a way to maximize the resources and adopt the needed changes without affecting the golden triangle factors of any project (Time, Quality and Cost) while maintaining and fulfilling stakeholder's satisfaction to the maximum as possible is becoming a mandatory. The traditional project management approach will not be suitable in such cases. That is why Agile Projects Management has a great value and preferred to be used in such projects. But we need to understand the pros and cons of APM and how to overcome the major challenges. This is what we will cover in this study.

1.3. Research Problem

Projects may succeed and may fail for many reasons. One of the main reasons and factors for any projects success or failure is the approach used in managing the project and specifically big and mega projects which requires more flexibility and adoptability during the project phases. By selecting and using the appropriate project management approach, we can minimize the risk of project failure and increase the probability of the project success.

This study will discuss and analyze some research and studies and then will answer the following main question: when to use Agile Project Management?

We have the following Sub questions:

- What are the pros and cons of APM?
- How to overcome the main challenges of APM?

2. Methodology:

This study is a qualitative type and is done by conducting literature reviews on studies and research papers on Agile Project Management Benefits and Challenges. By reading and analyzing them, recommendations and finding of this study and the answer to the study question were reached.

3. Literature review

The concept of Agility and Projects Management is a rising concept and methodology nowadays but what are they?

Simply, based on English Oxford dictionary agility means “moving quickly and easily”.

Where a Project is a sequence of unique, complex and related activities which have one objective that must be finished by a specific time, within certain budget and based on a set of criteria's. A project consists of of a number of tasks that must completed in certain order. There is no perfect project management system which fits all projects but there are many approaches and methods that can be used to manage them (Kovaleva 2020).

Where Agile Project Management is the implementation of projects in a highly flexible and interactive way opposite to waterfall approach (Thamhain 2014).

Many definitions focus on the interactive and flexible implementation as the main added value of this approach.

Also, APM is an incremental and interactive method of managing projects where project developers and stakeholders are anticipated to work together to recognize the product that need to be built and prioritize the specifications. The objective of APM is to enhance the speed of the project delivery by minimizing the effect of complexity and uncertainties (Masood and Farooq 2017).

Below we will explore the following studies:

Table 1 – Studies covered in this study

#	Study	Year	Primary Goal	Main Results
1	Issues and Challenges Impacting the Successful Management of Agile – Hybrid Projects: A Grounded Theory Approach	2021	Identify 38 unique issues and challenges related to APM and propose some methodologies to overcome them.	<ul style="list-style-type: none"> • Provided a list of factors affecting APM. • Proposed further 8 mitigation plans to overcome the challenges • Pros and cons of both traditional and agile project management.
2	Assessment of Success Measures and Challenges of the Agile Project Management	2020	Discuss the success measures with agile projects and challenges most companies face with it, mainly in Russia.	Clarified and confirmed the positive impact and benefits of agile project management and the main obstacle with it.
3	Agile Project Management and project Success: A Literature review	2019	<ul style="list-style-type: none"> • Review some APM literature • Compare traditional and APM • Review different frameworks for project success 	Established a base for more research on APM and its impact on success of projects.
4	Understanding The Characteristics, Benefits and Challenges of Agile IT Project Management: A Literature Based Perspective	2019	Explore the understanding of APM concept and compare the pros and cons of both traditional and APM.	The benefits of both traditional and APM are explained and the view of why not combining both methodologies at the same time by utilizing the strength of both.
5	Agile Vs. Traditional Approach in Project Management: Strategies, Challenges and Reasons to Introduce Agile	2019	Provide an overview to introduce APM and the reasons for that with some challenges.	<ul style="list-style-type: none"> • Encourage more research on the implementation of APM. • How effectively adopt it to organizations. • Examine what are the success factors in introducing APM to traditional projects.
6	The Benefits and Key Challenges of Agile Project Management Under Recent Research Opportunities.	2017	Examine the benefits and challenges of using APM.	Explored the challenges faced by companies and propose how to overcome them.

7	Applying Agile Methodologies in Industry Projects: Benefits and Challenges	2015	Discuss aspects, pros and cons of using APM in IT projects.	Discussed different challenges and benefits of using APM.
8	Can We Manage Agile in Traditional Project Environment?	2014	Share result of three years study about APM practices and clarify some remarks when using APM in mega projects.	<ul style="list-style-type: none"> • Clarified and positive impact of APM on projects. • Both APM and traditional approach can be integrated with remarks.
9	A Systematic Study on Agile Software Development Methodologies and Practices	2014	Explain the APM principles and clarify some of its limitations.	Clarified the main differences between traditional and APM.
10	Mixed agile/traditional project management methodology – reality or illusion?	2014	Provide overview on different project management approaches and be the base for further research on pros and cons of each approach.	Showed that each project management approach has different usages, benefits and challenges.

