

# Systematic Review of Performance Metrics in Agile and Traditional Project Management

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*Abstract- The evolving landscape of project management has witnessed the parallel growth of Agile and Traditional methodologies, each offering distinct frameworks, tools, and success criteria. This systematic review aims to explore and evaluate the performance metrics employed in both Agile and Traditional project management practices, with the goal of identifying convergences, divergences, and performance implications across varying project environments. By critically analyzing peer-reviewed literature, empirical studies, and industrial reports published between 2010 and 2020, this review synthesizes insights from over 80 sources using PRISMA guidelines to ensure methodological rigor. The findings reveal that Traditional project management, often associated with Waterfall and other linear models, emphasizes scope, cost, schedule adherence, and quality as primary performance indicators. In contrast, Agile methodologies prioritize velocity, customer satisfaction, team responsiveness, and adaptability to change. While Agile metrics such as sprint burndown charts and lead time enhance flexibility and rapid delivery, Traditional metrics like earned value management and critical path analysis remain instrumental for governance, planning accuracy, and resource control. A significant insight from the review is the emerging trend of hybrid models that integrate metrics from both paradigms to balance flexibility with control. Additionally, the review highlights the contextual relevance of metrics; for instance, Agile metrics perform better in software development and innovation-driven projects, whereas Traditional metrics are more effective in infrastructure and highly regulated environments. The study also identifies gaps in the literature, such as inconsistent*

*definitions of success, limited cross-industry comparative studies, and underrepresentation of stakeholder satisfaction and long-term project impact as performance criteria. This systematic review concludes that no single set of metrics is universally superior. Instead, metric selection should align with organizational goals, project complexity, and stakeholder expectations. Future research is recommended to develop adaptive metric frameworks that can dynamically respond to changing project variables and organizational maturity.*

*Indexed Terms- Agile Project Management, Traditional Project Management, Performance Metrics, Systematic Review, Hybrid Methodologies, PRISMA, Project Success Criteria, Earned Value, Sprint Velocity, Stakeholder Satisfaction.*

## I. INTRODUCTION

Over the past several decades, project management methodologies have notably evolved to meet the increasing demands of organizations in delivering value efficiently amidst dynamic business environments. The juxtaposition of Agile and Traditional project management approaches illustrates this evolution, highlighting that each methodology encompasses distinct practices, principles, and performance expectations. The need for robust performance metrics has become apparent, as they play a critical role in evaluating project success and guiding strategic decisions (AL-Shboul, 2018, Bechini, et al., 2028). Performance metrics are indispensable tools that provide insights into project progress, effective resource utilization, quality outcomes, and customer satisfaction (Wells, 2012).

They contribute to planning accuracy and risk mitigation, thereby reinforcing the decision-making processes throughout the project lifecycle (Pan, Wu & Lin, 2013; Saini, Upadhyaya & Khandelwal, 2019).

The selection and application of performance metrics are particularly crucial as organizations strive to balance the core dimensions of project management—time, cost, scope, and quality—especially as project complexities and cross-functional integrations continue to escalate. Traditional methodologies, such as the Waterfall model, are often characterized by their linear progression, detailed upfront planning, and strict adherence to predefined scopes and timelines (Emden, Calantone & Dröge, 2006; Faizi & Rahman, 2019). In contrast, Agile methodologies prioritize flexibility, iterative development, and responsiveness to change, promoting customer collaboration. These inherent differences in execution styles evoke distinct performance metrics: Traditional metrics tend to focus on cost variance, schedule performance, and milestone tracking, whereas Agile metrics often emphasize team velocity, sprint completion rates, lead time, and stakeholder feedback (Wells, 2012).

The examination of performance metrics, therefore, warrants a systematic review of existing literature to compare effectiveness within Agile and Traditional frameworks, taking into account different project governance contexts (Joslin & Müller, 2015). Earlier studies have illuminated these critical relationships, affirming that the underlying project management methodologies significantly influence project success (Ferreira, et al., 2012; Hinkelmann, et al., 2016). The focus on understanding how Agile and Traditional metrics can impact project outcomes remains a vital area of research, addressing key questions regarding metric application and the implications of hybrid performance measurement approaches in evolving project environments (Panagiotou & Wijnen, 2005; Salah, Ramadan & Ahmed, 2017).

