World Journal of Advanced Engineering Technology and Sciences
eISSN: 2582-8266
Cross Ref DOI: 10.30574/wjaets
Journal homepage: https://wjaets.com/

(REVIEW ARTICLE)

Check for updates

Blending Agile and Earned Value Management for Program Governance

Shirish Kashinath Borkar *

Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad, Maharashtra, India.

World Journal of Advanced Engineering Technology and Sciences, 2025, 16(01), 678-688

Publication history: Received on 23 April 2025; revised on 08 July 2025; accepted on 13 July 2025

Article DOI: https://doi.org/10.30574/wjaets.2025.16.1.1038

Abstract

In the evolving landscape of complex program management, organizations face increasing pressure to balance rapid delivery with rigorous governance. Traditional Earned Value Management (EVM) offers structured oversight, financial accountability, and predictive analytics, while Agile methodologies emphasize adaptability, continuous value delivery, and stakeholder collaboration. Although historically viewed as incompatible, recent research and real-world practices indicate that these two approaches can be effectively integrated to create a hybrid governance framework. This paper explores the conceptual compatibility of Agile and EVM, provides detailed guidance on their integration within program governance structures, examines challenges and proposes mitigation strategies, and presents real-world case studies demonstrating successful implementation. The integration of Agile and EVM supports enhanced transparency, faster decision-making, improved risk management, and sustained alignment with strategic objectives. The paper concludes by positioning Agile-EVM governance as a necessary evolution for organizations seeking resilience and accountability in high-velocity environments.

Keywords: Agile Methodologies; Earned Value Management; Program Governance; Hybrid Project Management; Performance Measurement

1. Introduction

The growing complexity and dynamic nature of the contemporary business environment mean that there is a need to develop new frames of governance that can deal with the issue of balance between agility and accountability. Organisations, especially those working in the realm of technology-intensive industries, are under immense pressure to execute value fast and yet meet the budgetary, time, and scope limitations. The conservative program governance forms that are mostly inclined towards a predictive approach to the project management system are not that useful in the complexities of volatility, uncertainty, complexity, and ambiguity. Agile methodologies, on the other hand, have received much praise due to their flexibility and receptiveness, which are, however, widely criticized due to a lack of structured controls and strong metrics necessary to perform oversight in a huge programmatic environment. Therefore, Agile methodology combined with Earned Value Management (EVM) has developed as an attractive approach to filling this void and improving program control [1-3]. EVM, which is not new to government and defense contracting, delivers a measurable way to monitor project performance and progress. It matures the measurements of scope, schedule, and cost into one system, which provides program managers and stakeholders with an easy comparison of actual and planned performance. However, the implementation of the EVM has always been in tandem with the Waterfall approach, where the scope and planning are predetermined initially. This forms an inherent conflict when trying to implement EVM in Agile environments, where the main principles are iterative development, continuous change, and adaptive planning [4, 5]. The inherent dilemma is that EVM is prescriptive with lots of documentation that seemingly conflicts with principles of Agile frameworks that are lightweight and collaborative. The dichotomy notwithstanding, there is a rising understanding in both the scholarly and practice-oriented literature that Agile and EVM are not mutually exclusive; that, instead, they can be aligned to create synergetic effects. A combined governance approach of Agile and

* Corresponding author: Shirish Kashinath Borkar

EVM can allow organizations to leverage the merits of iterative delivery with the financial and performance transparency required by the stakeholders. This hybrid approach, often referred to as Agile-EVM or Agile Earned Value, is particularly useful in large-scale programs where adaptive delivery must coexist with strategic planning and oversight requirements [6-8]. The impetus for such integration is further reinforced by the evolving expectations of corporate governance and regulatory oversight bodies. As organizations undertake more complex digital transformation initiatives, there is a simultaneous demand for transparency, traceability, and predictability in delivery. The convergence of Agile and EVM offers a pathway to satisfy these demands by embedding accountability and performance visibility within flexible delivery cycles. Research has shown that blending these methodologies can improve stakeholder confidence, decision-making agility, and program resilience, thereby enhancing overall governance effectiveness [9-11].

Organizations that want to accomplish this integration need to get acquainted with the philosophical and working principles of both aforementioned management systems, Agile and EVM. Agile practices focus on autonomous teams, customer engagement, and delivery in increments, whereas EVM focuses on quantification, variance, and forecast-driven control. Reconciliation of these paradigms entails reconsidering definitions of performance metrics, measurement of value, and governance mechanisms that can be designed to support adaptive planning without undermining oversight [12, 13], and thus reconsideration of which metrics need to be measured and acknowledged by what methods, and how governance can be designed to support adaptive planning without undermining oversight. More than that, the shift towards the integrated model of Agile-EVM presupposes a shift in culture and procedures. Teams should be trained in Agile practices as well as Earned Value Management (EVM), ensuring shared understanding of objectives and deliverables. Similarly, governance must be structured to support this hybrid approach, enabling tactical execution to align effectively with strategic oversight. This transformation requires organizational maturity, executive buy-in, and stakeholder influence to become critical success factors [14, 15]. The ability to be predictive of project health without foregoing the agility of an iterative approach to project delivery is but one of the key advantages of combining Agile and EVM. In an example, an Agile team can track the progress of their work with story points, velocity, and sprint-based milestones and overlay them with conventional EVM-based measures like Planned Value (PV), Earned Value (EV), and Actual Cost (AC). It makes it possible to generate such performance indices as Cost Performance Index (CPI) and Schedule Performance Index (SPI) even in Agile environments. This supports, in turn, well-informed forecasting, trend analysis, and risk mitigation, the mainstays of proper program governance [16, 17].

