

PROJECT ORGANISATION & STRATEGY



Executive Summary

This assessment provides the idea of the Agile Management process for managing various construction processes. The Agile process has three phases in the construction project which are the pre-design, design, and execution phases. The project leaders and team face various problems which are hampering the growth and success of the industry. So, it is essential to adopt the agile method. The concept of agile management focuses on the iterative formation of the final deliverables. The concept of agile thinking was developed from the agile manifesto which has four values and twelve principles. Agile project management can be more beneficial than any other traditional project management method. In this assessment, it can also be observed that the advantage of Agile management, it helps to maintain a certain culture and structure of the organization by which innovation can be practiced and inculcated. However, the disadvantages are the high and complex requirements of team formations. The future implication of using agile management is effectiveness and improved quality of the project such as Centrus. Moreover, the challenges and negative implications can be mitigated through reporting and maintaining a progress report of the project. Further, following a fixed plan as well as client collaboration can be very helpful for practicing Agile management in a project.



Table of Contents

Introduction	4
Analyzing the concept of agile project management concerning the Construction industry	4
Critically discuss the significance of agile project management in the Construction industry	5
Barriers to implementation of the agile project management in the Construction industry	6
Evaluating the advantages and disadvantages of using Agile project management in the Construction industry	7
Comprehending the future implications of using Agile in project management.....	9
Recommendations for future project management using the agile project management methodology.....	11
Conclusion.....	12
References	13



Introduction

Most of the project leaders and teams in the construction industry have been facing several uncertain problems for a few years. Any uncontrolled delay in the project can hamper the growth and overspend the project management process. This is the reason why there is a need for a more flexible and dynamic project management approach. So, various researchers have adopted the agile project management process for overcoming these problems. It is believed that the agile project management process can be capable of solving several complex issues and it can also be adaptable to changes in the business. Here, in this article, the concept of agile management and the challenges of agile management related to the construction industry will be analyzed.

Analyzing the concept of agile project management concerning the Construction industry

Various practitioners and researchers of project development in the construction industry convened in 2001 on how to produce better results in project management in this industry. The project managers were aware of the various shortcomings and issues related to traditional project management. To increase the flexibility, and quality of project management, agile project management was introduced. Agile project management is used to energize and empower the project teams for delivering business values and adapting to the changes in the needs of the industry.

Agile manifestos

The concept of agile thinking was developed from the agile manifesto (Ciric *et al* 2018). The agile manifesto consists of 4 values and 12 principles. The 4 values are- i) having the best working methods and process for the project, ii) choosing useful project outcomes instead of documentation, iii) the client collaboration is core for the success of the project, and iv) any changes in the agile project are welcomed (Mohammed and Jasim, 2018). The agile principles are- i) delivering valuable projects early, ii) change in the requirements are welcomed for getting competitive advantages, iii) delivering the products frequently iv) daily interaction with people v) projects should be built around motivated individuals, vi) facilitating doing direct communication vii) progress must be evaluated with the working products, vii) sustainable development should be promoted, viii) good designing and getting technical excellence, ix)

]getting simplicity in the project, x) continuous updates on effectiveness xi) self-organized x) constant pace.

Objectives

Agile project management has five main objectives in the construction industry project management. These business objectives are- i) doing continuous innovation for meeting the demand of customers. ii) adaptability to the products iii) reducing the timing of delivery iv) process and people adaptation and v) producing reliable results for supporting the growth of a business.

The difference with traditional project management

The difference which agile project management brings to project management is the proper planning and execution of key decision-making processes which makes the project effective. Traditional project management is a predictive approach whereas the agile method is an adaptive approach (Shaikh and Abro, 2019). The agile development process is an iterative process where the project is broken up into small sprints for the range of two or three weeks. Traditional project management has a low client involvement whereas the agile method has high client involvement. The development process can be changeable in the agile development process. So, The agile development process can be beneficial for project management in the construction industry.

Critically discuss the significance of agile project management in the Construction industry

Agile project development for the construction industry focuses on the iterative formation of the final products. Based on the value and principles of the project, the agile project management tool can include various tools and methods. Implementation of the agile method can help construction companies to improve the speed of the project (Kasturiwale and Rathod, 2021). The agile development method may require skilled and experienced workers for managing different types of projects. The agile method must be undertaken in different phases to getting success. The agile process in the construction industry may include pre-design, design, and execution phases.