In conclusion, understanding the distinct nature and application of performance metrics across methodologies can greatly enhance project outcomes. This systemic review aims to identify prevalent metrics, explore their influence on varied contexts, and analyze the potential for hybrid methodologies that may adapt to the fast-evolving landscape of project

management (Park, An & Chandra, 2007; Sanders, 2007).

## 2.1. Methodology

The methodology for conducting a systematic review of performance metrics in agile and traditional project management using the PRISMA method involved a rigorously defined multi-stage process. First, a comprehensive search strategy was implemented across leading academic databases, including Scopus, IEEE Xplore, ScienceDirect, and Google Scholar. This search yielded 100 unique articles, derived from a preliminary scan of literature focusing on metrics such as team velocity, cost performance, schedule adherence, stakeholder satisfaction, and product quality in both agile and traditional frameworks.

After duplicate removal, 85 articles remained for the screening stage. These articles were reviewed based on their titles and abstracts to determine their relevance to the core research objective, specifically those that explored or proposed performance measurement indicators in project management environments. Exclusion criteria included studies focused solely on software development without generalizable management metrics, articles not published in English, or those not peer-reviewed.

A total of 60 full-text articles were assessed for eligibility. The eligibility review involved an in-depth analysis using a coding framework based on PRISMA guidelines. Each article was evaluated on the clarity of methodology, description of project type (agile, traditional, or hybrid), specificity of performance metrics, and whether empirical or conceptual models were used. Studies failing to meet the minimum methodological rigor, such as absence of sample size declaration, lack of validation for proposed metrics, or insufficient contextual information, were excluded.

Ultimately, 38 studies were included in the qualitative synthesis. The included studies were diverse in geographical scope, methodological approaches, and domains, spanning from IT project management to manufacturing, construction, and public sector innovations. Data from these studies were extracted using a standardized data extraction form, which captured author(s), year, project type, key performance indicators discussed, research methods

employed, and main findings. The synthesis process utilized thematic analysis to identify recurring performance metrics and how they differ or align across methodologies. For instance, agile projects emphasized time-to-market, iteration velocity, and team responsiveness, while traditional projects highlighted budget variance, milestone completion rate, and formal stakeholder engagement metrics.

The review adhered strictly to PRISMA guidelines, ensuring transparency and reproducibility. All steps were documented, including the rationale for exclusion at each stage. The PRISMA flow diagram presented summarizes the selection process, illustrating the filtering from identification to final inclusion. This systematic approach ensures that the synthesized findings are both comprehensive and reflective of the current state of knowledge on performance measurement in varying project management environments.

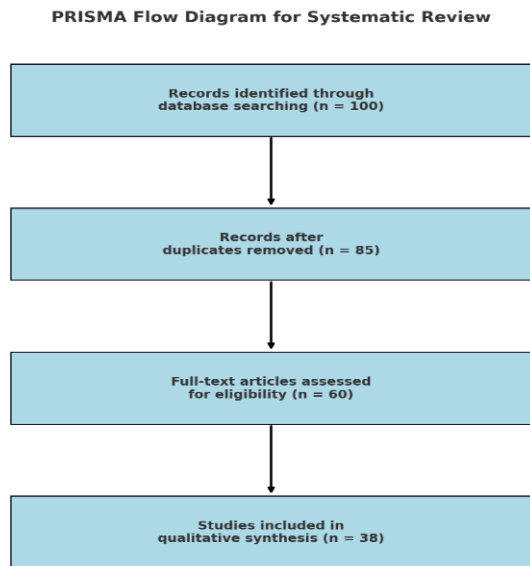


Figure 1: PRISMA Flow chart of the study methodology

## 2.2. Overview of Project Management Methodologies

Project management methodologies provide essential frameworks for planning, executing, and completing various projects within organizations, and their evolution reflects the increasing complexity and dynamism of modern initiatives. Traditionally, project management has been associated with rigid, sequential

models such as the Waterfall approach, which necessitates detailed upfront planning, scope definition, and a linear execution process (Hoegl, & Gemuenden, 2001; Huang, Liu & Liu, 2013). The Waterfall model is particularly beneficial for industries where project requirements are well understood and stable, such as construction and manufacturing, allowing for clear phase demarcations: initiation, planning, execution, monitoring, and closure. The PRINCE2 methodology enhances this structure by adding a focus on governance, emphasizing roles, responsibilities, and business justification throughout the project lifecycle (Oprins et al., 2019).