4. DISCUSSIONS:

Through the analysis of previous studies in Table (1), it became clear that Agile Project Management had a lot of benefits and some challenges, which we listed in the following: -

- Discussed (Sithambaram, Nasir and Ahmad, 2021) the issues and challenges of agile-hybrid projects which faced by the industry practitioners. Key issues were in the areas of executive support, misalignment of agile methods with the business objectives, deficient understanding of agile principles, lack of teamwork and inadequate skillset of the project stakeholders. It identified 38 unique factors, and presented its classification into 4 categories: organization, people, process, and technical. Its regulating factors were found to be the most challenging, followed by 'people' factors. The process category contained the largest number of factors, and the technical factors could often be mitigated by investing in additional effort, time and money.

- The purpose of (Koi-Akrofi, Akrofi& Akwete Matey, 2019) study is to understand the concept of agile IT project management and compare the pros and cons of both agile and traditional approaches in a typical industrial environment and the challenges of transitioning to purely agile.

There are a number of challenges and disadvantages with traditional methods of systems development like the “waterfall” that make the benefits of agile development methods stand tall. These disadvantages and challenges are:

- Monolithic and slow.
- Process management is based on the volume of requirements: the higher the functionality of the requirements, the longer the delivery time of the project and the lower the flexibility and productivity of the process. It is heavily dependent on initial requirements. However, if in any way these demands are defective, the project will be doomed.
- Management principles also contribute to multiple scheduling issues or problems, such as timely delivery, as it is difficult to predict the precise amount of job engaged at the planning phase of the project.

In contrast to the above, Agile has the following advantages:

- It makes it possible to make modifications after the original scheduling phase. It follows the changes in customer demands or requirements.
- Adding characteristics/features to maintain the product up to-date with the industry's recent innovations is simpler.
- Project priorities are assessed at the end of each sprint. This enables customers to add their feedback in order to finally get the product or item they want.
- The end-of-sprint testing guarantees that the mistakes or errors in each cycle are captured.
- Agile practices give people some motivation to cooperate more than traditional techniques.

There are still some challenges implementing agile in organizations today, some of the known disadvantages of agile development are as follows:

- This dynamic methodology is not suitable for processes that require a complex decision making of formal planning such as construction, manufacturing, military, health care system among others.
- As the initial project does not have a definitive plan, the final product can be grossly different than what was initially intended.

- The study of (Ciric et al, 2019) has shown what are the reasons for introduction of agile and challenges in its application in and beyond software development. Reasons for introducing APM are presented and ranked by respondents in table 2. A comparative overview is given to see the difference in reasons for APM introduction in and beyond software development. A list of reasons was created based on the reasons most mentioned in literature. In software development accelerate project/product delivery was ranked as most important reason, and enhancing ability to manage changing priorities, better focus on client and increasing productivity are ranked in top reasons. On the other side reducing project cost, improving team morale, and improving project visibility had the lowest rank. Beyond software development enhancing ability to manage changing priorities was ranked as most important reason, and accelerate project/product delivery, better focus on client and reducing project risk are ranked in top reasons. On the other side reducing project cost, improving team morale, and enhancing delivery predictability had the lowest rank.

Table 2: Reasons to introduce APM

Reasons for introducing APM				
	In software development		Beyond software development	
	Responses		Responses	
	N	Percent	N	Percent
Accelerate project/product delivery	61	17.30%	31	12.90%
Enhance ability to manage changing priorities	45	12.70%	34	14.10%
Increase productivity	27	7.60%	22	9.10%
Enhance project/product quality	22	6.20%	19	7.90%
Enhance delivery predictability	24	6.80%	13	5.40%
Enhanced client relationship	26	7.40%	19	7.90%
Better focus on client	36	10.20%	24	10.00%
Improve project visibility	21	5.90%	14	5.80%
Reduce project risk	32	9.10%	18	7.50%
Reduce project cost	14	4.00%	12	5.00%
Better manage teams	25	7.10%	19	7.90%
Improve team morale	20	5.70%	16	6.60%
Total	353	100.00%	241	100.00%

