World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(REVIEW ARTICLE)

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# Integrating agile methodologies with traditional project management frameworks: A hybrid approach for enhanced efficiency and risk mitigation

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World Journal of Advanced Research and Reviews, 2025, 25(03), 2298-2304

Publication history: Received on 23 February 2025; revised on 29 March 2025; accepted on 31 March 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.25.3.1003

## Abstract

This paper examines hybrid project management, a product of combined agile methodologies and traditional project management. The focus is on applying a hybrid approach for higher project efficiency and risk mitigation in contemporary project environments. With increasing complexity and uncertainties, the limitations of both project management approaches have become obvious. While traditional project management offers predictability and structure, it often lacks flexibility, and agile methodologies ensure adaptability, but faces challenges when implemented in large-scale projects. By analyzing extensive industry practices and literature, this paper shows how a hybrid approach leverages the strengths of traditional and agile project management methodologies by combining planning and risk assessment with stakeholder engagement & iterative development of agile practices. The findings, therefore, suggest significant value offered by hybrid methodologies in adaptability to change, stakeholder collaboration, and risk management.

**Keywords:** Agile Project Management; Traditional Project Management; Hybrid Approach; Risk Mitigation; Project Management Frameworks; Agile Methodologies

## 1. Introduction

Agile methodologies refer to flexible software development approaches emphasizing iterative improvement and customer satisfaction [1]. They have evolved as alternatives to traditional project management methodologies to address adaptability needs in a dynamic project landscape. Research shows that through agile practices, project performance can be enhanced by continuous improvement and collaboration, especially in uncertain conditions [2].

Agile methodologies have permeated project management environments and many industries, transcending the earliest software development application. However, traditional project management frameworks are an agelong methodology focusing on predictability and detailed planning [3]. Traditional project management usually employs tools like Earned Value Management (EVM) and Gantt charts. Due to the increasing complexity of projects, leading to difficulties in meeting foremost project deadlines, quality, and cost goals, hybrid approaches have emerged as a response, integrating agile methodologies and traditional project frameworks [4]. The popularity of hybrid models has increased over the years, providing improved adaptability and risk management [5].

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This paper will provide comprehensive insights on

- The dynamics of integrating agile methodologies with traditional project management frameworks
- The role of the hybrid approach for enhanced project efficiency
- Effective risk mitigation using a hybrid project management approach

## 2. Integrating Agile Methodologies with Traditional Project Management Frameworks

### 2.1. Overview of Traditional Project Management Frameworks

Traditional project management frameworks include PRINCE2, PMBOK, and ISO 21500. They spotlight specificity, and predictability, and seek to keep planning as detailed as possible throughout the project lifecycle [3]. Industries have continually integrated these methods into their processes using tools like Gantt Chart, Critical Chain Project Management, and Earned Value Management. The wide usage of traditional project management frameworks owes to its reliance on a sequential design approach that emphasizes the completion of a phase before the next. Experts believe that this is effective for predictable projects ().


**Figure 1** Project phases in traditional project management methodology

Also called the Waterfall method, traditional project management frameworks remain essential in industries with stringent documentation and control requirements. According to [6], as shown in Figure 1, the traditional project management methodology describes the linear, dependent phases of a project, with each relying on the deliverables of the former. This compels the project manager to complete a phase before moving on to the next. The methods have, however, become less effective with the shifting IT projects landscape, especially with evolving requirements [4].