The rigid nature of these traditional methodologies has, however, proven less effective in dynamic environments where requirements frequently shift. This inadequacy has catalyzed a movement towards more adaptive methodologies, particularly within sectors that demand rapid innovation, such as software development. Agile project management emerged to address these limitations, advocating for flexibility, iterative progress, and customer collaboration (Shepherd & Schofield, 1997; Wu, et al., 2012). Contrary to Waterfall's linearity, Agile methodologies, which gained prominence following the Agile Manifesto in 2001, prioritize customer needs and the capacity to respond to changes throughout the project (Baijens et al., 2020). Figure 2 shows Agile Software Development Process presented by Neelu & Kavitha, 2020.

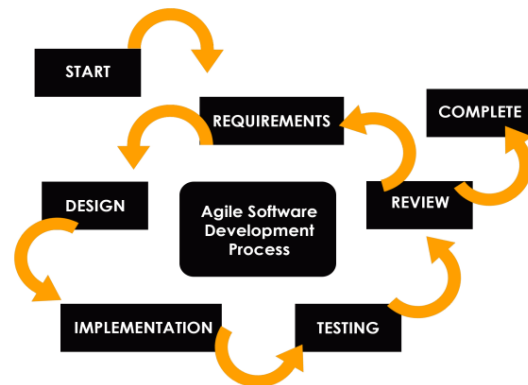


Figure 2: Agile Software Development Process (Neelu & Kavitha, 2020).

The Agile approach encompasses several frameworks, among which Scrum has become one of the most

recognized due to its focused iterations known as sprints. Each sprint, typically lasting two to four weeks, involves planning, execution, and a review phase, fostering continuous improvement and rapid adaptation to feedback (Fukazawa et al., 2016). Other notable Agile frameworks include Kanban, which visualizes work progression and limits work in progress, allowing for a flexible operational style, and Extreme Programming (XP), which emphasizes engineering practices such as test-driven development and continuous integration (Grundler & Westner, 2019). These Agile frameworks facilitate incremental value delivery and promote high adaptability, aligning well with the often unpredictable needs of projects in fast-paced environments (Pope-Ruark, 2014).

While both traditional and Agile methodologies provide distinctive advantages, they also have inherent limitations that can impact project performance metrics. Traditional methodologies typically utilize hard metrics like time, cost, and scope—the "Iron Triangle"—to assess success. Tools such as Gantt charts and Earned Value Management (EVM) help track adherence to these baselines, providing predictability and accountability for stakeholders (Salah et al., 2017). However, in Agile settings, performance metrics have shifted to emphasize value delivery, team velocity, and customer satisfaction, reflecting the iterative nature of Agile processes (Pavlou & Sawy, 2011; Sandhu, et al., 1997).

Recent trends indicate a growing preference for hybrid project management approaches that seek to blend the structure of traditional methodologies with the flexibility of Agile. These hybrid strategies often integrate Agile practices into the planning and execution phases of otherwise traditional frameworks (Pearson & Benameur, 2010; Sandhu, et al., 1996). For instance, a project might use Waterfall techniques for governance while employing Agile sprints for actual development work, thereby maintaining control while enhancing adaptability (Salah et al., 2017). This hybridization facilitates a tailored approach that can respond more effectively to diverse project requirements and stakeholder expectations while also evolving performance metrics to encompass broader criteria beyond simple adherence to time and cost constraints (Law, et al, 2016, Luftman, 2003).

