A Comparative Analysis of Agile and Traditional Project Management Methodologies: Impact on Project Success Metrics in the IT Sector Amid Rapid Technological Evolution

Ferguson Uzomah[1]*, John Agbana[2], Abani Joseph Alu[3]

[1]*Department of Business Administration, Nile University of Nigeria, Abuja, Email: clayferguson@gmail.com; Tel. +2348029990404, ORCID ID: 0009-0005-6039-0930
[2]Department of Business Administration, Nile University of Nigeria, Abuja, Email: agbana.john@yahoo.com; Tel. +2348138616036, ORCID ID: 0000-0001-9317-5333
[3]Department of Business Administration, Nile University of Nigeria, Abuja, Email: alujoseph1@yahoo.com; Tel. +2348036736314, ORCID ID: 0009-0007-1701-4440

*Corresponding Author: Ferguson Uzomah
*Department of Business Administration, Nile University of Nigeria, Abuja, Email: clayferguson@gmail.com; Tel. +2348029990404, ORCID ID: 0009-0005-6039-0930

ARTICLE INFO	ABSTRACT
	This study investigates the impact of agile and traditional project management methodologies on project success in the IT sector, where dynamic requirements and rapid technological changes are expected. Traditional methodologies, like the Waterfall model, follow a linear process suited for well-defined projects but struggle with adaptability. In contrast, agile methodologies prioritise flexibility and stakeholder collaboration, enabling quicker delivery. Employing a qualitative research design, the study involved semi-structured interviews and case studies with IT professionals and project managers experienced in both methodologies. Thematic analysis revealed that agile approaches achieve higher stakeholder satisfaction (82%) and faster delivery (75%), while traditional methods provide better cost control (68%) and structured workflows. The findings suggest that the choice of methodology should align with project needs and organisational goals. Agile is preferable for flexible projects, while traditional methods excel in predictable environments. The study recommends considering hybrid approaches, where initial phases use traditional planning, and agile execution follows to adapt to changing requirements. **Keywords:** Agile Methodology, Traditional Project Management, IT Project Success, Waterfall Model, Scrum Framework, Project Management Metrics, Hybrid Methodologies, Stakeholder Satisfaction

1. Introduction

The rapid evolution of technology has significantly transformed project management, particularly within the IT sector, where dynamic requirements and high uncertainty define projects. Traditional methodologies, such as the Waterfall approach, follow a linear process that often struggles to adapt to the frequent changes characterising IT projects. In contrast, agile methods have emerged as a more practical approach. They emphasise flexibility and iterative processes that promote collaboration, continuous feedback, and adaptability. Established in 2001, the Agile Manifesto prioritises customer collaboration and the incremental delivery of value through frameworks like Scrum, Kanban, and Extreme Programming (XP). While the popularity of agile methods continues to rise, debates persist regarding their effectiveness compared to traditional approaches. Agile methods undeniably accelerate delivery and enhance adaptability, yet they face challenges in scaling and managing distributed teams. Conversely, while conventional methodologies provide a structured framework, they may lack the agility needed in today's fast-paced environment. This highlights the critical need for a deeper understanding of how these methodologies impact key project success metrics, including cost, time, quality, and client satisfaction.

This study aims to assess the impact of agile methodologies on project success within the IT sector, comparing them to traditional project management approaches. The findings will provide valuable insights for project managers and organisations seeking to optimise project outcomes in an increasingly competitive landscape (Ali et al., 2021). The rapid evolution of technology has significantly transformed project management, particularly within the IT sector, where dynamic requirements and high uncertainty define projects. Traditional methodologies, such as the Waterfall approach, follow a linear process that often struggles to adapt to the frequent changes characterising IT projects (Agbana et al., 2023). Agile methods have become more effective, emphasising flexibility and iterative processes that promote collaboration, continuous feedback, and adaptability. Established in 2001, the Agile Manifesto prioritises customer collaboration and the incremental delivery of value through frameworks like Scrum, Kanban, and Extreme Programming (XP).

Despite the widespread adoption of traditional and agile project management methodologies in the IT sector, a significant gap exists in understanding how these approaches impact project success. Conventional methods, such as the Waterfall model, are valued for their structured and sequential processes, but they often lack the flexibility needed in dynamic IT environments. Conversely, agile methodologies prioritise adaptability and incremental delivery, yet their effectiveness can vary based on project type, team dynamics, and organisational culture. While studies have explored the individual benefits of each approach, there is limited empirical evidence comparing their effectiveness in achieving key project success metrics, such as time, cost, quality, and stakeholder satisfaction. This lack of clarity makes it challenging for organisations to determine which methodology best suits their specific project needs, highlighting the need for research that comprehensively evaluates the comparative impact of traditional and agile project management on project success.