### 2.2. Agile Methodologies

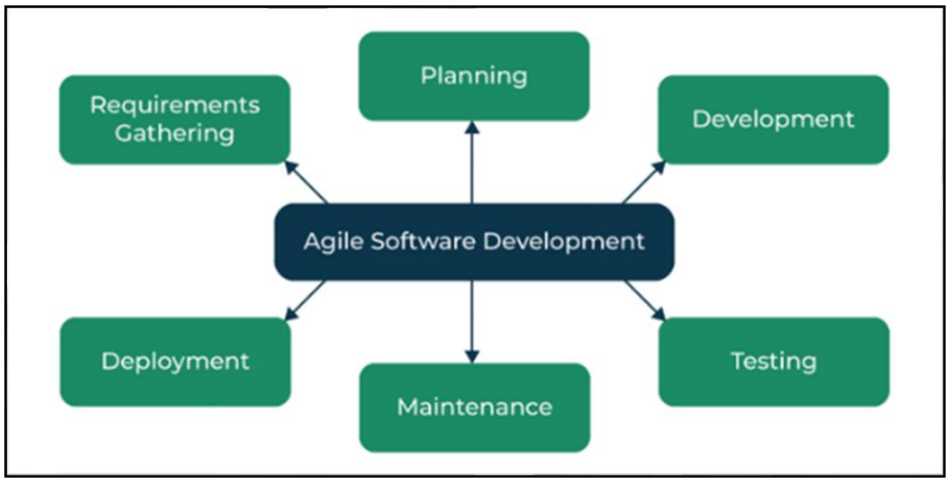


**Figure 2** Stages of Agile Methodologies

According to [7], agile methodologies comprise key frameworks including Kanban, Scrum, Dynamic Systems Development Method (DSDM), and Extreme Programming (XP), which emphasize responsiveness to changing project requirements rather than detailed, extensive upfront planning which is characteristic of traditional project management methodology. Agile methodologies have demonstrated tremendous benefits regarding stakeholder satisfaction and timely project delivery [4]. Agile frameworks significantly contribute to stakeholder satisfaction, risk mitigation, and delivery speed using feedback loops and continuous iterations. Agile methodologies have been adopted to address the challenges of speed and flexibility in executing projects. Based on their iterative approaches, project teams can respond to changes and get feedback regarding the project throughout its lifecycle [6].

The principles of agile methodology shown in Figure 2 above will foster quick iterations for efficiency and productivity. They also allow for prompt response and adaptation to changing requirements throughout the project's lifecycle [8].

### 2.3. Limitations of Agile Approach vs Traditional Project Management Approach

Despite the success of agile frameworks in IT-based industries, their application faces limitations in large-scale projects [9]. In essence, they have proven reliable for small and medium-sized projects. Concerns such as changes in distributed environments, scalability challenges, and communication & coordination problems exist with the agile approach. Besides, they also require high-level expertise, they may not always be suitable for every product domain [10]. In addition, [11] argued that implementing agile methodologies in non-traditional contexts can present unique challenges regarding team management and iterative testing.

On the other hand, the traditional approaches are limited when dealing with uncertain, complex, and dynamic environments. In other words, these methods are suited for well-structured projects and stable environments with clear scope and requirements [12]. Modern projects usually face numerous uncertainties, and complexities, and demand frequent changes. This makes traditional methodologies inadequate [13]. Due to these limitations, alternative approaches have been developed to provide more flexibility and adaptability, while focusing on managing project components interactions [12]. Therefore, researchers suggest adopting hybrid approaches to address the limitations of the agile approach. This involves combining traditional and agile practices [10].

## 3. Hybrid Approach for Enhanced Efficiency and Risk Mitigation

Hybrid project management integrates traditional project management frameworks with agile methodologies to leverage the strengths of the two approaches while mitigating their weaknesses [14]. The hybrid approach has become popular and is crucial for organizations that seek to address customer requirements, specified processes, and project uniqueness [15]. According to [16], 52% of projects are categorized as hybrid. Hybrid approaches, like agile, significantly improve project stakeholder success while maintaining the budget, quality, scope, and time outcomes as are obtainable with traditional methods.

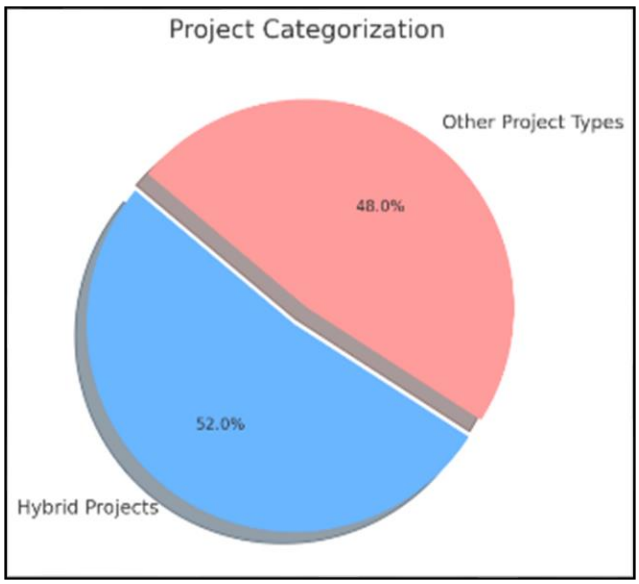


**Figure 3** Categories of project methodologies [*Excerpt: Gemino et al. 2020]*

Hybrid methodologies offer several benefits including improved collaboration, adaptability, and flexibility. However, only a fragmented knowledge exists about the success factors and prerequisites for the successful implementation of hybrid project management [14]. Changing project management approaches and evolving technologies led to hybrid project management. Although agile project management was originally meant for software development, non-IT organisations have begun to realize the benefits of the principles and practices of agile methodologies [17]. In the contemporary world where project requirements and expectations may change, or in many cases, not fully known from the start, companies find it difficult to use traditional methods because they are not effective for project environments characterized by uncertainty and continuous change [18].