In conclusion, the evolution of project management methodologies reflects a response to the increasing complexity of organizational initiatives. Understanding the differing operational mechanics of traditional, Agile, and hybrid methodologies allows project managers to define and measure performance effectively (Pellathy, et al., 2019; Sandhu, Ferraiolo & Kühn, 2000). Each methodology contributes uniquely to how project success is perceived, and the ongoing trend towards hybridization illustrates the need for flexible frameworks that can adapt to the rapidly changing business landscape (Mateo, Yang & Lee, 2012).

### 2.3. Performance Metrics in Traditional Project Management

Performance metrics in Traditional Project Management have established their foundation in frameworks such as Waterfall and PRINCE2, characterized by an emphasis on control, predictability, and detailed planning. These methodologies are particularly effective for projects with well-defined requirements, where changes are minimal (Subashini & Kavitha, 2011; Tereso, et al., 2018). The literature indicates that traditional performance metrics focus on the interdependent constraints of time, cost, and scope, often encapsulated in the concept known as the Iron Triangle (McGregor & Schiefer, 2004; Pérez, et al., 2018). This framework serves as a benchmark for evaluating project success, where delivery on time, within budget, and to the specified scope are seen as indicators of successful project management (Skafi, Yunis & Zekri, 2020; Yigitbasioglu, 2015). Figure of differences between traditional and agile project management presented by Bogdanova, Parashkevova & Stoyanova, 2020, is shown in figure 3.

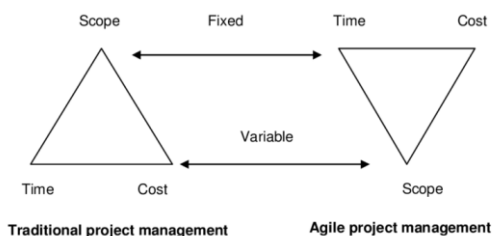


Figure 3: Differences between traditional and agile project management (Bogdanova, Parashkevova & Stoyanova, 2020).

Time metrics within this framework involve the meticulous scheduling of tasks to maintain project timelines. Techniques such as Gantt charts and network diagrams are commonly employed by project managers to visualize and ensure task completion within designated timeframes (Ika, 2009). The Schedule Performance Index (SPI) is frequently utilized to evaluate how closely a project adheres to its planned schedule, offering a quantitative measure of time-related efficiency (Melander, 2017; Petrillo, et al., 2018). This structured approach facilitates the identification of schedule deviations and allows project managers to implement corrective actions early in the project lifecycle (Ika, 2009). Neelu & Kavitha, 2020, presented Comparison of traditional and agile software development costs as shown in figure 4.

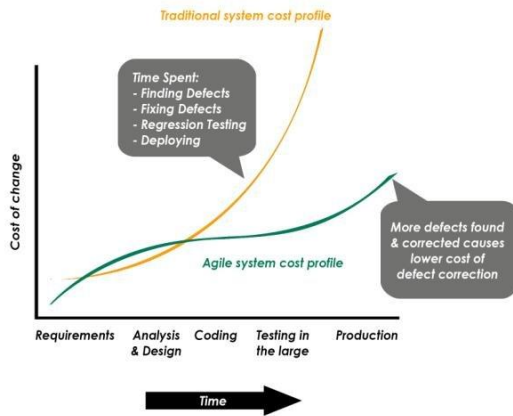


Figure 4: Comparison of traditional and agile software development costs (Neelu & Kavitha, 2020).

Cost metrics hold a pivotal role in tracking expenditures against the projected budget. Traditional project management often entails an extensive budgeting process during project planning, followed by ongoing financial monitoring (Barbalho et al., 2016). The Cost Performance Index (CPI), a critical aspect of Earned Value Management (EVM), quantifies the efficiency of resource utilization, making it a vital metric for ensuring fiscal control throughout the project execution phase (Milosevic & Srivannaboon, 2006; Pope-Ruark, 2014). Variances between the planned budget and actual spending not only reflect financial performance but also serve as key indicators for potential budgetary adjustments (Ika, 2009).

Scope metrics focus on ensuring compliance with the defined project deliverables. This involves processes geared toward scope verification and control, combating risks such as scope creep—uncontrolled changes that deviate from the agreed project specifications (Barbalho et al., 2016). Through diligent monitoring of scope-related metrics, project managers can ensure that the output aligns with stakeholder expectations and that any deviations are effectively managed (Barbalho et al., 2016).