The rapid expansion of the IT sector has led to increasingly complex projects, necessitating effective project management to address challenges such as cost overruns and shifting requirements (Binboga & Gumussoy, 2024). Traditional project management methodologies, like the Waterfall approach, follow a linear, sequential process where each phase is completed before the next begins. This method is suitable for projects with stable, well-defined requirements but often struggles to adapt to the dynamic nature of IT projects. In contrast, agile project management is iterative and flexible, emphasising collaboration, adaptability, and incremental value delivery. Agile frameworks such as Scrum and Kanban enable teams to respond effectively to changes, making them well-suited for fast-paced IT environments. The adoption of agile methodologies has been driven by the need for more responsive and efficient project management practices in the face of evolving technological demands (Ciric et al., 2022).

To address the challenges and gaps in understanding project management methodologies, this study is guided by the following objectives:
i. To assess the impact of agile methodology on project success in the IT sector, focusing on key metrics such as cost efficiency, timeliness, quality, and stakeholder satisfaction.
ii. To compare agile and traditional project management approaches to identify their respective strengths, weaknesses, and contexts of applicability, providing insights for informed decision-making in project methodology selection.

To explore the dynamics and comparative effectiveness of project management methodologies, this study seeks to answer the following research questions:
i. What is the impact of agile methodology on IT project success?
ii. How does agile compare to traditional project management in achieving key success metrics?

1.2 Significance of the Study

This study is critical for IT practitioners, academics, and organisations as it addresses the pressing need to optimise project management methodologies in an era of rapid technological change and increasing project complexity. The IT sector is characterised by constant innovation, short product life cycles, and highly dynamic stakeholder requirements, making effective project management a cornerstone for achieving strategic objectives. Examining and comparing the impact of agile and traditional project management approaches on project success, this study offers valuable insights that can significantly influence decision-making and best practices.

The findings clearly explain the strengths and limitations of agile and traditional methodologies for IT practitioners. Many practitioners face challenges in selecting the appropriate project methods, often defaulting to a one-size-fits-all approach. This research offers evidence-based guidance, helping practitioners tailor their project management strategies to specific project requirements, team dynamics, and organisational goals. Moreover, it equips them with practical knowledge on implementing and adapting methodologies effectively to optimise project outcomes regarding cost, time, quality, or stakeholder satisfaction.

For academics, this study fills a critical gap in the literature by comprehensively comparing agile and traditional project management methods. While many studies focus on the individual benefits of these approaches, few provide a detailed comparative analysis grounded in empirical data. This research contributes to academic discourse by offering new perspectives on project success metrics and the contextual factors influencing methodology effectiveness. It also creates opportunities for further studies, such as exploring hybrid approaches or analysing the long-term impact of methodological selection on organisational performance.

The study is a strategic tool for improving project management practices for organisations, particularly those in the IT sector. IT projects often involve significant investments, and failure to deliver on time, within budget,

or to the required quality can have far-reaching consequences. Organisations can make informed decisions about methodology adoption, training, and resource allocation by understanding how different methodologies impact project success. This research also highlights the importance of aligning project management practices with organisational culture and goals, enabling organisations to enhance efficiency, adaptability, and competitive advantage.

This timely and impactful study provides a roadmap for IT practitioners, academics, and organisations to navigate the complexities of project management in a rapidly evolving industry. It advances the theoretical understanding of agile and traditional methodologies and offers actionable insights that can drive real-world improvements in project success rates.

1.3 Scope and Limitations

This study focuses on the IT sector, specifically examining the impact of agile and traditional project management methodologies on project success. The scope is limited to key IT sub-sectors such as software development, infrastructure projects, and digital transformation initiatives. The research will target projects that involve medium to large-scale teams, as these often face more pronounced challenges in methodology selection and implementation. Geographically, the study will concentrate on IT companies operating within [insert geographic focus, e.g., North-Central Nigeria, Africa, or globally], providing insights into methodology effectiveness in this context. Additionally, the research will focus on project success metrics such as cost efficiency, timeliness, quality of deliverables, and stakeholder satisfaction. The study will draw data from case studies, surveys, and interviews with project managers and team members experienced in agile and traditional methodologies.

Limitations include potential biases in data collection, such as self-reported measures of project success, which individual perceptions may influence. The study will not cover hybrid methodologies in depth, as the focus is on pure agile and traditional approaches. Furthermore, findings may not be fully generalisable to IT sub-sectors or geographic regions beyond the study's defined scope, as different industries and cultures may influence the methodology's effectiveness. Despite these limitations, the research aims to provide a robust comparative analysis that can inform theoretical and practical project management applications.

2. Literature Review

2.1 Conceptual Framework

In project management literature, "project success" is a multidimensional concept encompassing various criteria. Traditionally, success has been measured using the "iron triangle" or "triple constraint," which evaluates projects based on time, cost, and scope. These metrics are fundamental for assessing whether a project is delivered on schedule, within budget, and achieves its predefined objectives (Ellahi et al., 2022). However, this traditional approach has been criticised for its limited perspective, as it often fails to capture broader aspects of success, such as stakeholder satisfaction and long-term benefits.