According to [19], it is possible to question the possibility of running a project on just agile practices because firms that rely only on agile project management practices outside the software sector are limited, although the benefits for a rapidly changing environment exist. The agile-stage-gate model is well documented in the literature. Meanwhile, there are other types of hybrid project management. For example, there is a phased planning concept in the manufacturing industry, which was coined based on the premise that it is difficult to plan a project entirely in a phase [19]. A project's requirements are well-known in traditional project management, but combining them with agile principles fosters the development of some requirements in iterations (incrementally).

Essentially, although there are some examples of existing hybrid project management models, combining models based on long-term planning (traditional approach) and other models that emphasize planning enshrined in the short term (agile project management) can be contradictory (Cooper & Sommer). However, the two philosophies are usually applied for different hybrid project management aspects, with traditional project management catering to macro aspects of the project and agile project management focusing on micro, day-to-day operations [17].

### 3.1. Significance of Hybrid Approach for Enhanced Project Efficiency

Companies have increasingly become motivated to adopt software for business operations and processes. However, this has led to higher project complexity. The project management process is essential for completing projects successfully, given that management approaches like scrum and waterfall are insufficient for every project [20].

The hybrid approach of project management has gained traction for enhancing project efficiency. Some benefits of using hybrid methods are improved stakeholder collaboration, adaptability, and flexibility [21]. Its importance is expected to grow to meet tailored needs in turbulent project environments characterized by the increasing complexity of technological and social systems and environmental volatility [19].

With the freedom to modify the strict processes of project management to the project manager’s needs and ease of use, hybrid project management provides an opportunity for project managers to find an individual method or solution for their problems [20]. Although factors like the type of product, budget constraints, fixed deadline, and team size contribute to the complexity of a project, the benefits are far-reaching. First, [22] observed that a small incremental method of developing and delivering a project deliverable lead to a happy and satisfied customer. Second, it offers substantive adaptability and allows the project team to make changes as they please. A hybrid model also encourages and values communication, while ensuring higher transparency and constant human interaction through the project lifecycle. Hybrid project management seeks to boost client interaction, promote change, and increase project value by increasing the probability of success using the agile approach component while eliminating waste through the lean approach component [23].

### 3.2. Risk Mitigation Using Hybrid Methodology

Modern projects face several risks due to the volatile and complex nature of project environments. However, integrating agile and traditional methodologies enables accurate risk monitoring using advanced technologies like BIM and data analytics [24]. In essence, hybrid project management can reduce project risks by breaking project deliverables and milestones into manageable and smaller pieces [25]. Hybrid methodology offers a large selection of methods and techniques and can be used as a suitable tool for a project depending on the type and status. This will increase project benefits under known circumstances and achieve better results with lower costs [26]. Since it is usually unclear how to achieve the project goals at the start of the project, the hybrid approach serves to concretize the step-by-step objective using the target plan while planning long-term for the costs, time, and milestones [14].

In addition, by focusing on customer benefits and requirements, there is a higher chance of generating maximum customer benefit through feedback, fostering a higher tendency to create and find solutions. In other words, in case of any change, the approach can help to deal with the changes much more flexibly and incorporate changing or new requirements without having to completely alter the project schedule – which can have cost and time implications on

the project [27]. The combined effects of traditional and agile methodologies to take advantage of the strengths of both methods enhance risk mitigation techniques.

By leveraging defined processes and thorough planning in traditional project management, which helps to spot and address a project's potential risks early, agile methodologies can contribute significant value by promoting iterative development and adaptability to enable quick response to unforeseen challenges. This results in increased project control and higher project success rates [14]. Meanwhile, digital twin technology has been identified as a significant improvement in predictive analytics and real-time risk monitoring for large-scale infrastructure projects. Project managers can create a virtual replica of an asset to monitor the conditions of the project, simulate various scenarios, and identify and predict risks before they impact the project [28].

### 3.3. Challenges and Barriers to Integration of Agile Methodologies with Traditional Project Management Frameworks

Integrating agile methodologies with traditional project management presents multiple challenges. Due to increasing system complexity and environmental volatility, adopting hybrid project management is expected to increase, and the factors for its successful implementation are having experienced teams, selecting the right approach, ensuring higher customer involvement, and promoting a supportive organizational culture [25], there are common barriers. According to [29], organizational culture is the most significant obstacle to the effective adoption and application of the agile approach. Others are resistance to change, rigid existing frameworks, lack of customer availability, and lack of sufficient agile expertise [30].