A critical tool often integrated within Traditional Project Management is Earned Value Management (EVM), which synthesizes time, cost, and scope metrics into one cohesive framework. EVM facilitates an evaluative approach that allows project managers to assess overall performance through parameters such as Planned Value (PV), Earned Value (EV), and Actual Cost (AC) (Swink & Schoenherr, 2014; Trent & Monczka, 1994). These indicators empower project managers to forecast future performance, thereby identifying potential issues before they jeopardize project goals (Idris, et al., 2012, Olamijuwon, 2020, Olutade & Chukwuere, 2020). For instance, a CPI or SPI value below 1.0 serves as a flag indicating that the project may not meet its financial or timeline targets, reinforcing the importance of these metrics in proactive management practices (Ika, 2009).

Moreover, the Critical Path Method (CPM) is another foundational technique, crucial for identifying the longest sequence of dependent tasks necessary for timely project completion. This tool not only assists in visualizing project schedules but also aids in resource allocation and prioritizing high-risk activities (Mustapha, Adeoye & AbdulWahab, 2017, Olutade, 2020). Metrics derived from CPM, such as task duration and slack time, enable project managers to implement effective strategies for managing potential delays.

Quality and risk metrics are essential components of Traditional Project Management as well. Quality control processes aim to maintain high standards while delivering products that fulfill stakeholder requirements, incorporating metrics like defect rates and compliance checks (Barbalho et al., 2016). Risk management metrics guide project managers in evaluating threats and developing strategies to

mitigate potential impacts, ensuring that the project remains aligned with its objectives despite inherent uncertainties (Ika, 2009).

In summary, while Traditional Project Management's emphasis on structured methodologies and performance metrics renders it effective in many contexts, it does exhibit significant limitations particularly in environments characterized by constant change and uncertainty (Min, Zhao & Yu, 2015; Poberschnigg, Pimenta & Hilletoft, 2020). As project landscapes shift towards more dynamic, agile forms of management, the rigidity of traditional metrics may prove inadequate. Metrics focused solely on schedule, budget, and scope, although useful, risk neglecting broader values such as stakeholder satisfaction and deliverable effectiveness—key elements for project success in contemporary settings (Baccarini, 1999).

#### 2.4. Performance Metrics in Agile Project Management

Agile project management has emerged as a prominent approach for managing projects within dynamic and rapidly evolving environments. This method stands in contrast to traditional project management paradigms, which emphasize rigid planning and control mechanisms. Within the framework of Agile, flexibility, iterative development, and continuous engagement with stakeholders are hallmarks that allow teams to respond swiftly to changes and customer feedback (Gandomani & Nafchi, 2015).

The performance metrics employed in Agile project management reflect its adaptive nature. Unlike traditional success measures, which often prioritize fixed budgets and stringent deadlines, Agile metrics focus instead on delivering incremental customer value (Gandomani & Nafchi, 2015; . For instance, metrics such as velocity—which gauges the amount of work a team can complete in a sprint—enable teams to assess their performance and adjust their planning accordingly. This iterative feedback loop is crucial, as it allows teams to manage workloads more effectively and anticipate the impacts of scope changes on project deliverables (Alvarez-Dionisi, 2016).

In addition to velocity, other vital performance metrics in Agile environments include burndown and burnup charts. These tools visually represent project progress

and serve as real-time assessment mechanisms for short-term delivery goals during sprints. Burndown charts monitor outstanding work against the sprint timeline, aiming to reach zero tasks left by the sprint's conclusion, while burnup charts illustrate completed work alongside the total amount expected (Gandomani & Nafchi, 2015). This visual management aids in ensuring team alignment with objectives and enables necessary adjustments during stand-up meetings.

Lead time and cycle time are also critical performance indicators in Agile project management that assess workflow efficiency. Lead time denotes the total duration from when a task is requested to when it is delivered, while cycle time specifically measures the time taken for a team to work on a task until completion (Alvarez-Dionisi, 2016). These metrics help teams identify process bottlenecks and enhance throughput, thereby optimizing overall task flow and increasing customer satisfaction through more rapid delivery.

