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OPTIMIZING THE SELECTION OF PROJECT MANAGEMENT APPROACHES – RESEARCH FINDINGS

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Purpose: The purpose of this article is to analyze the optimal application areas of predictive, adaptive, and hybrid project management approaches, identifying key factors influencing their selection and evaluating their impact on project success and stakeholder satisfaction.
Design/Methodology/Approach: This study employs a quantitative research methodology, combining a comprehensive literature review with survey data collected from 37 project management professionals. The analysis focuses on project characteristics, organizational factors, and external environment variables to establish correlations between these factors and the selection of project management methodologies.
Findings: The findings indicate that hybrid project management approaches are the most widely used due to their balance between structured planning and flexibility. Predictive approaches are more effective for projects with stable requirements and fixed timelines, while adaptive approaches excel in dynamic environments with evolving requirements. The study highlights the significant role of senior management support and the customization of methodologies in achieving project success.
Research Limitations: The study is limited by its reliance on self-reported data, which may introduce bias, and the geographic concentration of respondents, primarily in Poland. Future research could expand the sample size and include a more diverse population to validate the findings across different cultural and organizational contexts.
Practical Implications: The article provides actionable insights for organizations aiming to optimize their project management approach. By understanding the factors influencing methodology selection, practitioners can better align project management strategies with specific project and organizational requirements, ultimately enhancing project efficiency and stakeholder satisfaction.
Originality/Value: This study contributes to the existing body of knowledge by offering empirical evidence on the comparative effectiveness of predictive, adaptive, and hybrid project management approaches. Its practical recommendations support organizations in making informed decisions regarding methodology selection, addressing a critical gap in project management research.
Keywords: project management, predictive approaches, adaptive approaches, hybrid methodologies, project success.
Category of the Paper: research paper.

1. Introduction

In the face of rapid technological advancements and constantly evolving market demands, organizations are under growing pressure to deliver successful projects that meet both strategic goals and stakeholder expectations. Traditional project management approaches, such as predictive or plan-driven models, are often inadequate for projects that require adaptability and responsiveness to change. Consequently, adaptive and hybrid approaches, including Agile and mixed-method models, have gained prominence for their ability to navigate complexity and prioritize flexibility.

Despite the popularity of various project management approaches, there remains a critical gap in understanding the optimal conditions and criteria for their effective application. The objective of this study is to bridge this gap by providing a comparative analysis of predictive, adaptive, and hybrid project management strategies, aiming to identify the factors influencing the choice of approach in diverse project environments. This research not only addresses the challenges of aligning project characteristics with suitable methodologies but also offers empirical insights based on survey data to guide organizations in selecting the most effective project management approach. By addressing this research gap, the findings contribute to enhancing project efficiency, improving outcome predictability, and ultimately achieving higher levels of project satisfaction among stakeholders.

2. Literature review

Project design and implementation have become critical aspects of organizational strategy, as reflected by the increasing volume of publications dedicated to project management and the development of diverse project management approaches and methodologies aimed at supporting organizations in achieving their strategic objectives. The origins of modern project management date back to the 1950s, marked by the introduction of network planning techniques such as the Critical Path Method (CPM) and the Program Evaluation and Review Technique (PERT) (Reed et al., 2024; Stretton, 2007). Since then, project management has evolved significantly, from practices primarily used in engineering and construction to comprehensive methodologies applicable across a wide range of industries.

2.1. Traditional (predictive) project management approaches

Predictive, or traditional, project management approaches rely on thorough, upfront planning and assume that project requirements can be clearly defined from the outset. The Waterfall methodology and PRINCE2 are well-established examples, structured around

sequential project phases and emphasizing control through detailed documentation and rigid schedules (Bentley, 2020). These methodologies, however, tend to struggle in environments marked by high levels of uncertainty, where requirements may change during the project lifecycle. Research suggests that projects with fixed or highly regulated scopes, as well as those in industries with lower variability, such as construction or manufacturing, benefit most from predictive approaches (Wright, 2022; Ciric et al., 2021).

The primary advantage of predictive methodologies lies in their ability to provide stability through clear scope definitions and fixed budgets, making them suitable for large-scale projects with multiple dependencies (Sheffield, Lemétayer, 2010; Shiv, Doraiswamy, 2012). However, rigid adherence to initial plans can result in costly overruns and delays if changes become necessary, a frequent risk in today's rapidly changing business environment (Pace, 2019). Studies by Reed et al. (2024) and Rotaru (2021) also underscore that while predictive approaches provide effective structure and accountability, they can limit flexibility, making them less adaptable to the evolving needs and expectations of stakeholders.

2.2. Adaptive project management approaches

In response to the limitations of traditional project management, adaptive methodologies have gained popularity, especially in industries characterized by high innovation and changing requirements, such as software development. The Agile approach and its associated methodologies, like Scrum and Kanban, prioritize flexibility and continuous feedback over rigid planning, which enables iterative development cycles that adapt to evolving stakeholder needs (Cooke, 2014; Reed et al., 2024). The Agile Manifesto, published in 2001, formalized these principles, advocating for customer collaboration, rapid response to change, and incremental project delivery (Schwaber, Sutherland, 2020).

Adaptive methodologies focus on delivering value through frequent iterations, or sprints, which help to address stakeholder feedback continuously. Research by Bentley (2020) shows that Agile approaches are particularly advantageous for projects with uncertain requirements, as they allow project teams to modify the project scope and priorities based on real-time feedback, rather than pre-defined milestones. Wright (2022) emphasizes that adaptive project management has a strong focus on customer satisfaction, with scope defined by the evolving needs of the customer rather than a fixed project plan.