Pre Design phase and design phase

The agile method is impactful and beneficial for the pre-design and design phase of the construction project. It starts with the kick-off meeting with the clients and consultants. This

meeting will provide a detailed analysis of the project. The project drawings are made and provided for tendering. This process helps to rectify mistakes in the drawing during the project. The agile method can help to increase customer participation in the project and encourage the customers to participate in the construction of project deliverables (John, 2018). The agile method breaks the whole project into smaller tasks which helps to achieve consistent delivery of the final deliverables. The smaller tasks can also reduce uncertainty and manage the risk of the project.

Execution phase

The execution phase starts with a site kick-off meeting which can be called the sprint meeting. The sprint meeting helps to know the targeted backlog items which will be handled until the next sprints. A product backlog can act as a skeleton of a sprint meeting. The sprint meeting can also determine the time in which the backlog items should be finished. The major aim of the agile method is to reduce the project timing and it can improve by encouraging the workers to continue to team up and provide their valuable insights to the project managers. Agile project management can be used for mitigating the risks and uncertainty related to the project.

Barriers to implementation of the agile project management in the Construction industry

Various barriers may affect agile project management in the construction industry. These barriers may include the lack of technical knowledge, organizational culture, lack of financial support, and others (Soares, *et al* 2022). Lack of technical knowledge can be a huge factor for various construction companies. So, various companies after adopting the agile method may face roadblocks due to inexperience in using the agile methods. As agile projects help to expose problems more quickly than any other traditional methods so there is a need for experienced workers who can manage the problems quickly. Also, many times organizations may not be ready to work collaboratively but the agile method requires a team effort to get success. Some of the other barriers that the construction industry may suffer from are-

Communication gap

The communication gap can be a major problem for agile project management in the construction industry. There is a need for clear communication between the project leader and the team members to know the project criteria and requirements and manage the daily work.

Also, there should be clear communication with the customers and project teams for knowing the various requirements of the customers.

Inconsistent requirements and changing priorities

The inconsistency of the customer requirements and changes in the priorities of the customers can also be problematic for the project team in the construction project. The change in requirements can cause the already specified requirement obsolete.

Poor planning and limited documentation

Lack of documentation can be another problem for the agile project. As the user stories of the project contain a small number of instructions so it can sometimes be problematic for the team to know the customer's requirements. The agile project can also be difficult for long-term construction projects. So, this problem can be solved with proper planning. Poor planning can make the project difficult for the project team.

There can also be issues related to the design stage including understanding the client's needs, and involvement of the client (Hussien, *et al* 2019). Client involvement is essential for designing the construction project. These are the problems that are common for construction projects. Lack of technical knowledge, communication gaps, and inconsistent requirements are the main issues for agile project management related to the construction industry.

Evaluating the advantages and disadvantages of using Agile project management in the Construction industry

In the article by Beerbaum (2021), it can be analyzed that using Agile project management is both advantageous as well as disadvantageous.

Innovation and eliminating uncertainty

One of the most advantageous aspects of agile project management is that through the help of this project management tool, innovative projects can be significantly delivered to customers even under highly uncertain situations or circumstances. Agile project management uses constant adaptability along with high innovation. This article by Beerbaum (2021), states that it is agile project management that allows the project to explore rather than just plan and implement. Especially in the construction industry, a large-scale construction company utilizes agile project management.

Avoiding delays in project delivery

Agile project management in construction projects consists of significant benefits in inculcating the values and principles of agile management in the project. Agile management is highly effective for meeting deadlines and completing a project effectively (Lalmi *et al.*, 2021). It is the high scope of innovation that allows the construction industry to take guidance from the agile manifesto. Through the help of agile project management, detailed design, and innovation, can be ensured in the construction industry. According to the systems theory, any project can be well influenced by the function, structure as well as role of the systems (Teece, 2018). In the article by Beerbaum (2021), it is stated that agile project management is known for practicing discipline and organization within a project in the construction industry by maintaining a proper system.