In Table 3 challenges of APM application are presented and ranked by respondents. A comparative overview is given in order to see the difference in challenges encountered in and beyond software development. A list of challenges was created based on the most commonly mentioned APM challenges in literature. In software development work prioritization and alignment among stakeholders on what to build next was ranked as most important reason, and insufficient time for testing, long feedback loops, incompatibility of agile methods with organizational processes and functions are ranked in top reasons. On the other side excessive preparation/planning, low transparency in project status, progress, and performance, lack of project management strategy, formal guidelines and standard processes and

inability to handle interruptions and urgent requests had the lowest rank. Beyond software development work prioritization and alignment among stakeholders on what to build next was ranked as most important reason, and incompatibility of agile methods with organizational processes and functions, lack of predictability of business value delivered and visibility to client value at all levels (business, project, team, customer), lack of project management strategy, formal guidelines and standard processes in top reasons. On the other side insufficient time for testing, inability to handle interruptions and urgent requests had the lowest rank.

Table 3: Challenges in APM application

	In software development		Beyond software development	
	Responses		Responses	
	N	Percent	N	Percent
Excessive preparation/planning	15	5.60%	7	5.30%
Work prioritization and alignment among stakeholders on what to build next	41	15.20%	28	21.20%
Insufficient time for testing	32	11.90%	6	4.50%
Inability to handle interruptions and urgent requests	23	8.60%	8	6.10%
Long feedback loops	32	11.90%	11	8.30%
Unclear definition of roles in project team	25	9.30%	12	9.10%
Lack of predictability of business value delivered and visibility to client value at all levels (business, project, team, customer)	31	11.50%	16	12.10%
Incompatibility of agile methods with organizational processes and functions	33	12.30%	19	14.40%
Low transparency in project status, progress, and performance	16	5.90%	10	7.60%
Lack of project management strategy, formal guidelines and standard processes	21	7.80%	15	11.40%
Total	269	100.00%	132	100.00%

- Discussed (Kaur, Jajoo& Manisha, 2015) some of the practical aspects, pros and cons of applying agile principles to different types of IT projects including testing projects, maintenance projects and large-scale development projects. The applicability aspects of agile principles on different IT projects have been summarized as shown in table 4 below:

Table 4: Applicability of Agile Aspects on IT projects.

S.N.	Agile Principle	Applicability of Agile Projects on		
		<i>Large Scale Development Projects</i>	<i>Testing Projects</i>	<i>Maintenance Projects</i>
1	Welcoming changing requirements	High	Medium	Low
2	Incremental Project delivery	High	Medium	Low
3	Application of Scrum Ceremonies, Teams and artifacts	Medium	Medium	Medium
4	Active client involvement	Medium	High	High
5	Teams' empowerment to take decisions	Medium	Medium	Low

Finally, they concluded that Agile might not be as perfect a fit for testing, maintenance or distributed & large-scale development projects, as it is for small & co-located development projects, but it is indeed a powerful methodology that can enable teams to improve productivity, enhance visibility and achieve higher customer satisfaction. Also, it essentially gives freedom to project teams for adaptive planning and evolutionary development.

- The study (Thamhain, 2014) has reported the results of a three-year field study into the practices of Agile project management at 37 technology-intensive companies. It shown that the principles of this contemporary technique are applicable to most projects independent of their nature, size or IT orientation, improving resource effectiveness, project execution time and overall project success. However, the study also shown that for large and highly complex projects, and for most situations outside of software and IT, the Agile methodology must be carefully modified to fit the organizational processes and cultures of the enterprise.

There are some suggestions that emerged from this study include:

- Introduce Agile to your organization incrementally. Start with agile practices that already support existing processes and organizational cultures.
- examine the various components of your project management process for opportunities for applying Agile principles without compromising existing management processes and controls; identify compatible and incompatible assumptions and encourage synergism between agile and traditional methods.
- Examine customer interfaces and contracting practices, redesign procedures to support agile execution.
- Examine progress measurement, reviews and payment practices for realignment with agile execution.
- Win the hearts and minds and support of senior management, convincing them that Agile is a more effective way of executing projects leading to higher success rates and customer satisfaction.
- Pay attention to people issues, such as empowerment, collaboration, commitment and ownership which are at the backbone of Agile and crucial to its successful practice.
- According to the Masood & Farooq (2017) study, APM methods provide numerous benefits, including cost savings on rework, faster project completion, and increased customer satisfaction. However, the use of APM is constrained by challenges such as scheduling tasks, managing knowledge, and managing large and multi-site projects. The following summarizes the benefits and drawbacks of APM:
 - ✓ Benefits of agile project management include:
 - A significant advantage of APM is that it helps to reduce project costs by avoiding costly changes and rework. Traditionally, project teams develop rigid project plans based on predetermined specifications
 - The agile approach helps projects save resources by obviating the need for lengthy planning activities.
 - APM expedites project completion by preventing last-minute changes to project plans, scope, requirements, and designs.
 - APM method promotes continuous improvisation and sprinting, which results in faster project delivery.
 - APM is associated with increased customer satisfaction.
 - the APM approach promotes creativity and innovation.
 - APM increases visibility into performance.
 - APM presents an approach that is well-suited for managing small projects by SMEs.
 - APM fosters the development of both the project team and individual team members.
 - ✓ Challenges of agile project management include:
 - A significant APM challenge is the difficulty associated with task scheduling.
 - Additionally, the APM approach can make it more difficult for the project team to monitor and control the project's scope.
 - The project is implemented without clearly defined standards and requirements; consequently, the project manager lacks a clear yardstick for evaluating the team's performance.
 - APM also presents a problem in terms of knowledge management.
 - Personnel issues also complicate the APM approach. APM is a people-centric approach, as opposed to a process- and plan-centric approach.
 - Managing issues relating to people becomes even more challenging when projects are implemented in geographically dispersed environments.
- The Flora & Chande (2014) article discussed the values and principles underlying ten agile practices that are gaining traction in the software development industry. Agile processes are not always beneficial; they do have

some limitations, as discussed in this paper. Numerous Agile techniques have been proposed and implemented by researchers across a variety of domains. This section discusses the objectives of several well-known agile software development methods. Agile methodologies adhere to common principles but differ in practice:

- Extreme Programming (XP)
- Scrum
- Lean Software Development (LSD)
- Kanban
- Adaptive Software Development (ASD)
- Feature Driven Development (FDD)
- Dynamic System Development Method (DSDM)
- Agile Modeling (AM)
- Crystal
- Agile Unified Process (AUP)

Table 5 presents the primary benefits and disadvantages of implementing an agile methodology in software development processes.

Table 5: Advantages and Disadvantages of Implementing an Agile Methodology

Advantages	Disadvantages
Rapid, iterative and incremental delivery	Not suitable for large projects
Increased performance	Customer interaction
Flexibility of design	Insufficient and unclear requirements
Adaptive to the changing environment	Changing requirements
Reduces risks of development	Difficulty in integration testing
Working software	Frequent delivery
Ensures customer satisfaction	Lack of documentation
Avoids over production	More helpful for management than developer
Improvement in quality	Culture and co-located teams
Least documentation	Experienced resources
Fault detection	Traditional waterfall development mind set
Best practices	Unfamiliarity with Agile

- Špundak (2014) paper defined project management methodologies and provided an overview of various project management approaches. The literature review established what constitutes project management methodology in a broader or more specific sense, as well as the primary characteristics of a methodology. The importance of combining project management approaches was demonstrated through an examination of a software development project. Table 6 described the differences between traditional and agile approach.

Table 6: presents the difference between traditional and agile approach

Characteristic	Traditional approach	Agile approach
Requirements	clear initial requirements; low change rate	creative, innovative; requirements unclear
Users	not involved	close and frequent collaboration
Documentation	formal documentation required	tacit knowledge
Project size	bigger projects	smaller projects
Organizational support	use existing processes; bigger organizations	prepared to embrace agile approach
Team members	not accentuated; fluctuation expected; distributed team	collocated team; smaller team
System criticality	system failure consequences serious	less critical systems
Project plan	Linear	complex; iterative

- The Bergmann & Karwowski (2018) paper conducted a review of the available literature in the field of agile project management. It contrasted traditional project management with modern project management, specifically agile project management, and discusses the impact of project complexity factors. Additionally, it discussed various frameworks for project success and critical success factors. Finally, it recommended APM dimensions that are applicable to all project types and have the potential to impact a project's success. Agile project management (APM) is founded on four core values:
 - To place an emphasis on people and interactions over processes and tools.
 - To place a premium on functional products over exhaustive documentation.
 - To place a higher premium on customer collaboration than on contract negotiation.
 - To place a premium on adapting to change over sticking to a plan.