While Agile has shown success across various industries, its reliance on less formalized documentation and processes requires a cultural shift within organizations, fostering a no-blame environment, collaborative teams, and high levels of self-organization (Pace, 2019). Despite its advantages, the Agile approach may introduce risks in highly regulated environments where documentation and fixed scope are mandatory (Azenha et al., 2021). Research by Reed et al. (2024) highlights that, while Agile is widely praised for its adaptability, its lack of a clearly defined hierarchy and increased dependence on cross-functional teams can create challenges for organizations accustomed to traditional management structures.

2.3. Hybrid project management approaches

As project requirements have become increasingly diverse, hybrid methodologies have emerged, blending elements of both predictive and adaptive approaches to achieve a balance between structure and flexibility. This middle ground is particularly valuable for projects where components like regulatory compliance benefit from a structured approach, while customer-driven features demand adaptability (Gemino et al., 2021; Brendzel, 2024). Hybrid project management approaches, often combining the upfront planning of Waterfall with the iterative execution of Agile, enable organizations to harness the stability of traditional models while maintaining the responsiveness of adaptive methodologies (Wright, 2022).

Studies reveal that hybrid approaches are commonly applied in complex projects that require multiple stakeholder groups and have a broad scope (Reed et al., 2024; Piwowar-Sulej, 2021, Wolniak, 2022a, 2020b). By maintaining a predictive framework for regulatory or highly sensitive components and incorporating iterative Agile cycles for development tasks, hybrid methodologies address a broader range of project needs. Research also indicates that hybrid approaches facilitate improved stakeholder satisfaction by aligning project deliverables with both regulatory and market-driven requirements (Bentley, 2020; Cooke, 2014).

2.4. Selection criteria for project management approaches

The choice of project management approach depends on several factors, including project complexity, regulatory requirements, team size, and customer involvement. Wright (2022) notes that highly regulated projects with extensive compliance requirements may necessitate a predictive approach, while projects with evolving or uncertain requirements benefit more from adaptive methodologies. Additionally, organizational culture plays a significant role in approach selection; bureaucratic organizations may struggle to adopt Agile, while collaborative environments are often better suited to adaptive approaches (Piwowar-Sulej, 2021).

Research by Reed et al. (2024) suggests that the experience and expertise of project teams also impact approach selection, as teams familiar with Agile can more effectively implement adaptive methodologies. Moreover, factors such as project team structure and communication frequency affect the feasibility of hybrid approaches, as they require both structured documentation and iterative, cross-functional collaboration.

In summary, the literature on project management approaches highlights the advantages and limitations of predictive, adaptive, and hybrid methodologies. Predictive approaches offer stability for projects with defined requirements and minimal need for flexibility, while adaptive methodologies excel in environments characterized by uncertainty and rapid change. Hybrid approaches combine elements of both, providing a tailored approach to projects with mixed needs. However, selecting the optimal project management methodology requires careful consideration of organizational, project-specific, and external factors. As the field of project

management continues to evolve, understanding the optimal conditions for each approach is essential to maximizing project success and stakeholder satisfaction in an increasingly complex business landscape.

3. Research method

This study employs a quantitative research approach to identify optimal application areas for different project management approaches – predictive, adaptive, and hybrid – and the key factors influencing their selection. Given the increasing interest in project management methodologies and the limited empirical research on their practical effectiveness, a hypothetico-deductive method was chosen to provide objective measurements and identify quantitative relationships between project characteristics and methodology selection (Apanowicz, 2005; Sułkowski et al., 2021)

3.1. Literature review and formulation of research questions

The research process began with a comprehensive review of the literature to understand the evolution, application, and efficacy of various project management approaches. The review highlighted the need for a practical analysis of project management approaches, particularly in assessing their effectiveness across diverse organizational environments. Based on insights from the literature, two research questions were formulated:

1. What are the optimal application areas for predictive, adaptive, and hybrid project management approaches?
2. What factors influence the selection of a project management approach for a specific project?

These questions guide the study's empirical focus on identifying factors that inform the choice of methodology and examining how different project management approaches align with project and organizational characteristics.

3.2. Data collection instrument: survey questionnaire

To gather data, a survey questionnaire was developed, a common tool for data collection in project management research (Reed et al., 2024). The questionnaire is structured into five sections:

1. Demographics – questions capturing respondents' background, including work experience, certifications, and familiarity with different project management methodologies.
2. Project characteristics – questions addressing the scope, requirements stability, and project end-date flexibility.

3. Delivery organization characteristics – this section focuses on factors such as senior management commitment, customization of project management methodologies, and organizational type.
4. Evaluation of project outcomes – questions capturing respondents' assessment of project success in terms of stakeholder satisfaction, budget compliance, and timeline adherence.
5. External environment – questions about regulatory requirements, market changes, and legal constraints affecting the projects.

The questionnaire comprises a total of 33 questions. Respondents were project management professionals, providing usable responses from 37 individuals collected between June and July 2024.

3.3. Survey population and sample description

The sample comprises a diverse group of project management professionals with an average of 9.5 years of experience in project environments and certifications in methodologies such as Scrum, PMP, PRINCE2, and Lean. While the majority of respondents (76%) were based in Poland, participants also included individuals from countries such as India, Slovakia, and the United States. This diversity in experience levels and project management certifications enhances the study's ability to generalize findings across varied project environments.