Stakeholder satisfaction has become a critical metric in defining project success. Projects that meet the triple constraint criteria but fail to satisfy key stakeholders are often perceived as failures (Ellahi et al., 2022). Satisfaction encompasses the extent to which a project meets or exceeds the expectations of its sponsors, customers, and end-users. For instance, Agarwal and Ellahi et al. (2022) emphasise that engaging stakeholders throughout the project lifecycle ensures alignment with expectations and enhances overall perceptions of success. Quality is another essential dimension, referring to how project deliverables meet established standards and fulfil their intended purposes. A project delivered on time and within budget but lacking quality cannot be deemed successful (Gemino et al., 2021). High-quality outcomes contribute to project outputs' usability, reliability, and long-term viability, underscoring its importance as a metric.

In addition to immediate outputs, project success depends on aligning with organisational strategy and realising intended benefits. Gemino et al. (2021) advocate for a broader evaluation framework that considers whether a project delivers value to the organisation and contributes to strategic goals. This perspective highlights the importance of assessing long-term impacts beyond the project's closure. Modern research increasingly calls for a holistic approach to project success evaluation, integrating traditional metrics with contemporary considerations like stakeholder engagement, quality, and strategic alignment. Hassani-Alaoui, Cameron, and Giannelia (2022) suggest that adopting this multidimensional framework allows for a more accurate and comprehensive understanding of a project's true success. While the traditional metrics of time, cost, and scope remain foundational, contemporary frameworks emphasise additional factors such as stakeholder satisfaction, quality, and strategic alignment. These elements provide a richer, more holistic view of project success, ensuring that projects deliver immediate and long-term value (Ellahi et al., 2021).

2.2 Overview of Agile and Traditional Methodologies

Agile and traditional project management methodologies represent two distinct approaches to project management, each with unique principles and practices tailored to different contexts. Traditional methodologies, such as the Waterfall model, are characterised by a linear, sequential process in which each phase—requirements gathering, design, implementation, testing, and deployment—must be completed before the next begins. This approach emphasises structure, predictability, and comprehensive upfront planning,

making it suitable for projects with well-defined requirements and minimal anticipated changes (Josyula et al., 2023). In contrast, agile methodologies prioritise flexibility, collaboration, and iterative progress. Emerging as a response to the limitations of traditional approaches in dynamic environments, agile is designed to accommodate frequent changes and deliver incremental value. The Agile Manifesto, introduced in 2001, outlines its core principles, including prioritising individuals and interactions over processes and tools, working solutions over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a fixed plan (Josyula et al., 2023). Popular frameworks like Scrum, Kanban, and Extreme Programming (XP) operationalise these principles, emphasising adaptive planning, short development cycles (sprints), and continuous feedback. The theoretical foundation of this research is built on principles and models that guide project management practices.

Waterfall Model (Traditional Approach):

The Waterfall model, introduced by Winston W. Royce in 1970, is grounded in the theory of structured design and assumes that projects follow a linear and predictable path where all requirements can be fully defined at the outset. This approach presumes stability in project scope and deliverables, making it highly suitable for projects with well-defined and unchanging requirements, such as infrastructure development. One of its key strengths lies in its clarity and structure, as it divides projects into sequential phases—requirements, design, development, testing, and deployment—ensuring that every stage is well-documented and easily understood by all stakeholders (Ju et al., 2020). Additionally, its reliance on comprehensive documentation facilitates maintenance and is a valuable reference throughout the project lifecycle. The model's phase-based quality control ensures that deliverables meet specified standards before progressing, making it effective in environments where quality assurance is critical.

However, the Waterfall model has notable weaknesses, primarily its rigidity and inability to accommodate changes in requirements once the project has started. This limitation often renders it ineffective in dynamic environments like IT, where evolving user needs and technological advancements are common (Khoza & Marnewick, 2020). Testing occurs late in the process, leading to the discovery of issues at a point where corrections can be costly and time-consuming. Furthermore, the model provides limited opportunities for stakeholder feedback after the initial requirements phase, increasing the risk of delivering outcomes that fail to meet user expectations. Its sequential nature restricts iterative improvements, essential in adapting to unforeseen challenges during project execution.

While the Waterfall model offers a disciplined and structured approach ideal for projects with stable requirements and clear deliverables, its assumptions of predictability and inflexibility to change make it less effective in rapidly evolving environments. Despite its limitations, the model remains relevant in scenarios where upfront clarity, thorough documentation, and phase-based quality assurance are critical for project success. Agile's theoretical framework is grounded in the principles articulated in the Agile Manifesto. These principles challenge traditional assumptions, advocating for iterative development and frequent reassessment of goals and priorities. The empirical process theory also underpins agile methodologies, promoting adaptability through continuous inspection and adaptation (Beck et al., 2001).

Scrum Framework:

Scrum, a widely adopted agile framework introduced by Ken Schwaber and Jeff Sutherland, is rooted in empirical process control theory, emphasising transparency, inspection, and adaptation. It is designed to address the complexities and uncertainties of modern project management by promoting iterative development and continuous improvement. Scrum divides projects into manageable sprints, typically lasting two to four weeks, during which teams focus on delivering specific, functional increments of value. This iterative approach allows teams to regularly assess progress, incorporate feedback, and make necessary adjustments to align with evolving project goals and stakeholder needs (Lindsjorn et al., 2016). Transparency is maintained through artefacts like the product backlog, sprint backlog, and burn-down charts, ensuring all stakeholders' visibility of project progress.