Additional research into APM practices has resulted in the following practices:

- Accepts and manages change rather than avoiding it.
- Change on an incremental basis.
- Assumes simplicity and steers clear of complication.
- Enhances value.
- Considers meticulous planning, design, and documentation to be a waste of time.
- Produces documentation that is value-driven.
- Iterates to break down lengthy projects (enabling and focusing on the next effort).
- Teams those are empowered and motivated.
- Concentrates on providing functional features to paying customers as quickly as possible.
- Customer participation in the implementation process is encouraged.
- All stakeholders receive prompt feedback.
- The Kovaleva (2019) paper defined the success criteria for Agile projects. The most frequent challenges faced by businesses are evaluated, and the relationship between the trend in the popularity of agile techniques and the success of the methodology's implementation is examined using large scale Agile surveys conducted in Russia and throughout the world. The objectives and accomplishments of agile transformations in software development, finance, and telecommunications are summarized in Tables 7, 8, 9.
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Table 7: Goals and Achievements of Agile Transformations in Software Development Companies

Top 5 goals Top 5 achievements	Top 5 goals Top 5 achievements
Enhance ability to manage changing priorities	Enhance ability to manage changing priorities
Enhance software quality	Improve project visibility
Accelerate product delivery	Enhance delivery predictability
Improve project visibility	Accelerate product delivery
Enhance delivery predictability	Improve team morale

Table 8: Goals and Achievements of Agile Transformations in Finance Companies

Top 5 goals Top 5 achievements	Top 5 goals Top 5 achievements
Accelerate product delivery	Improve business/IT alignment
Improve business/IT alignment	Improve project visibility
Enhance ability to manage changing priorities	Accelerate product delivery
Enhance product quality	Enhance ability to manage changing priorities
Increase productivity	Improve team morale

Table 9: Goals and Achievements of Agile Transformations in Telecommunication companies

Top 5 goals Top 5 achievements	Top 5 goals Top 5 achievements
Accelerate product delivery	Improve project visibility
Increase productivity	Enhance ability to manage changing priorities
Enhance ability to manage changing priorities	Better manage distributed teams
Improve project visibility	Accelerate product delivery
Improve business/IT alignment	Increase productivity

5. CONCLUSION AND RECOMMENDATIONS:

Over the last few decades, project management research has grown significantly. There has been an increase in the difficulty of managing projects due to rapidly changing business environments. Agile Project Management, which is gaining popularity, was examined in this study for its advantages and disadvantages, as well as how to overcome the main challenges of APM. An APM system's most significant advantages include rapid iterative and incremental delivery, increased performance, flexibility of design, adaptability to the changing environment, reduced risks of development, working software, ensuring customers' satisfaction, and avoiding over production. APM systems have

a number of significant drawbacks, such as their inability to handle large projects, customer interaction, ambiguous requirements, difficulty in performing integration testing, frequent delivery of new features, and the resulting lack of documentation, as well as the fact that they are better suited to management than developers, and that they rely on inexperienced resources, a traditional waterfall development mindset, and a lack of familiarity with Agile methodologies.

Recommendations have been made in order to deal with the aforementioned issues. Starting with agile practices that already support existing processes and organizational cultures is a good example of incremental adoption. In addition, look for ways to incorporate agile principles into your project management process without jeopardizing your current management processes and controls; identify assumptions that are compatible and incompatible with agile principles; and promote synergy between Agile and Traditional Methods. Customers' interfaces, contracting practices, and payment practices should be examined to see if they are aligned with agile execution. To win the hearts and minds of senior management, convince them that Agile is a better way of executing projects, which leads to higher success rates and customer satisfaction.

As a final point, pay attention to the human aspects of Agile such as the importance of empowerment, collaboration, commitment, and ownership. Theoretically and practically, these findings can be found. Research in this area focuses on the most commonly encountered issues, which can help scholars gain a deeper understanding of these issues and determine whether or not proposed solutions are actually viable options. This study incorporates solutions that have already been tried.

As a practical matter, these solutions can be applied to a wide range of industries. The findings of this review study will serve as a foundation for future research into agile project management, project complexity, and how these factors affect project success. There has been some progress in the application of agile project management, but there is still a lot of work to be done.

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