Among the certifications reported, Scrum was the most common, with 15 responses (Figure 1). The second most popular certification was Project Management Professional (PMP), issued by the Project Management Institute (PMI), with 11 responses. Agile-related certifications ranked third with 10 responses. PRINCE2 certification followed with 7 responses, while Six Sigma (4 responses), Lean (3 responses), and Scaled Agile Framework (SAF, 2 responses) were less frequently reported. Less common certifications, such as Kanban, Large Scale Scrum (LeSS), and Programme Management Professional (PgMP), were mentioned by only 1 respondent each.

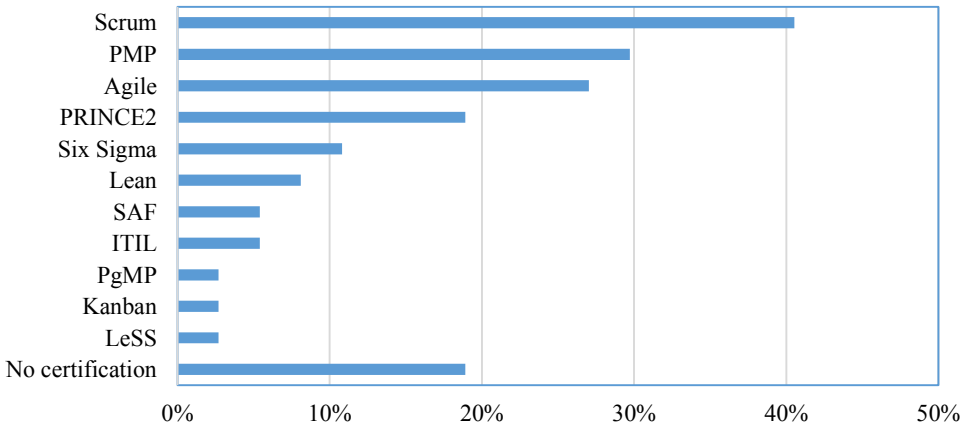

Figure 11. Respondents' project management certificates.

Source: Own study.

The respondents' familiarity with project management methodologies varies significantly, reflecting both traditional and adaptive practices (Figure 2). The Waterfall methodology is the most commonly used approach, with 78% (29 out of 37) of respondents having practical experience. Only 4 respondents (11%) reported theoretical knowledge of Waterfall, while another 4 respondents (11%) were not familiar with it. This high level of practical familiarity highlights the continued relevance of traditional approaches in many projects.

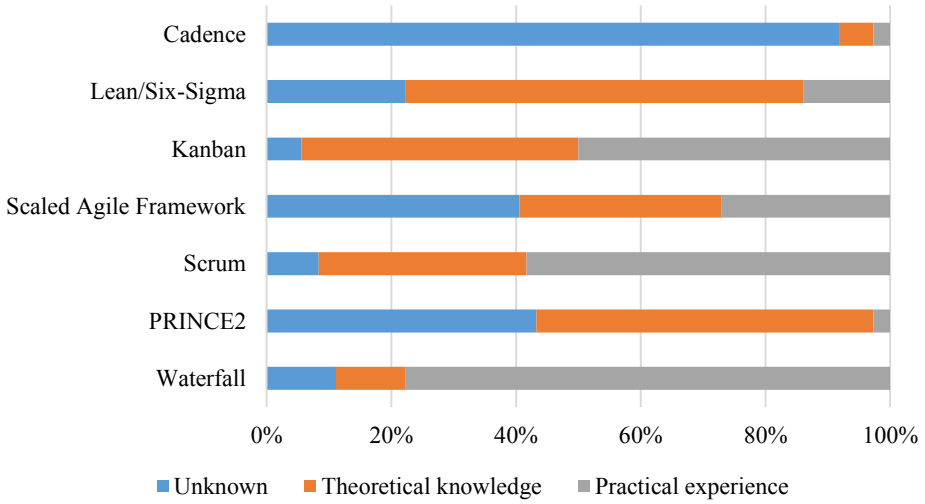

Figure 22. Respondents' familiarity with project management methodologies.
Source: Own study.

The Scrum methodology is slightly less prevalent in practice, with 57% (21 responses) indicating experience. However, this still reflects its widespread adoption as a cornerstone of adaptive project management. In comparison, the Kanban methodology sees considerable application, with 49% (18 responses) reporting practical experience. Interestingly, Kanban also exhibits a strong theoretical base, as 17 respondents (46%) have theoretical knowledge, and only 2 (5%) are unfamiliar with it. The Scaled Agile Framework (SAF) is less commonly applied, with only 27% (10 responses) having practical experience. However, 37% (12 respondents) are familiar with SAF theoretically, while 41% (15 respondents) are entirely unfamiliar with this methodology, highlighting its niche status within adaptive project management. PRINCE2, while recognized for its certifications, is rarely applied in practice. Although 54% (20 respondents) reported theoretical knowledge of PRINCE2, only 1 respondent had used it practically, and 43% (16 respondents) were unfamiliar with it. This disparity underscores the gap between PRINCE2's reputation and its real-world application. Another methodology with a significant gap between theoretical and practical familiarity is Lean/Six-Sigma. A majority (65%, 24 respondents) have theoretical knowledge of this methodology, but only 14% (5 respondents) have applied it in projects. This suggests that Lean/Six-Sigma is more commonly perceived as a process optimization tool rather than a standard project management approach. For niche methodologies such as Cadence, familiarity

is minimal. Only 1 respondent reported practical experience, 2 respondents (5%) had theoretical knowledge, and 92% (34 respondents) were entirely unfamiliar with it.