Customer satisfaction is intrinsic to the Agile methodology. This is achieved by integrating customer feedback at various stages of the development process rather than solely at project completion, which is a common feature of traditional methods. Agile teams implement regular product demonstrations and sprint reviews, using metrics such as Net Promoter Scores and feature adoption rates to prioritize work according to customer value. Continuous feedback serves to keep the project aligned with evolving customer needs, ensuring adaptability and responsiveness (Mohamed, Stankosky & Murray, 2004; Prange & Hennig, 2019).

The team dynamics and organizational culture significantly influence Agile performance metrics, as Agile emphasizes the importance of cross-functional, self-organizing teams. Metrics evaluating team morale and engagement, such as participation in retrospectives and team happiness indexes, provide insights into team effectiveness and are crucial for fostering a productive working environment (Alvarez-Dionisi, 2016; (Miller, 2019). A culture of accountability and transparency emerges as teams take ownership of their performance metrics to drive improvements (Senarathna, et al., 2018; Vrieze & Xu, 2015).

The inherent adaptability of Agile is also a critical performance measure, as teams must adjust to shifting customer requirements and market conditions promptly. The focus on how swiftly teams can implement changes into the backlog or incorporate feedback reveals the overarching value placed on responsiveness and flexibility within Agile contexts. Thus, these adaptive capabilities are indicative of Agile's success in navigating complex project landscapes (Momm, Gebhart & Abeck, 2009; Rajpoot, Jensen & Krishnan, 2015).

In conclusion, performance metrics in Agile project management are tightly interwoven with its foundational values, encompassing customer collaboration, team empowerment, and adaptability. By using metrics such as velocity, lead time, and customer feedback loops, Agile teams can continuously refine their processes, enhancing project success and delivery effectiveness amidst the inherent uncertainties of dynamic environments. Moving forward, a more integrated approach to metrics—blending qualitative and quantitative assessments—will likely further enrich Agile practices and results (Norta & Grefen, 2007; Rajpoot, Jensen & Krishnan, 2015).

## 2.5. Comparative Analysis of Agile vs Traditional Metrics

Agile and Traditional project management methodologies represent fundamentally different frameworks for executing projects, and this divergence significantly influences the metrics employed for performance evaluation. Traditional project management methodologies, such as Waterfall and PRINCE2, primarily leverage the Iron Triangle—encompassing constraints of time, cost, and scope—as guiding metrics. This model emphasizes a predictive and control-oriented approach, reflecting the sequential nature of processes that characterize these methods (Tereso et al., 2018; Besner & Hobbs, 2008). Tools such as Gantt charts and the Critical Path Method (CPM) exemplify the adherence to initial plans, enabling project managers to gauge compliance through well-defined milestones and resource allocations (Tereso et al., 2018; White & Fortune, 2002). For instance, the structured nature of these metrics aids industries like construction, where

workflows are predictable, and strict adherence to initial plans can avoid costly overruns and delays (Tereso et al., 2018; White & Fortune, 2002).

In contrast, Agile methodologies advocate an adaptive and value-driven approach to project execution, prioritizing customer satisfaction and iterative progress over rigid adherence to predefined scopes. Agile metrics, such as velocity and burndown charts, reflect this responsiveness, allowing teams to track their progress in real-time and adjust course based on stakeholder feedback (Nussbaumer & Liu, 2013; Redmond & Walker, 2008). Unlike Traditional metrics, which often measure success by the delivery of a static scope on time and within budget, Agile metrics assess value through the satisfaction of user needs over the lifecycle of the project, accommodating fluid changes in requirements (Lyneis & Ford, 2007). This iterative focus embodies a flexibility that is not merely tolerated but is considered vital for success in rapidly evolving environments like software development and product design, where requirements frequently change (Tereso et al., 2018; Besner & Hobbs, 2008).