Enhancing client participation

Agile project management is highly useful in increasing and enhancing the involvement of the client during the development of the project. This agile project management is significantly effective in increasing the participation rate of clients in the construction industry. It also helps to increase the scope of uncertainty management along with risk management within the project. For instance, in the construction industry, the main function of agile project management is to ensure innovation, feedback, participation, and completion on time.

Non-realization of proper solution and absence of documentation

Along with the advantages of agile project management, there are also disadvantages of agile project management. In the article by Beerbaum (2021), it can be assessed that agile project management comes with several disadvantages such as the nonrealization of the 100% right solution for the project, especially during ongoing regulatory projects. Moreover, incomplete as well as ineffective documentation during an ongoing project is very vague and is seen to obstruct project completion.

Issues in forming proper working teams

In the case of agile project management, another disadvantage that is faced by any construction organization is that the team members are interchangeable. The requirements of agile project management are excessively high and professional assistance is required during the process of forming teams. Moreover, while completing huge projects, significant difficulties are faced and experienced while communicating and coordinating (Esangbedo and Ealefoh, 2021). According to the article by Beerbaum (2021), the disadvantages of agile project management also, come with a lack of knowledge regarding agile project management as well as a lack of awareness

about this management style among the workers and the other stakeholders of the construction organization. Further, the Lack of documentation in Agile project management is severely disadvantageous as tracking the project development can be easy through the help of documentation. Furthermore, the absence of long-term planning is also a disadvantage which is why agile management can be very difficult to handle especially in the construction industry.

Comprehending the future implications of using Agile in project management

Influencing the organizational culture and environment

The implication of the application of agile project management can be both positive and negative, especially while dealing with Construction projects in the construction industry. In the article by Younus *et al.*, (2021), it can be observed that Agile management doesn't only influences and fastens the process of project management or project development, but also influences the thought process of the team members. In this article, the authors have stated that through the usage of Agile project management, product adaptability along with continuous development and innovation can be ensured.

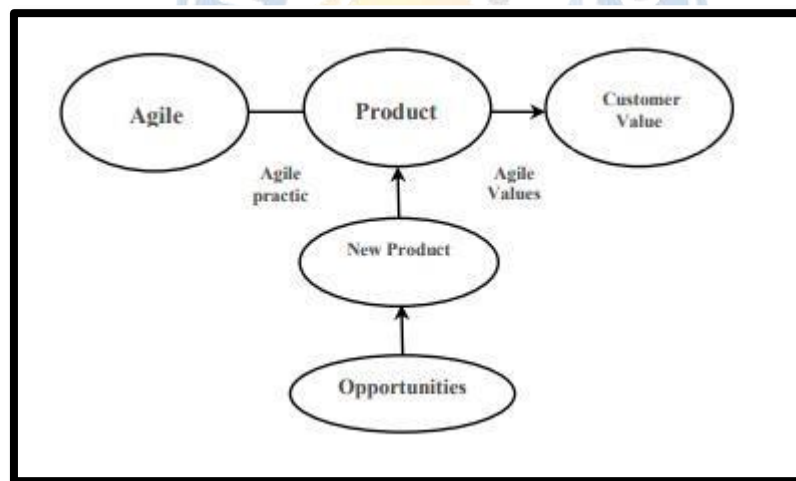


Figure 1: The APM framework

(Source: Yonus *et al.*, 2021)

Moreover, the impact of using agile project management is that by its proper implementation, the culture of the construction companies can be influenced and enhanced in significant ways through which the project in a construction company can be able to adopt fundamental values, principles, and discipline itself. Agile project management in the construction sector can be

beneficial for solving uncertainties and also will lead to advanced risk assessment techniques within the project.

Addressing the demands of the clients

Clients in the construction demands change over time and also demand innovation in the infrastructure as well as in preparing the structure of the infrastructure which can be ensured by the usage of agile project management. According to the contingency theory, proper management initiatives should be maintained and ensured especially while handling cognitions in a project (Yu *et al.*, 2020). Agile project management is one of the most significant contingency initiatives which can help to influence as well as enhance the structure and culture of the organization. In the article of Younus *et al.*, (2021), it can be analyzed the future implications of agile project management will be efficient project management along with the enhanced performance of the organization. For instance, Centrus and the US energy department planned a project which included building, operating, and testing the commercial systems of the plants (Sträusser, 2015). Agile management in this case helped a lot in the timely construction without making delays. Finally, Centrus through the help of Agile project management can significantly complete the project and hand it over.