Training methods also reflect trends in project management adoption. Self-study was the most common form of acquiring knowledge, especially for hybrid (16 respondents) and predictive approaches (15 respondents). Training for the adaptive approach was the most popular, with 76% of respondents having received Agile training. Notably, 11 respondents had attended extensive Agile training sessions lasting more than 10 days.

The traditional approach also saw considerable training, with 51% of respondents reporting formal training, primarily at expert levels (8 respondents for sessions longer than 10 days). In contrast, the hybrid approach had the highest proportion of respondents with no training or self-study (8 responses), indicating a gap in structured learning opportunities for hybrid methodologies.

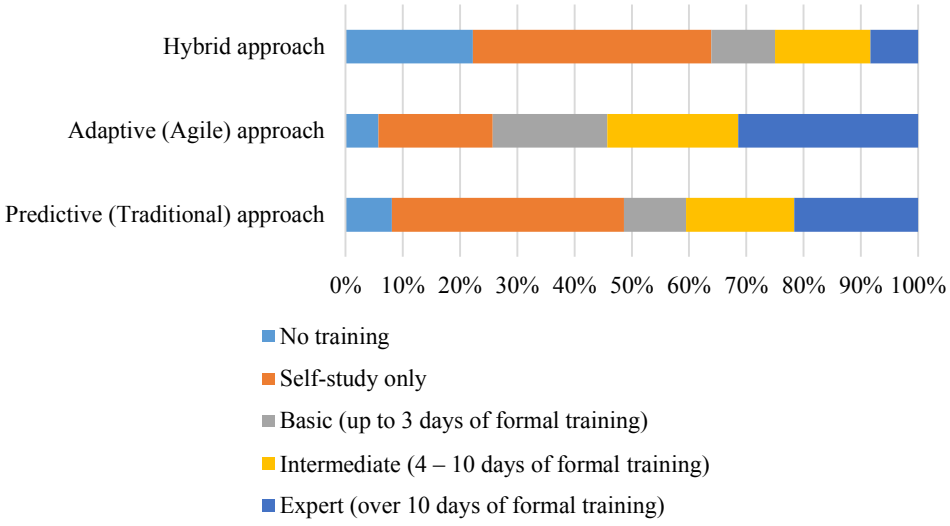

Figure 33. Received training in project management approaches.

Source: Own study.

These findings illustrate a clear divergence between theoretical familiarity and practical application across methodologies. Traditional approaches like Waterfall dominate in practice, while adaptive and hybrid methodologies are more often studied than applied. Addressing the barriers to practical implementation, particularly for PRINCE2, SAF, and Lean/Six-Sigma, could improve the balance between knowledge and usage.

3.4. Research variables

To address the study's objectives, several key variables were defined, classified into three categories: external factors, organizational characteristics, and project-specific factors.

- External factors – this includes regulatory requirements, the level of political and market changes, and industry type (Wright, 2022).

- Organizational characteristics – key organizational variables include organizational culture (bureaucracy vs. collaboration), senior management support, and organization type (e.g., private, public sector).
- Project-specific factors – variables include project size, team size, budget, dependencies, and the frequency of customer and internal communication.

3.5. Data analysis approach

The data collected from the survey was analyzed using descriptive and inferential statistics. Descriptive analysis was employed to understand the distribution of project management approaches and methodology customization across different project and organizational characteristics. The study also employs correlation analysis to examine relationships between project attributes and methodology selection, particularly to test the hypothesis that the choice of project management approach depends on project complexity, requirement stability, and external factors.

3.6. Limitations of the method

One limitation of the survey-based approach is the reliance on self-reported data, which may introduce biases based on respondents' personal perceptions and experiences. Additionally, the regional focus on respondents from Poland may limit the generalizability of findings to other geographic regions. Future studies may expand the scope to include a more diverse, global sample to validate the findings across different organizational and cultural contexts.

In conclusion, the methodology of this study combines literature review insights with quantitative data from experienced project management professionals. The structured approach provides an evidence-based foundation for understanding the criteria influencing project management methodology selection, which aims to support organizations in aligning their approach with project-specific needs for improved project outcomes.

4. Results and discussion

The survey data, collected from 37 project management professionals, provides valuable insights into the application areas and selection criteria for predictive, adaptive, and hybrid project management approaches. The findings reveal diverse preferences and considerations across project types, organizational settings, and external factors, helping to illuminate how various methodologies are employed in practice to enhance project outcomes and stakeholder satisfaction.

4.1. Distribution of Project Management Approaches

The results show that hybrid project management is the most commonly used approach among respondents, applied in 43% of projects. The adaptive approach follows at 27%, with the predictive approach used in 24% of projects. Only 6% of respondents indicated that no formal project management approach was applied. This distribution aligns with current research indicating that the hybrid approach is favored for its balance of structure and flexibility, making it suitable for complex projects with diverse requirements (Reed et al., 2024).

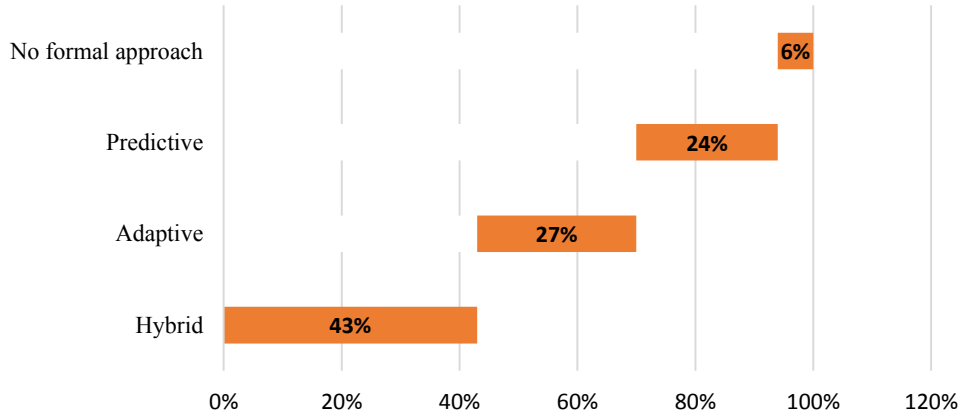

Figure 4. Project management approach used in projects described by respondents.
Source: Own study.