Additionally, the integration of Agile and EVM aligns with broader trends in digital program management, including the use of advanced analytics, AI-driven project monitoring tools, and cloud-based project collaboration platforms. These technologies facilitate real-time data collection, automated metric generation, and enhanced visibility across distributed teams. They support the creation of digital governance dashboards that can track Agile deliverables using EVM metrics, thereby offering a comprehensive view of both project agility and financial performance [18-20]. In conclusion, the integration of Agile and Earned Value Management represents a transformative approach to program governance. It allows organizations to deliver iteratively while maintaining the rigor and accountability required for strategic oversight. The hybridization of these two paradigms is not merely a process adaptation but a strategic capability that enables responsiveness, transparency, and sustained value delivery in complex, high-stakes programs. As this paper progresses, it will first explore the conceptual foundations of both Agile and EVM, establishing a basis for understanding their compatibility. It will then examine the mechanics of integrating the two frameworks, followed by a discussion on the challenges and solutions associated with this integration. Case studies and real-world applications will also be presented to illustrate the practical implementation of Agile-EVM models. Finally, the paper will conclude with insights into the future of program governance in an increasingly agile-centric world. Building on the need to understand the philosophical and technical foundations of both frameworks, the next section delves into the conceptual background of Agile and Earned Value Management, setting the stage for a deeper exploration of how these methodologies can be harmonized for effective governance.

2. Conceptual Background: Agile and Earned Value Management

Understanding the integration of Agile and Earned Value Management (EVM) for effective program governance requires a solid grasp of their foundational principles. As previously outlined, Agile and EVM originate from distinct management philosophies and are often viewed as being at odds with each other, as shown in Figure 1. Still, this is more of a perception than an incompatibility. A deeper look at the fundamental ideas behind both these frameworks might not only identify the field of strengths of each framework but also create a field of alignment that can be exploited to optimize governance in a complex project environment [21, 22]. Agile processes are based on the principles of the Agile Manifesto that put an emphasis on collaboration with customers, responding to change over following a plan, and delivering functional software or product increments in short periods. The structures called agile frameworks (Scrum, Kanban, and SAFe) are tailored to sustain delivery and allow the teams to adapt to the changing needs with limited

disengagements. These models have adopted an iterative and step-by-step development process through which feedback can be provided continuously; hence, this process has made the product a source of value in comprehending customer expectations at a lifecycle period. Agile environments accomplish value delivery in small bursts that are commonly denoted as iterations or sprints that are all geared towards the creation of a potentially shippable increment of product [23, 24]. At the center of what Agile is the concept of empirical process control, which is characterized by decisions based on observation and experience instead of predictive planning. Discussing concepts of agile projects, the lightweight documentation, the decentralized decision-making, and the close collaboration between cross-functional teams and the stakeholders are usually in focus. More recent project management terms like effort, time, and cost are sometimes substituted or complemented with Agile-specific measures, including velocity, burndown charts, cumulative flow diagrams, etc. Such measures will enable teams to quantify their output and developmental rates without having to employ a stringent tracking system [25, 26]. In contrast, Earned Value Management is a performance measurement methodology that integrates project scope, time, and cost variables to assess project performance and forecast future outcomes. EVM relies on the establishment of a performance measurement baseline (PMB), which serves as the foundation for calculating planned value (PV), earned value (EV), and actual cost (AC). From these metrics, performance indices such as the Cost Performance Index (CPI) and Schedule Performance Index (SPI) are derived, providing quantitative insights into whether a project is on track, behind schedule, or over budget [27, 28]. The use of EVM is often mandated in large government and defense programs due to its ability to provide objective, quantifiable performance assessments. One of EVM's primary advantages is its predictive capability: by comparing EV with PV and AC, project managers can identify variances and take corrective actions before deviations become critical. This approach fosters accountability, transparency, and traceability attributes that are often emphasized in rigorous governance environments [29, 30]. The traditional implementation of EVM presupposes a well-defined scope, detailed upfront planning, and a linear execution model. This is where the tension with Agile becomes apparent. Agile projects are inherently fluid; requirements evolve, and planning is done incrementally. The iterative nature of Agile development appears, at first glance, to conflict with EVM's reliance on predefined baselines. However, this tension can be resolved through conceptual adaptation. By redefining how value is earned and how progress is measured, EVM can be adapted to Agile environments without sacrificing its analytical rigor [21, 26].