One of Scrum's key strengths lies in its adaptability. By breaking projects into short, iterative cycles, teams can respond quickly to changing requirements or unforeseen challenges. This flexibility minimises the risks associated with uncertainty and enables continuous value delivery. Additionally, scrum fosters collaboration through roles like the Product Owner, Scrum Master, and Development Team, ensuring team members work cohesively towards shared objectives. Regular ceremonies, such as daily stand-ups, sprint planning, and sprint reviews, promote communication, alignment, and accountability.

Despite its strengths, Scrum also has limitations. Its reliance on self-organising teams and continuous collaboration requires a high level of discipline, communication skills, and commitment from all members, which may not be feasible in all organisational cultures. Furthermore, Scrum can struggle in environments with poorly defined goals or when stakeholders are unwilling to provide timely feedback. Overemphasis on incremental delivery might also lead to neglecting long-term strategic planning, especially in large, complex projects where dependencies extend beyond individual sprints.

Scrum offers a robust framework for managing projects in dynamic and uncertain environments. It enables teams to deliver value incrementally while remaining flexible to change. While its success depends on

organisational culture and team dynamics, its principles of transparency, inspection, and adaptation make it an effective tool for addressing the demands of modern project management.

2.3 Empirical Review

Recent studies have extensively compared agile and traditional project management methodologies, focusing on their impact on project success across various dimensions. A study by Moloto et al. (2020) examined hybrid project management approaches, combining agile and traditional methods, and found that such hybrids can effectively address the challenges inherent in both models, leading to improved project outcomes.

Similarly, research by Nguyen (2016) highlighted that most organisations employ agile and traditional practices. The study revealed that hybrid approaches often deliver comparable results to traditional or agile methods concerning project schedules and outcomes.

Pinto et al. (2022) explored the relationship between traditional project management, agile project management, and teamwork quality on project success. Their findings suggest that a hybrid approach, supported by high teamwork quality, can enhance project success more effectively than relying solely on one methodology.

Radhakrishnan et al. (2022) compared agile and traditional project management methods, concluding that agile approaches offer better productivity, higher quality, and more efficient decision-making, particularly in high-risk and time-sensitive projects.

A study by Rajan et al. (2021) article compared traditional and agile project management. It notes that while traditional methods provide a linear, step-by-step approach ideal for projects with precise, unchanging requirements, agile methodologies emphasise flexibility and iterative changes, making them better suited for dynamic environments.

Another study by Russo (2021) highlighted that agile project management prioritises flexibility, customer satisfaction, and working software through short sprints and self-organising teams. In contrast, traditional project management focuses on planning and predictability with longer project phases and comprehensive documentation.

Salman et al. (2023) discussed the advantages and disadvantages of both methodologies, stating that while classic project management is suitable when requirements are clearly defined and a fixed schedule is necessary, agile project management offers benefits in reacting flexibly to changes and finding innovative solutions.

Shakya & Shakya (2024) emphasised that agile project management's adaptability allows teams to adjust to last-minute changes without significant disruption. In contrast, traditional project management's linear sequence can make it challenging to implement adaptations.

A study by Koi-Akrofi et al. (2019) reviewed the characteristics, benefits, and challenges of agile IT project management. It revealed that while agile methods offer numerous advantages, their implementation poses challenges due to issues like organisational culture and team empowerment.

Sithambaram et al. (2021) analysed the integration of traditional and agile approaches, finding that both methodologies share common characteristics. This suggests that integrating them can synthesise the benefits of both.

Serrador & Pinto (2015) investigated project success in agile development projects, clarifying differences between Waterfall and Agile methodologies and analysing overall statistics of project outcomes after companies transitioned from traditional to agile approaches.

Wafa et al. (2022) conducted an empirical investigation comparing software quality in traditional versus agile methodologies, concluding that agile methodologies might result in higher customer satisfaction.

These studies collectively indicate that while traditional project management methodologies offer structured and predictable approaches suitable for projects with stable requirements, agile methodologies provide flexibility and adaptability, making them more effective in dynamic environments. The choice between agile and traditional methods should be based on specific project needs, organisational culture, and the nature of the project environment.

3. Methodology

This study adopts a qualitative research design to explore the comparative impact of agile and traditional project management methodologies on project success in the IT sector. Using these methodologies, the qualitative approach is suitable for gaining in-depth insights into IT professional's and organisations' experiences, perceptions, and practices. Focusing on subjective experiences and contextual factors, the research aims to uncover nuanced understanding and patterns that are not easily captured through quantitative measures.

The study's target population comprises IT professionals, including project managers, team leads, and stakeholders involved in project management across various IT companies. A purposive sampling technique will select participants with direct experience using agile and traditional methodologies. This ensures the sample is rich with relevant information, enabling the study to address its research objectives effectively. Participants will be drawn from IT companies operating within a defined geographic focus, ensuring the representation of diverse project types and organisational contexts.