The preference for hybrid methodologies reflects the need to combine the structured planning of predictive approaches with the flexibility of adaptive methods, particularly in projects with regulatory constraints and evolving stakeholder needs (Gemino et al., 2021). This finding supports the literature, which notes that hybrid approaches are increasingly used in modern project management due to their adaptability to complex and dynamic project environments (Wright, 2022).

4.2. Project characteristics influencing methodology selection

The survey indicates that project characteristics, such as scope clarity, expected changes, and project end-date flexibility, are significant factors in determining the appropriate project management approach.

- Scope clarity – approximately 35% of projects had a well-defined and complete scope at the outset, favoring the predictive approach, which benefits from stable requirements. In contrast, projects with evolving scopes (27%) were more likely to adopt adaptive methodologies, as these allow for adjustments based on stakeholder feedback and emerging requirements (Bentley, 2020; Shiv et al., 2012).

- Flexibility of project end dates – for almost half of the projects (46%), flexibility was possible for key dates but not the final deadline. Projects with stricter timelines (32%) were more inclined toward predictive or hybrid approaches, which provide structured planning and control mechanisms essential for meeting fixed deadlines (Sheffield, Lemétayer, 2010). Projects with flexible timelines were more open to adaptive approaches, accommodating iterative cycles and ongoing adjustments.
- Requirement stability – projects with medium stability in requirements (54%) predominantly used hybrid approaches, blending predictive planning with adaptive execution. Fixed requirements, present in 20% of projects, correlated with predictive approaches, whereas projects expecting frequent changes preferred adaptive approaches.

4.3. Organizational characteristics and methodology customization

Organizational culture, management support, and methodology customization emerged as influential factors in methodology selection.

- Organizational culture and senior management support – projects with strong senior management support (86%) reported higher success rates, consistent with findings that executive involvement facilitates alignment with strategic goals and resource allocation (Reed et al., 2024; Piwowar-Sulej, 2021). Organizations with collaborative cultures were more likely to adopt adaptive or hybrid approaches, while more hierarchical cultures tended toward predictive approaches.
- Customization of methodologies – most organizations reported adapting their chosen project management methodologies to align with organizational and project-specific needs. A high degree of customization was noted in 11% of projects, with moderate customization in 73%. This trend is supported by existing literature indicating that tailoring methodologies improves their applicability and effectiveness (Pace, 2019). Hybrid projects, in particular, benefitted from customized methodologies, as they often required blending aspects of both structured and flexible approaches to meet varied project demands (Rotaru, 2021).

The level of adoption of project management methodologies further highlights the practical alignment of organizational characteristics with the chosen approaches. Figure 5 presents the distribution of methodology adoption levels among respondents, emphasizing the prominence of hybrid methodologies due to their adaptability to diverse project needs. This reflects the findings that organizations often customize methodologies to better fit their structure and project-specific requirements.

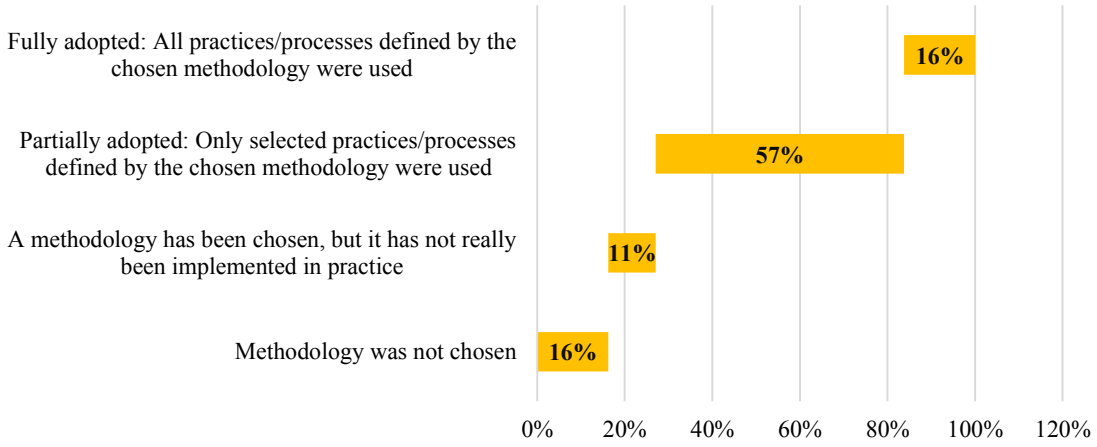

Figure 5. Level of project management methodology adoption among surveyed organizations.
Source: Own study.

4.4. External environment characteristics and approach selection

The external environment, including regulatory and market changes, influenced approach selection, especially in highly regulated or volatile industries.