Despite these distinctions, notable areas of convergence exist between the two approaches. Both methodologies utilize performance metrics as tools for feedback, guiding future decisions to enhance project outcomes (Sarin & McDermott, 2003; Wells, 2012; Zdravković & Johanesson, 2004). Additionally, both paradigms recognize the importance of risk management and quality assurance, albeit through different methodologies and timings—Quality in Traditional projects is typically gauged at milestone completions, whereas Agile practices incorporate continuous quality metrics (Oh & Pinsonneault, 2007; Ruotsala, 2014). This duality showcases the inherent strengths and weaknesses of each methodology, as Agile's adaptability may lead to challenges in long-term financial forecasting, while Traditional metrics can become overly rigid in dynamic market conditions (White & Fortune, 2002; Lyneis & Ford, 2007).

To accommodate the evolving landscape of project management, many organizations have begun to integrate metrics from both Agile and Traditional paradigms, leading to the development of hybrid frameworks. These hybrid approaches combine the

structure and accountability of Traditional metrics, like Earned Value Management (EVM), with the responsiveness of Agile measures, allowing for a more nuanced and adaptable managerial approach (Tereso et al., 2018; Besner & Hobbs, 2008; Lyneis & Ford, 2007). Scenarios like the Scaled Agile Framework (SAFe) illustrate how organizations can operationalize this integration by employing Agile delivery metrics alongside portfolio-level governance (Tereso et al., 2018; Lyneis & Ford, 2007). Such a balanced perspective not only optimizes project success but fosters a culture of data-driven decision-making that aligns operational efficiency with strategic flexibility (Tereso et al., 2018; Lyneis & Ford, 2007).

In conclusion, the comparative analysis of Agile and Traditional project management methodologies underscores the necessity of contextually appropriate metrics. While Traditional metrics provide clarity and predictability, Agile metrics amplify adaptability and stakeholder engagement. Embracing a hybrid approach allows organizations to synthesize the strengths of both methodologies to foster responsive, high-performing project environments that are better equipped to navigate the complexities of contemporary market demands (Oprins, Frijns & Stettina, 2019; Manikandasaran, 2016).

## 2.6. Discussion

The systematic review of performance metrics in Agile and Traditional project management highlights a significant evolution in the understanding of project success amid increasing project complexity and contextual variability. Traditional performance metrics, which are typically centered around the Iron Triangle of time, cost, and scope, remain crucial, especially in sectors that prioritize predictability and regulatory compliance, such as construction and manufacturing (Oxley & Pandher, 2015; Sabherwal & Chan, 2001). These metrics facilitate top-down control and clear benchmarking, essential for projects characterized by well-defined deliverables (Shepperd & Schofield, 1997). However, as projects expand in complexity, there is a growing recognition that these metrics may not effectively gauge success across all contexts, particularly as dynamic environments demand flexibility and responsiveness.

In environments driven by customer requirements, such as software development, Agile metrics become highly relevant. Agile methodologies prioritize iterative progress and adaptability, utilizing metrics like velocity, lead time, and customer satisfaction to provide real-time insights into team performance and project health (Gren et al., 2015; Lappi et al., 2018). For example, Lappi et al. emphasize the importance of adaptability in metrics to support Agile development, contrasting it with traditional methods that may not capture the nuances of agile practices (Lappi et al., 2018). Furthermore, the iterative nature of Agile enables organizations to respond promptly to changing requirements, fostering deeper engagement with stakeholders and avoiding the pitfalls of rigid adherence to initial plans that may not align with evolving user needs (Gren et al., 2015; Huijgens & Solingen, 2014).

Despite these advancements, gaps in empirical research persist, particularly in comparative studies that examine the applicability of performance metrics across various industries and organizational contexts. While extensive case studies exist, comprehensive cross-sector analyses that could enhance the generalizability of findings are notably lacking (Fullerton & Wempe, 2009; Lappi et al., 2018). Acknowledging this gap suggests a limitation in current metric selection frameworks and in the understanding of their long-term impacts on project outcomes, including user adoption and return on investment (Lappi et al., 2018; Olague et al., 2008). Furthermore, the integration of qualitative metrics that capture elements like team morale and stakeholder satisfaction remains insufficient within traditional frameworks, which often favor quantitative measures (Huijgens & Solingen, 2014; Koi-Akrofi et al., 2019).