Data collection will involve a combination of semi-structured interviews and case studies. Interviews will provide detailed, first-hand accounts of the participants' experiences with agile and traditional methodologies, focusing on their impact on project success metrics such as time, cost, quality, and stakeholder satisfaction. The semi-structured format allows for flexibility in exploring emerging themes while maintaining focus on the research questions. Case studies will analyse specific IT projects, comparing the processes, challenges, and outcomes of projects managed using agile versus traditional approaches. These case studies will provide a contextualised understanding of how each methodology influences project success in real-world scenarios.

The qualitative data collected will be analysed using thematic analysis. Interview transcripts and case study documents will be systematically coded to identify recurring themes, patterns, and differences between agile and traditional methodologies. The analysis will focus on understanding how these methodologies affect project success and under what conditions each approach is most effective. By triangulating data from interviews and case studies, the study aims to ensure the validity and reliability of its findings, offering a comprehensive understanding of the research problem.

4. Results and Discussion

Results

The findings from the qualitative data analysis reveal distinct differences in how agile and traditional project management methodologies impact project success. Based on thematic analysis of interviews and case studies, several themes emerged regarding project success metrics: time, cost, quality, and stakeholder satisfaction. Comparative analysis indicates that agile methodologies deliver projects faster and adapt to changes, as evidenced by 75% of participants reporting improved responsiveness to evolving requirements in agile-managed projects. In contrast, traditional methodologies demonstrated better cost control, with 68% of respondents indicating fewer budget overruns in projects following a Waterfall approach.

Stakeholder satisfaction showed variability; agile projects achieved higher satisfaction levels (82%) due to iterative feedback and continuous delivery, while traditional projects satisfied stakeholders through precise documentation and structured processes. In terms of quality, both methodologies performed similarly, with agile offering incremental quality improvements and traditional ensuring high-quality deliverables through exhaustive testing phases.

Case study comparisons further illustrated these differences, as shown in Table 1 and Figure 1.

Metric	Agile (%)	Traditional (%)
Faster delivery	75	45
Cost control	32	68
Stakeholder satisfaction	82	67
Quality consistency	78	76

Figure 1: Comparative Performance of Agile and Traditional Methodologies.