- Regulatory requirements – projects with moderate to high regulatory demands (61%) were more likely to use predictive or hybrid methodologies, which provide structured processes to ensure compliance (Wright, 2022). Projects in industries with lower regulatory requirements leaned towards adaptive approaches, emphasizing flexibility and rapid response to changing conditions.
- Market changes – projects impacted by frequent market changes favored adaptive and hybrid approaches to allow responsiveness to shifting demands. Adaptive methodologies, such as Scrum, were particularly effective for projects in fast-paced industries, as they enabled iterative updates and continuous alignment with market trends (Reed et al., 2024).

4.5. Communication and stakeholder involvement

Effective communication and stakeholder involvement were essential across all project management approaches. The survey results show that:

- Customer involvement – projects with regular customer involvement, particularly those with daily or weekly interactions (76%), reported higher stakeholder satisfaction. Adaptive and hybrid approaches excelled in maintaining regular customer feedback, a key factor for projects with changing requirements.
- Internal communication – frequent communication within the project team, especially daily meetings (60%), was common in adaptive and hybrid projects, supporting ongoing coordination and quick problem-solving. Predictive approaches, while typically less communicative, still benefited from structured periodic updates to keep all stakeholders informed (Cooke, 2014).

The survey also provided detailed insights into the impact of the external environment on the selection of project management approaches. Figure 6 presents the success metrics reported by respondents, including budget adherence, schedule compliance, and stakeholder satisfaction. The data shows that the highest levels of success were achieved in projects utilizing hybrid approaches.

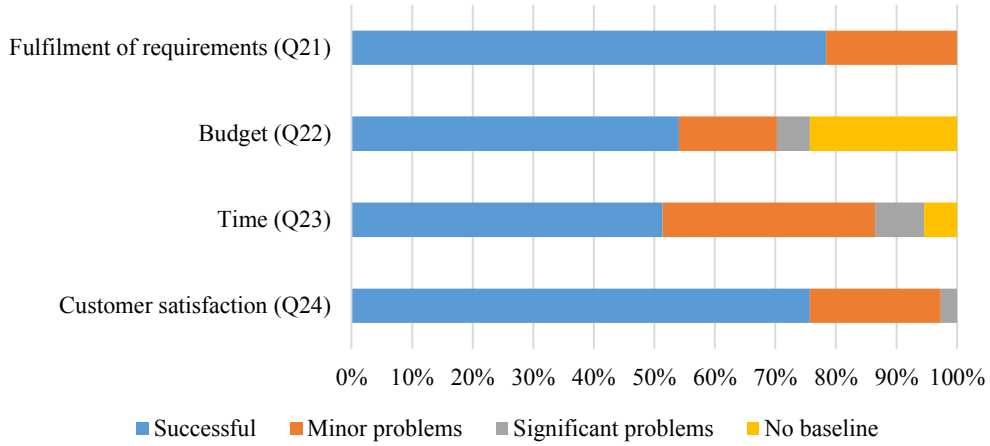

Figure 6. Success metrics reported for projects.

Source: Own study.

Figure 7 compares the success metrics achieved by different project management approaches (predictive, adaptive, and hybrid). The analysis reveals that hybrid approaches, owing to their flexibility in responding to changing requirements, achieved the highest levels of stakeholder satisfaction. In contrast, predictive approaches excelled in budget and schedule compliance.

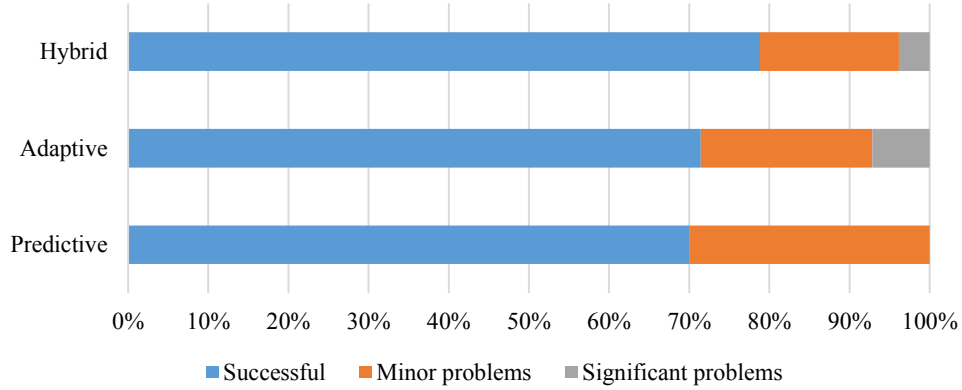

Figure 7. Comparison of reported project success metrics with applied project management approach.

Source: Own study.

These findings underscore the importance of tailoring the approach to the characteristics of the external environment, particularly in dynamic and demanding contexts where hybrid approaches can provide a better balance between flexibility and structure.

4.6. Project outcomes and success factors

The study found that project success was closely tied to the alignment of project characteristics with an appropriate project management approach. Such alignment facilitates the effective use of resources, enhances stakeholder satisfaction, and increases the likelihood of achieving key project objectives.

- Budget and timeline adherence – predictive and hybrid projects demonstrated higher success rates in adhering to budget and schedule constraints. This success stems from the structured nature of these approaches, which emphasize meticulous upfront planning, clearly defined deliverables, and robust monitoring mechanisms. These methodologies reduce uncertainty, ensuring better control over time and cost (Bentley, 2020). Notably, predictive approaches excel in projects with low variability, whereas hybrid methods provide additional flexibility when moderate changes are expected.
- Stakeholder satisfaction – adaptive and hybrid approaches excelled in delivering higher levels of stakeholder satisfaction. This was primarily due to frequent feedback loops, iterative adjustments, and a focus on meeting evolving customer needs. These principles, central to Agile methodologies, foster active collaboration and dynamic problem-solving, which are crucial in projects with shifting priorities. These findings align with Agile methodologies, enabling project teams to respond dynamically to stakeholder inputs, ensuring continuous alignment with project goals (Schwaber, Sutherland, 2020).