Team complications and lowering quality

By inculcating agile project management, it can be observed that team complications can also take place. The severe team complications and lack of proper knowledge regarding the project management technique can shed severe implications on the project in the construction industry. Moreover, the application of Agile management leads to limited and wrong resource planning which can hamper the planning as well as the structure of the project in the future. However, Agile management can be used through effective communication with all the team members as well as all the stakeholders of the construction organization. Further, the outcome can also be fragmented through which the product infrastructure or the project can have disadvantages and loopholes. Furthermore, due to the lack of knowledge among the team members and awareness, agile management can be hampered due to the absence of participation from all the team members. The infrastructure quality along with the quality of products used in the project can deteriorate which can even damage the reputation of the construction organization. Agile management can also have severe security issues. The budget of the project can be affected along with the quality (van der Heijden *et al.*, 2018).

Recommendations for future project management using the agile project management methodology

According to Jiménez *et al.*, (2020), in the process of agile methodology, there are various stages which include planning, implementing, tracking, controlling, and closing the project. Hence to practice agile project management, the following recommendations should be effectively taken into consideration during the development of the project:

Generation of reports during the project: Constant generation of reports can be very effective for the project as the status of the project can be monitored through the help of those reports (Jiménez *et al.*, 2020). It is the reports that will help to ensure the effective management of the project in a construction organization. Moreover, the generation of reports can be effective and can also help eliminate the inefficiencies of the project. Through the help of report keeping, the progress of the project can be tracked and agile management along with its implications can also be tracked efficiently.

Ensuring training and awareness about agile management: While dealing and working with agile management, the construction sector should inculcate proper awareness and training for agile management among the employees and workers as the concept of agile management can be very complicated and is unknown to many. Further, training and awareness about agile management can help enhance the quality of the management and the quality of the project through which the successful along with enhanced quality of a project can be delivered on time. Moreover, it is the training and effective awareness, the teams will be aware of the uncertainties and the advantages that can be achieved by using agile.

Periodic meetings should be scheduled: According to Jiménez *et al.*, (2020), periodic meetings should be helped in the construction organization during the ongoing project as through the help of meetings, the progress of the project along with the costing can be discussed with the employees and the team members significantly. Moreover, in the meetings, the next steps of the agile approach can be discussed and the whole project can be planned according to the agile principles as well as the agile manifesto. Further, through the help of meetings, the challenges and issues can be discussed effectively within the team which influences the quality of organizational culture during an ongoing project.

Ensuring client collaboration during the negotiation of the contract: Client participation is one of the most important parts of agile management as the process of participation of the clients

helps to enable as well as establish a significant value proposition (Sjödin *et al.*, 2020). Moreover, especially during the negotiation of the contract, the client is needed to be asked about engaging themselves within the project as with the engagement and proper monitoring of the client, the project quality along with the costing system can be enhanced effectively in the construction industry.

Following a fixed plan: According to Jiménez *et al.*, (2020), planning is one of the most important parts of agile management. For instance, in the case of Centrus, it can be observed that the project was well planned which resulted in the successful implementation of the project and also ensured the timely delivery of the project. To ensure proper implementation of agile management, it should be made sure that the project is well planned. A proper plan for the project will help the project to be well organized as well as disciplined.

Conclusion

The inference that can be drawn from this assessment is that agile project management is one of the most beneficial management tools through which the quality, as well as the outcome of the project, can be enhanced. The agile manifesto focuses on client collaboration and heightening the quality of the project along with proper tracking of the project's progress. Agile management in the beginning helps to discuss and plan the project execution followed by the implementation of the project. Further, in this assessment, one of the most significant barriers that are identified is that lack of knowledge and awareness of agile management can hamper the project. However, with proper recommendations such as meetings and client participation, agile management can be properly ensured in the construction industry.

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