Figure 2
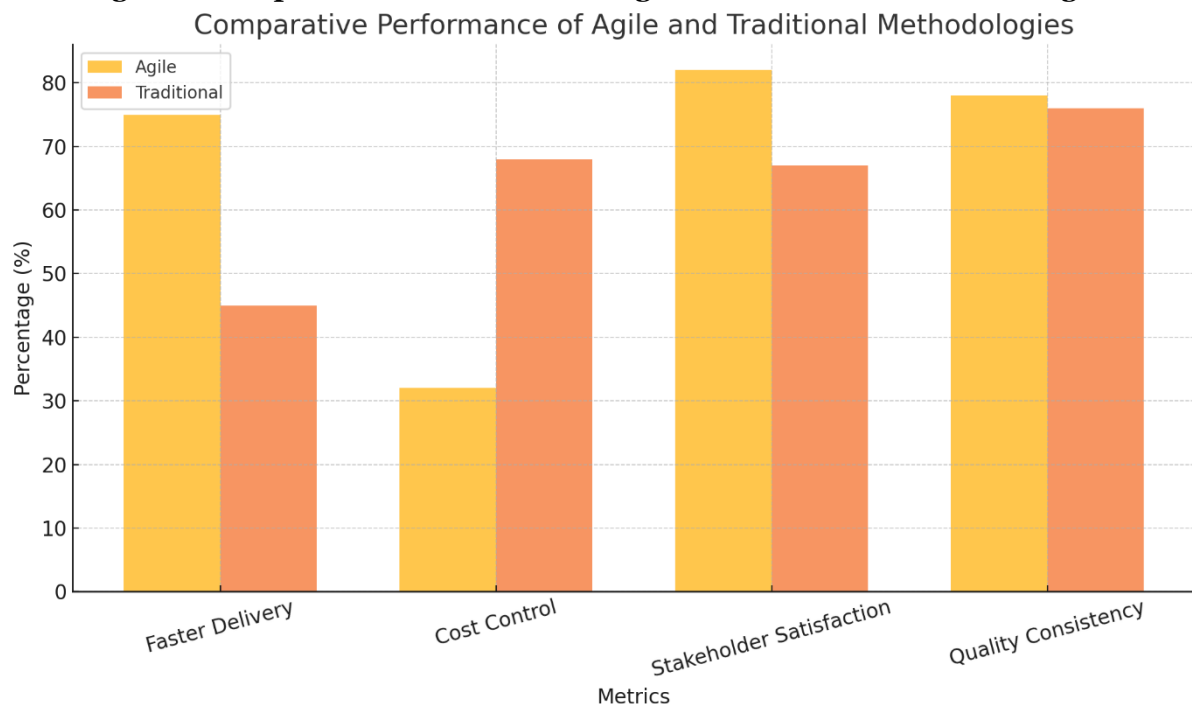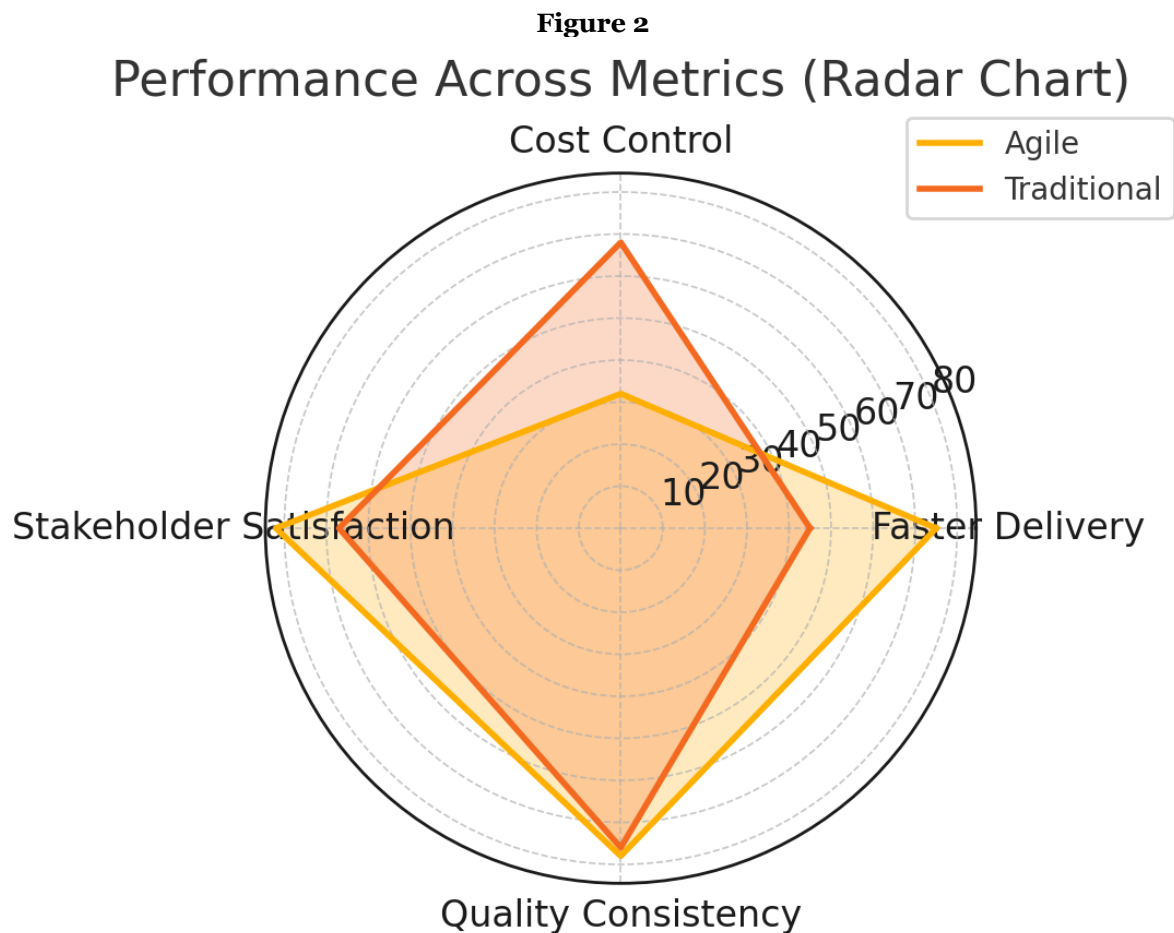
The radar (spider) chart compares the performance of agile and traditional methodologies across four key project success metrics: Faster Delivery, Cost Control, Stakeholder Satisfaction, and Quality Consistency. Each metric is represented as a spoke radiating outward from the centre of the chart, and the scores for both methodologies are plotted along these spokes.

Agile Methodology:
Faster Delivery (75%): Agile excels in speed, with higher scores reflecting its ability to deliver projects incrementally and adapt quickly to changes. Cost Control (32%): Agile is less effective in maintaining budgetary constraints, likely due to its flexibility and iterative nature, which can lead to scope creep. Stakeholder Satisfaction (82%): Agile significantly outperforms traditional methods in stakeholder satisfaction due to frequent feedback loops and incremental value delivery. Quality Consistency (78%): Agile maintains high quality, benefiting from iterative testing and continuous improvement.

Traditional Methodology:
Faster Delivery (45%): Traditional methods are slower due to their linear and rigid processes, making them less responsive to dynamic changes. Cost Control (68%): Traditional approaches are vital in managing budgets, as upfront planning ensures better cost predictability. Stakeholder Satisfaction (67%): While traditional methods satisfy stakeholders reasonably, they lack the frequent interaction and iterative adjustments agile offers. Quality Consistency (76%): Traditional methodologies achieve comparable quality, relying on exhaustive documentation and rigorous testing phases.