Figure 8 explores the interplay between project size, complexity, and environmental changes on the effectiveness of selected project management approaches. This figure underscores the distinct advantages and limitations of predictive, adaptive, and hybrid methodologies, highlighting their effectiveness across various project scenarios.

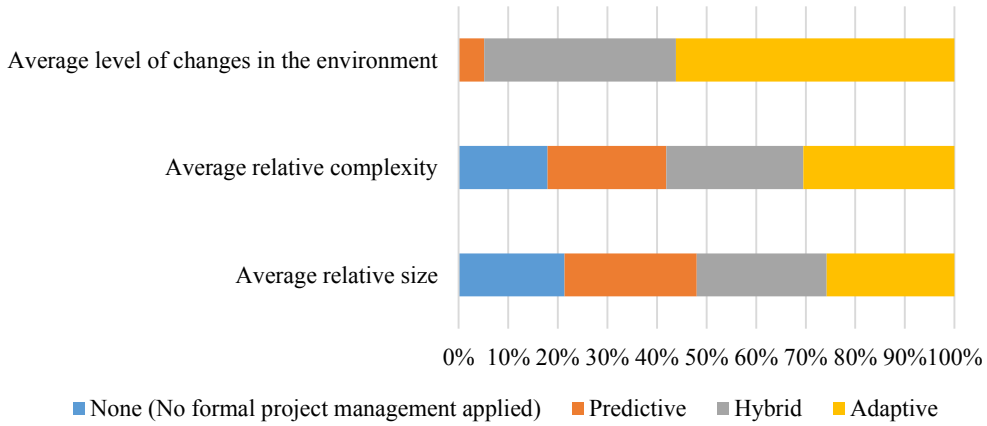

Figure 8. Effectiveness of project management approaches across project size, complexity, and environmental dynamics.

Source: Own study.

The analysis presented in Figure 8 highlights several important trends regarding the effectiveness of project management approaches in various contexts. Predictive methodologies emerge as the most effective for projects characterized by well-defined requirements, low complexity, and stable external conditions. These approaches provide a robust framework for ensuring accountability and achieving budget and timeline goals. Predictive methods are particularly favored for large-scale projects, where detailed upfront planning and strict adherence to timelines and budgets are critical to success.

In contrast, adaptive approaches demonstrate their strength in smaller projects that face high uncertainty and frequent changes in requirements or external environments. The success of adaptive methodologies lies in their capacity for real-time adjustments, enabled by iterative processes and stakeholder engagement. This iterative nature allows teams to respond dynamically to evolving needs, ensuring that the project remains aligned with stakeholder expectations despite shifting circumstances. Adaptive methodologies also foster innovation and creativity, making them ideal for exploratory or high-risk projects.

Hybrid methodologies, on the other hand, are most effective in medium-to-large projects with mixed levels of complexity and partially defined requirements. Their combined structure and flexibility make them particularly suitable for projects requiring both rigorous regulatory compliance and adaptability to evolving market demands. By blending these elements, hybrid approaches address the dual demands of maintaining control in regulated aspects of the project while allowing for adaptability in areas subject to change.

The study underscores that the selection of an appropriate project management approach is a critical determinant of project success. Projects with well-established plans and predictable external factors often achieve greater budgetary control and predictability when managed through predictive or hybrid approaches. Conversely, in dynamic environments, adaptive methodologies support greater innovation and stakeholder alignment, particularly when rapid adjustments are necessary to address evolving external conditions. Ultimately, this correlation highlights the need for organizations to develop a nuanced understanding of their project environment and to customize their methodologies accordingly.

5. Conclusion

In an era of rapid technological advancement and shifting market demands, organizations face increasing pressure to choose effective project management approaches that align with their unique project requirements and strategic objectives. This study examines the optimal application areas for predictive, adaptive, and hybrid project management approaches, exploring key factors that influence their selection in diverse project environments.

Through a survey of project management professionals, the research reveals that hybrid approaches, combining the structured planning of predictive methods with the flexibility of adaptive methodologies, are the most widely applied. Hybrid methodologies are especially favored in complex projects requiring compliance with regulatory demands alongside responsiveness to evolving stakeholder needs. The study also finds that predictive approaches are well-suited for projects with stable, clearly defined requirements and fixed timelines, while adaptive methodologies excel in environments characterized by high uncertainty and frequent changes.

The results of this study affirm that the selection of a project management approach significantly influences project success and stakeholder satisfaction. Predictive approaches offer stability and control, making them suitable for projects with well-defined requirements and fixed timelines. Adaptive approaches, in contrast, are better suited for projects with changing requirements and high uncertainty, where flexibility and customer feedback are crucial. Hybrid approaches, which combine aspects of both, prove to be the most versatile, accommodating projects with diverse needs and varying levels of predictability.

These findings emphasize the importance of a tailored approach to project management. Organizations benefit from customizing methodologies to suit specific project requirements and adapting to external and internal factors. Furthermore, the strong correlation between senior management support, effective communication, and project success highlights the need for organizational commitment to ensure the chosen project management approach aligns with both strategic objectives and operational realities.

In summary, while predictive, adaptive, and hybrid approaches each offer distinct advantages, the optimal choice depends on a careful analysis of project, organizational, and external environment factors. This study contributes to the understanding of how organizations can leverage diverse project management approaches to enhance efficiency, responsiveness, and overall project success.