In addition, management experiences conflicts in the business processes, development processes, and human-related issues when implementing agile approaches in traditional firms. This typically leads to discomfort among employees and can potentially impede expected efficiency gains [31, 32]. categorized these barriers into financial, organizational, institutional, and knowledge and technology types. This is why it is important to explore company-wide implementation, provide proper guidance, and secure high sponsorship. Since most challenges derive from the process and people dimensions, it is also essential that the project managers evolve into a facilitative role [33-34].

## 4. Conclusion

Hybrid project management helps to balance traditional project management methodologies' rigidity with agile practices' flexibility. Taking a hybrid approach to project management fosters improved project efficiency by integrating adaptative and predictive processes, which allows teams to respond to uncertainties on time while maintaining project quality, scope, and budget. Despite integration complexity and scalability challenges, hybrid methodologies offer advantages such as stakeholder engagement and effective risk mitigation. This study highlights the increasing importance of hybrid models across sectors and demonstrates their potential to improve project performance. Future research should examine the application of digital twin technology and best practices for implementing hybrid project management while developing tailored frameworks for diverse project environments.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Authors' Contributions*

- **Oluyinka Joseph Adedokun** contributed to the conceptualization of the research and provided technical input on traditional project management frameworks.
- **Nnenna Linda Akunna** led the overall project coordination, literature review, and manuscript preparation.
- **Adeyemi Adewunmi Olalemi** contributed to data collection, analysis, and discussion of agile methodologies.
- **Ismail Oluwasola Sanni** provided critical review and editing of the manuscript, ensuring coherence and scholarly quality.
- **Victor O. Hammed** contributed to the theoretical framework and analysis of the hybrid project management approach.

## References


[1] D. Shah, "Agile methodologies and their impact on software project success with case studies," ShodhKosh: Journal of Visual and Performing Arts, 2024.

[2] E. C. Daraojimba, C. N. Nwasike, A. O. Adegbite, C. A. Ezeigweneme and J. O. Gidiagba, "Comprehensive review of agile methodologies in project management," Computer Science & IT Research Journal, vol. 5, no. 1, pp. 190-218, 2024.

[3] F. S. Valadares, N. C. S. Moura, T. N. F. Pereira and M. de Oliveira Arantes, "Identification of the main traditional project management methods through a systematic literature review," International Journal of Advanced Computer Science and Applications (IJACSA), vol. 15, no. 4, pp. 952-959, 2024.

[4] A. Rahman, "IT project management frameworks: Evaluating best practices and methodologies for successful IT project management," Academic Journal on Artificial Intelligence, Machine Learning, Data Science and Management Information Systems, vol. 1, no. 1, pp. 57-76, 2024.

[5] E. Papadakis and L. K. Tsironis, "Towards a hybrid project management framework: A systematic literature review on traditional, agile and hybrid techniques," The Journal of Modern Project Management, vol. 8, 2020.

[6] M. F. Harake, "Introducing project management frameworks and methodology," PM World Journal, vol. 13, no. 3, 2024.

[7] A. Sharma, "A review of agile methodology in software development," 2016.

[8] D. Trivedi, "Agile methodologies," International Journal of Computer Science & Communications, vol. 12, no. 2, pp. 91-100, 2021.

[9] H. Saeeda, F. Arif, N. Mehmood Minhas and M. Humayun, "Agile scalability for large scale projects: Lessons learned," J. Softw., vol. 10, pp. 893-903, 2020.

[10] A. Solinski and K. Petersen, "Prioritizing agile benefits and limitations in relation to practice usage," Software Quality Journal, 2016.

[11] U. Świerczyńska-Kaczor, M. Kotlinska and M. Zelazowska, "Implementation of agile approach in a reward-based crowdfunding project aimed at funding a film: An overview of the concept and challenges," Journal of Economics & Management, vol. 37, no. 3, pp. 139-155, 2019.

[12] D. Toljaga-Nikolic, D. Petrovic and M. M. Mihic, "How to choose the appropriate project management approach?," in 2017 12th International Scientific and Technical Conference on Computer Sciences and Information Technologies (CSIT), 2017.

[13] K. Sundberg, B. Rapp and C. Keller, "Modern project management," Management and Information Technology after Digital Transformation, 2021.

[14] J. Reiff and D. Schlegel, "Hybrid project management - a systematic literature review," International Journal of Information Systems and Project Management, vol. 10, no. 2, pp. 45-63, 2022.