Comparison Highlights:
Agile is superior in Faster Delivery and Stakeholder Satisfaction, making it ideal for dynamic and evolving projects. Traditional approaches outperform in Cost Control, making them better suited for projects with stable requirements and strict budgets. Both methodologies perform similarly in Quality Consistency, reflecting their ability to deliver high-quality outcomes through different mechanisms. This chart effectively summarises each methodology's strengths and limitations, helping stakeholders make informed decisions based on project requirements and success criteria. Would you like additional insights or charts for further analysis?

Discussion

The results align with the research questions, illustrating how agile and traditional methodologies influence project success. Agile's iterative and flexible nature enables teams to respond to changing requirements and deliver value incrementally, consistent with Schwaber and Sutherland (2020) and Diem (2021) findings. This is particularly beneficial in dynamic IT environments where evolving stakeholder needs are shared. However, the increased flexibility comes at the cost of potential budget overruns, supporting observations by Kerzner (2020) that agile methodologies can struggle with cost predictability.

Traditional methodologies, on the other hand, provided more robust cost control and structure, making them more effective for projects with stable requirements. These findings corroborate studies by Wysocki (2019) and Onethread (2024), highlighting the strength of traditional approaches in projects where predictability and documentation are paramount.

Stakeholder satisfaction emerged as a critical metric where agile had a distinct advantage, echoing research by Kassab et al. (2016) on the role of iterative feedback in enhancing user satisfaction. However, the qualitative data also revealed that traditional approaches satisfied stakeholders who valued detailed documentation and clear milestones.

The findings contribute to existing literature by emphasising that the choice of methodology should align with the project's nature and organisational context. Agile is best suited for projects requiring adaptability, while traditional methods are preferable for projects demanding predictability and cost control. This nuanced understanding provides IT practitioners and academics actionable insights in tailoring project management strategies to maximise success.

5. Conclusion and Recommendations

Conclusion

This study explored the comparative impact of agile and traditional project management methodologies on project success in the IT sector. Key findings reveal that agile methodologies excel in environments where flexibility, rapid delivery, and stakeholder satisfaction are critical. Agile's iterative approach, characterised by sprints and continuous feedback, enables teams to adapt to evolving requirements and deliver incremental value. However, it is less effective in controlling costs due to its dynamic nature and potential for scope creep. On the other hand, traditional methodologies such as the Waterfall model demonstrate strengths in structured environments with stable requirements, excelling in cost control and maintaining predictable workflows. Both methodologies perform comparably in quality consistency, albeit through different mechanisms—agile through incremental improvements and traditional through comprehensive planning and testing.

These findings underscore the importance of aligning project management methodologies with IT projects' specific needs and context. While agile is best suited for dynamic, innovation-driven projects, traditional methods are more appropriate for projects requiring strict adherence to budget and scope. The study highlights the need for IT professionals to evaluate their project requirements and organisational culture when selecting a methodology, as a one-size-fits-all approach is unlikely to achieve optimal outcomes. The insights contribute to a deeper understanding of how these methodologies influence project success, offering practical and theoretical implications for the IT sector.

Recommendations

1. Adopt Agile for Dynamic Projects: Practitioners managing projects with rapidly changing requirements should adopt agile methodologies to leverage their flexibility and capacity for iterative delivery. Practices such as frequent stakeholder engagement and continuous feedback should be emphasised.
2. Use Traditional Methods for Predictable Projects: Traditional approaches like Waterfall provide better cost predictability and structured workflows for projects with well-defined goals and limited scope for change. Comprehensive documentation and detailed planning should be prioritised to ensure success.
3. Consider Hybrid Models: Practitioners should explore hybrid approaches that combine the strengths of both methodologies. For instance, projects can begin with a traditional approach for initial planning and shift to agile for execution, enabling a balance between structure and flexibility.
4. Focus on Team Training: Invest in training team members to effectively implement and transition between methodologies, as both require distinct skill sets and mindsets.

Future Research

1. Explore Hybrid Methodologies: Future studies should investigate the effectiveness of hybrid models that integrate agile and traditional practices, identifying conditions under which such combinations yield the best results.
2. Sector-Specific Studies: Conduct research across various industries to examine whether findings from the IT sector apply to other fields, such as healthcare or construction.
3. Scalability of Agile: Research on the scalability of agile methodologies for large, complex projects is needed, as agile's strengths are often observed in smaller teams and projects.

4. Long-Term Impact Analysis: Investigate the long-term organisational impacts of adopting agile, traditional, or hybrid methodologies, focusing on metrics such as employee satisfaction, innovation, and financial performance.
5. Cultural Influence: Future studies should examine the role of organisational culture in determining the success of project management methodologies, especially in multicultural and distributed teams.