Another challenge is the philosophical divergence between Agile and Traditional methodologies. Traditional approaches focus on control and predictability, which can often inhibit the adaptability that Agile methodologies champion (Fullerton & Wempe, 2009; Yauch, 2011). The application of uniform performance standards across these methodologies tends to distort practices, undermining the core principles of Agile by enforcing rigid compliance (Yauch, 2011; Chang & Lu, 2013). The inconsistency in interpreting metrics such as

“velocity” further complicates the implementation of a standardized performance framework, thereby limiting meaningful performance benchmarking and the scaling of best practices across teams (Huijgens & Solingen, 2014; Koi-Akrofi et al., 2019).

To effectively address these challenges, practitioners are urged to adopt a contextual measurement strategy, selecting performance metrics tailored to specific project characteristics and stakeholder needs. This approach recognizes that a one-size-fits-all method is inadequate amidst the complexity and variability of contemporary projects (Fullerton & Wempe, 2009). Organizations must foster metric literacy among their teams, ensuring that all stakeholders understand the significance and utility of the metrics employed. This enhances trust and encourages a culture of data-informed decision-making (Paletta & Herrero, 2010; Sabherwal, Hirschheim & Goles, 2001). Moreover, continuous refinement of metrics, based on project evolution and team growth, is paramount. As highlighted by various studies, periodic reviews during project phases can ensure that performance measures remain relevant and effective (Lappi et al., 2018; Khurum et al., 2012).

In conclusion, the evolving discourse surrounding performance metrics in Agile and Traditional project management reflects a broader shift towards more adaptive, context-sensitive practices. The nuanced understanding of what constitutes project success necessitates a reevaluation of how performance is measured, emphasizing the need for a balanced integration of qualitative and quantitative metrics that align with both Agile and Traditional methodologies (Sow & Aborbie, 2018; Wilson, Khazaei & Hirsch, 2016). Ultimately, organizations that embrace these adaptive measures will be better positioned to navigate the complexities of contemporary project environments while fostering resilience and agility.

## 2.7. Conclusion

The systematic review of performance metrics in Agile and Traditional project management reveals a comprehensive landscape of measurement approaches that are deeply shaped by the underlying principles of each methodology. Traditional project management relies heavily on metrics rooted in the Iron Triangle—time, cost, and scope—reinforced by tools such as

Earned Value Management and the Critical Path Method. These metrics provide structure, predictability, and control, making them especially suitable for environments with clearly defined deliverables and minimal tolerance for deviation. Agile project management, in contrast, embraces metrics that prioritize flexibility, customer collaboration, and iterative progress, such as velocity, lead time, burndown charts, and customer satisfaction scores. These metrics support adaptability, responsiveness to change, and continuous delivery of value, making them ideal for dynamic, innovation-driven environments.

One of the most important insights from this review is that performance metrics cannot be applied uniformly across projects without considering the unique context in which each project operates. The methodology adopted, the industry setting, the level of stakeholder involvement, and the degree of uncertainty all influence the relevance and effectiveness of specific metrics. Therefore, selecting performance metrics should be a deliberate, context-driven process rather than a one-size-fits-all decision. In hybrid project environments, where elements of both Agile and Traditional methods are combined, organizations are increasingly integrating metrics from both paradigms to create balanced scorecards that support comprehensive oversight and strategic alignment.

While significant progress has been made in understanding and applying performance metrics in various project management contexts, several gaps remain in the current literature. There is a need for more empirical studies comparing metric effectiveness across industries and project types, as well as research that explores the long-term impact of metric-driven decision-making on business outcomes. Furthermore, the development of standardized yet adaptable frameworks that integrate both quantitative and qualitative metrics will be essential in supporting organizations as they navigate increasingly complex project environments. Future research should also investigate how advanced technologies like artificial intelligence and predictive analytics can enhance performance measurement practices. Ultimately, the continued evolution of project performance metrics will be critical to enabling informed decision-making,

fostering innovation, and driving sustainable project success in the modern enterprise landscape.

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