The results emphasize the need for organizations to carefully assess project, organizational, and external factors when selecting a project management approach. Key determinants such as requirement stability, organizational culture, and regulatory constraints play critical roles in shaping the choice of methodology. Additionally, the study highlights the importance of senior management support, frequent communication, and stakeholder involvement as essential factors for project success.

This study contributes to the growing body of knowledge on project management by offering empirical insights into how organizations can strategically align their project management approaches with project-specific needs. By understanding the criteria for selecting the most appropriate approach, organizations can enhance project efficiency, responsiveness, and stakeholder satisfaction, ultimately improving overall project outcomes in today's complex business landscape.

This study highlights the significance of selecting the right project management approach based on project-specific, organizational, and environmental factors. However, several areas remain for further exploration to deepen understanding and applicability in diverse contexts:

- Longitudinal studies on methodology effectiveness – future research could involve longitudinal studies to assess the impact of project management approach selection over the project lifecycle. This would provide insights into how different approaches affect long-term project success, adaptability to evolving stakeholder needs, and sustained stakeholder satisfaction.
- Cross-industry comparisons – while this study includes projects from various industries, a detailed, industry-specific analysis would be valuable. Research comparing approach effectiveness across high-tech, healthcare, manufacturing, and financial sectors, for example, could reveal unique needs and success factors specific to each industry.
- Influence of organizational culture and size – this study indicates that organizational culture and structure impact the choice and success of project management approaches. Future studies could explore these variables in greater depth, examining how factors such as company size, hierarchical structures, and collaboration levels shape project management practices.
- Impact of emerging technologies – with the rapid rise of AI, machine learning, and advanced project management software, future research could investigate how these technologies interact with traditional and adaptive methodologies, influencing efficiency, decision-making, and outcome predictability.
- Hybrid approach customization models – given the popularity of hybrid methodologies, further research could focus on developing frameworks or models to guide the customization of hybrid approaches for different project types, enabling a structured yet adaptable strategy for project managers.

These directions offer pathways to refine project management practices, providing tailored recommendations that organizations can apply to maximize project success in increasingly complex environments.

References

1. Agile Manifesto (2001). *Manifesto for agile software development*. http://agilemanifesto.org
2. Apanowicz, J. (2005). *Metodologiczne uwarunkowania pracy naukowej. Prace doktorskie, prace habilitacyjne*. Warszawa: Difin.

3. Azenha, F., Reis, D., Fleury, A. (2021). The Role and Characteristics of Hybrid Approaches to Project Management in the Development of Technology-Based Products and Services. *Project Management Journal, 52(1),* 90-110.
4. Bentley, C. (2020). *Adaptable Project Management – A Combination of Agile and Project Management for All (PM4A)*. ITGP.
5. Brendzel, K. (2024). Project management maturity assessment of the SME sector enterprises–results of own research. *Scientific Papers of Silesian University of Technology. Organization & Management [Zeszyty Naukowe Politechniki Slaskiej. Seria Organizacji i Zarzadzanie], 196*, 81-93**.**
6. Ciric, D., Delic, M., Lalic, B., Gracanin, D., Lolic, T. (2021). Exploring the link between project management approach and project success dimensions: A structural model approach. *Advances in Production Engineering & Management Journal*, *16(1),* 99-111.
7. Cooke, J. (2014). *Agile Productivity Unleashed: Proven Approaches for Achieving Productivity Gains in Any Organisation*. ITGP.
8. 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.
9. Pace, M. (2019). A correlational study on project management methodology and project success. *Journal of Engineering, Project, And Production Management*, *9*(2), 56-65.
10. Piwowar-Sulej, K. (2021). Organizational culture and project management methodology: research in the financial industry. *International Journal of Managing Projects in Business*, *vol. 14, no. 6,* pp. 1270-1289.
11. PMI (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) and The Standard for Project Management (7th Edition)*. Newtown Square: PMI.
12. Reed, A., Angolia, M., Baham, C., Igah, R. (2024). Usage of Hybrid Project Management Approaches and Influences on Approach Selection. *Communications of the Association for Information Systems*, *54*.
13. Rotaru, D.A.D. (2021). Choosing the Most Suitable Project Management Methodology. *Internal Auditing & Risk Management*, *62*(2s), 43-55.
14. Schwaber, K., Sutherland, J. (2020). *The Scrum Guide: The Definitive Guide to Scrum: The Rules of the Game*. Retrieved from: https://scrumguides.org/docs/scrumguide/v2020/2020-Scrum-Guide-US.pdf, 24.11.2024.
15. Sheffield, J., Lemétayer, J. (2010). Critical success factors in project management methodology fit. *PMI® Global Congress*.
16. Shiv, P., Doraiswamy, R. (2012). *50 Top IT Project Management Challenges*. ITGP.
17. Stretton, A. (2007). A short history of modern project management. *PM World Today*, *9*(10), 1-18.
18. Sułkowski, Ł., Lenart-Gansiniec, R., Kolasińska-Morawska, K. (2021). *Metody badań ilościowych w zarządzaniu*. Łódź: Wydawnictwo Społecznej Akademii Nauk.

19. Wolniak, R. (2022a). Project management in engineering. *Scientific Papers of Silesian University of Technology, Organization and Management Series*, *157*, 685-698.
20. Wolniak, R. (2022b). Project management standards, *Scientific Papers of Silesian University of Technology, Organization and Management Series*, *160*, 639-654
21. Wright, C. (2022). *Agile Project Management, Assurance and Auditing: A Practical Guide for Auditors, Reviewers, and Project Teams*. ITGP.