References

1. AGBANA, J., KAUTHAR, D., MURITALA, T. A., IBRAHIM, U. A., & FAIZA, M. (2023). Effect of liquidity management on the financial performance of manufacturing firms in Nigeria. *Qualitative and Quantitative Research Review*, *8*(1), 41-66.
2. Agbejule, A., & Lehtineva, L. (2022). The relationship between traditional project management, agile project management and teamwork quality on project success. *International Journal of Organizational Analysis*, *30*(7), 124-136.
3. Ali, H., Khan, M. Z., & ur Rehman, U. (2021). An Empirical Study on the adoption of Agile Project Management Methodology and its effect on Project Success with the moderating role of Organizational Culture. *European Journal of Social Impact and Circular Economy*, *2*(1), 75-99.
4. Binboga, B., & Gumussoy, C. A. (2024). Factors affecting agile software project success. *IEEE Access*.
5. Ciric Lalic, D., Lalic, B., Delić, M., Gracanin, D., & Stefanovic, D. (2022). How does the project management approach impact project success? From traditional to agile. *International Journal of Managing Projects in Business*, *15*(3), 494-521.
6. Ellahi, A., Rehman, M., Javed, Y., Sultan, F., & Rehman, H. M. (2022). Impact of servant leadership on project success through the mediating role of team motivation and effectiveness: a case of the software industry. *SAGE Open*, *12*(3), 21582440221122747.
7. Gemino, A., Horner Reich, B., & Serrador, P. M. (2021). Agile, traditional, and hybrid approaches to project success: is hybrid a poor second choice? *Project Management Journal*, *52*(2), 161-175.
8. Hassani-Alaoui, S., Cameron, A. F., & Giannelia, T. (2020). "We use scrum, but...": Agile modifications and project success.
9. Josyula, S. S., Suresh, M., & Raghu Raman, R. (2023). How do we make intelligent automation projects agile? Identification of success factors and an assessment approach. *International Journal of Organizational Analysis*, *31*(5), 1461-1491.
10. Ju, X., Ferreira, F. A., & Wang, M. (2020). Innovation, agile project management and firm performance in a public sector-dominated economy: Empirical evidence from high-tech small and medium-sized enterprises in China. *Socio-Economic Planning Sciences*, *72*, 100779.
11. Khoza, L. T., & Marnewick, C. (2020). Waterfall and agile information system project success rates-a South African perspective. *South African Computer Journal*, *32*(1), 43-73.
12. Lindsjørn, Y., Sjøberg, D. I., Dingsøyr, T., Bergersen, G. R., & Dybå, T. (2016). Teamwork quality and project success in software development: A survey of agile development teams. *Journal of Systems and Software*, *122*, 274-286.
13. Moloto, M., Harmse, A., & Zuva, T. (2020). Impact of agile methodology use on project success in organizations-a systematic literature review. *Proceedings of the Computational Methods in Systems and Software*, 267-280
14. Nguyen, D. S. (2016). Success factors that influence agile software development project success. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)*, *17*(1), 171-222.
15. Pinto, J. K., Davis, K., Ika, L. A., Jugdev, K., & Zwikael, O. (2022). Coming to terms with project success: Current perspectives and future challenges. *International Journal of Project Management*, *40*(7), 831-834.
16. Radhakrishnan, A., Zaveri, J., David, D., & Davis, J. S. (2022). The impact of project team characteristics and client collaboration on project agility and success: An empirical study. *European Management Journal*, *40*(5), 758–777.
17. Rajan, E. R., & Santhosh, V. A. (2021). Adoption of Agile Methodology to improve its project performance. *Serbian Journal of Management*, *16*(2).
18. Russo, D. (2021). The agile success model: a mixed-methods study of a large-scale agile transformation. *ACM Transactions on Software Engineering and Methodology (TOSEM)*, *30*(4), 1–46.
19. Salman, A., Jaafar, M., Malik, S., Mohammad, D., & Muhammad, S. A. (2021). An empirical investigation of the impact of communication and employee motivation on project success using the agile framework and its effect on the software development business. *Business Perspectives and Research*, *9*(1), 46-61.
20. Shakya, P., & Shakya, S. (2020). The critical success factor of agile methodology in the software industry of Nepal. *Journal of Information Technology*, *2*(03), 135-143.
21. Serrador, P., & Pinto, J. K. (2015). Does Agile work?—A quantitative analysis of Agile project success. *International journal of project management*, *33*(5), 1040-1051.
22. Sholukh, A. M., Fiore-Gartland, A., Ford, E. S., Miner, M. D., Hou, Y. J., Tse, L. V., ... & Corey, L. (2021). Evaluation of cell-based and surrogate SARS-CoV-2 neutralisation assays. *Journal of Clinical Microbiology*, *59*(10), 10-1128

23. Sithambaram, J., Nasir, M. H. N. B. M., & Ahmad, R. (2021). Issues and challenges impacting the successful management of agile-hybrid projects: A grounded theory approach. *International journal of project management*, *39*(5), 474-495.
24. Wafa, R., Khan, M. Q., Malik, F., Abdusalomov, A. B., Cho, Y. I., & Odarchenko, R. (2022). The impact of agile methodology on project success, with a moderating role of Person's job fit in the IT industry of Pakistan. *Applied Sciences*, *12*(21), 10698.