[15] F. Coppola Azenha, D. Aparecida Reis and L. Fleury, "The role and characteristics of hybrid approaches to project management in the development of technology-based products and services," Project Management Journal, vol. 52, pp. 90-110, 2020.

[16] A. C. Gemino, B. Horner Reich and P. Serrador, "Agile, traditional, and hybrid approaches to project success: Is hybrid a poor second choice?" Project Management Journal, vol. 52, pp. 161-175, 2020.

[17] S. Carlsson and E. Kyrk, "Hybrid projects success factors in physical product development - An explanatory qualitative study from the project manager's perspective," Business Administration - Management, June 2021.

[18] T. Bergmann and W. Karwowski, "Agile project management and project success: A literature review," in In International Conference on Applied Human Factors and Ergonomics, Springer, Cham., 2019.

[19] S. Spalek, "Traditional vs. modern project management methods: Theory and practice," in Smart and Efficient Economy: Preparation for the Future Innovative Economy, 21st International Scientific Conference, 2016.

[20] N. Jamous, G. Garttan, D. Staegemann and M. Volk, "Hybrid project management methods efficiency in IT projects," in 27th Americas Conference on Information Systems, Montreal, 2021.

[21] S. Gawande and S. Jiwani, "Constructive effect of hybrid project management methodologies on success rates of projects," International Journal of Science and Research (IJSR), 2024.

[22] K. Schwaber and J. Sutherland, The Scrum Guide, 2017.

[23] A. Lalmi, G. Fernandes and S. B. Souad, "A conceptual hybrid project management model for construction projects," Procedia Computer Science, vol. 181, pp. 921-930, 2021.

[24] O. F. Nahid, R. Rahmatullah, M. Al-Arafat, E. Kabir and A. Dasgupta, "Risk mitigation strategies in large scale infrastructure project: A project management perspective," Journal of Machine Learning, Data Engineering and Data Science, vol. 1, no. 1, pp. 21-37, 2024.

[25] M. Elkhatib, A. Al Hosani, I. Al Hosani and K. Albuflasa, "Agile project management and project risks improvements: Pros and cons," Modern Economy, pp. 1157-1176, 2022.

[26] R. Cooper and A. F. Sommer, "New-product portfolio management with agile challenges and solutions for manufacturers using agile development methods," Research-Technology Management, vol. 63, no. 1, pp. 29-38, 2020.

[27] R. Hassani, Y. El Bouzekri El Idrissi and A. Abouabdellah, "Digital project management in the era of digital transformation: Hybrid method," in Proceedings of the 2018 International Conference on Software Engineering and Information Management, 2018.

[28] C. Khosakitchalert, N. Yabuki and T. Fukuda, "Automated modification of compound elements for accurate BIM-based quantity takeoff," Automation in Construction, vol. 113, 2020.

[29] H. D. M. M. Pussella and B. A. M. A. S. M, "Exploring the challenges in transitioning from traditional project management to agile project management," vol. 1, no. 1, pp. 17-49, 2018.

[30] S. Obrutsky and E. Erturk, "The agile transition in software development: The common barriers and how to overcome them," Business and Management Research, vol. 6, pp. 40-53, 2017.

[31] Jack, Peaceibisia & Manu, Alfred & Esan, Ifetobi & Ogundeko, Ibrahim. (2020). Fundamentals Of Coastline Dynamics: Formation, Environmental Impacts and Management Strategies. International Journal of Civil Engineering and Technology (IJCIET). 11. 78-90. 10.34218/IJCIET_11_08_008.

[32] D. Soares, F. J. G. da Silva, S. C. F. Ramos, K. Kirytopoulos, J. C. Sa and L. P. Ferreira, "Identifying barriers in the implementation of agile methodologies in automotive industry," Sustainability, vol. 14, no. 9, p. 5353, 2022.

[33] H. Mohan, "Analyzing and exploring agile project management challenges from a practitioner perspective: A case study on HMS," Industrial Innovation Management, Halmstad University, 2018.

[34] Nnenna Linda Akunna; Tawakalitu Omobolanle Abereijo; Oluyinka Joseph Adedokun; Jennifer Chiamaka Anyamele; Kelvin Ovabor; Victor Oluwadamilola Komolafe. “The Role of Artificial Intelligence in Project Management; Improving Decision-Making, Resource Allocation, and Risk Assessment.” Volume. 10 Issue.3, March-2025 International Journal of Innovative Science and Research Technology (IJISRT), 1206-1210, https://doi.org/10.38124/ijisrt/25mar975