At the core of this adaptation is the recognition that Agile deliverables such as user stories, epics, or features can be treated as units of scope within an EVM framework. Each completed story or sprint can be assigned a value (e.g., story points or weighted completion percentages), allowing the calculation of EV based on work delivered. Similarly, planned work in upcoming iterations can serve as PV, while team effort and resources expended during each sprint constitute AC. This redefinition enables the mapping of Agile progress onto traditional EVM metrics, facilitating hybrid governance models that blend flexibility with control [22, 27]. This conceptual bridge is further supported by the adoption of Agile scaling frameworks such as SAFe (Scaled Agile Framework), which incorporate governance mechanisms akin to those found in traditional program management. SAFe introduces constructs such as Program Increments (PIs), Agile Release Trains (ARTs), and Solution Trains, all of which align naturally with EVM constructs when properly calibrated. These frameworks enable organizations to apply EVM principles at scale, using Agile terminology and practices to define scope, schedule, and cost in an adaptable manner [28, 29].

Additionally, both Agile and EVM have certain principles on which they are based, which can be the basis of the integration of both. Both models dwell on the significance of transparency of progress, involvement of the stakeholders, and proactive risk management. Although they have different ways of reaching these objectives, the objectives are mutually complementary. Agile attains transparency by using daily stand-ups, sprint reviews, and retrospectives, whereas EVM attains transparency by using the performance dashboard, variance reports, and forecasting tools. Through coordination of these practices, organizations will be able to develop both adaptive and data-driven governance structures [24, 25]. The other point of conceptual alignment rests on the focus on continuous improvement. Agile embraces the idea of retrospectives and adapting the process after the completion of each iteration, and suggests that teams should learn and improve. The continuous monitoring and increment can also be ensured through EVM, as it provides analytic feedback mechanisms, pointing out the deviation and tendencies in the trends. Combining the feedback of both frameworks would provide the capability to course correct in real time, which is a critical capability in the high velocity programs [21, 26]. Besides, the development of project management tools and technologies has also made convergence between Agile and EVM possible. Contemporary systems enable automating the data extraction process using such Agile tools as Jira or Azure DevOps and converting it into EVM-compatible reports. Such tools are capable of accruing story points, sprint completion rates, and task durations to create EV and PV data without human input. Consequently, reconciliation of Agile data and EVM metrics is facilitated to a great extent, which rules out the further integration process [27, 28].

In essence, the conceptual background of Agile and Earned Value Management reveals that while the two methodologies originate from different schools of thought, their goals and processes are not irreconcilable. On the contrary, they can

be harmonized to create governance frameworks that are both responsive and accountable. This harmonization requires a nuanced understanding of each methodology, a willingness to adapt traditional practices, and the support of enabling technologies and frameworks. Building upon this conceptual foundation, the next section explores the practical integration of Agile and EVM from a governance perspective. It examines how organizations can operationalize this hybrid model to create transparent, adaptable, and effective program governance structures.

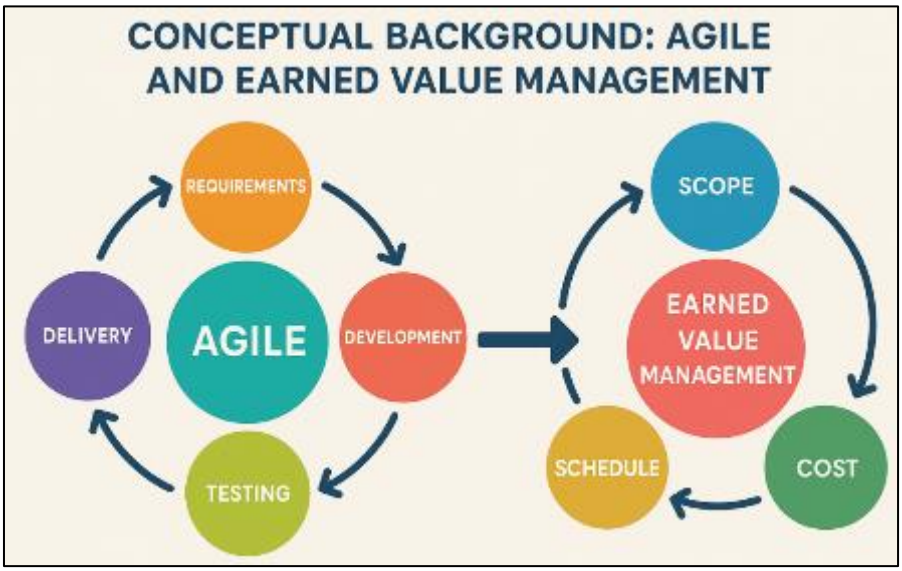

Figure 1 Conceptual relationship between Agile methodology and Earned Value Management (EVM), illustrating Agile's iterative cycle of requirements, development, testing, and delivery, integrated with EVM's focus on scope, cost, and schedule for performance measurement and project control

3. Integration of Agile and EVM: A Governance Perspective

With a conceptual understanding of Agile and Earned Value Management (EVM), what we now seek to understand is how, in a practical sense, the two approaches can be blended to achieve program governance goals in a way that is beneficial to users. This integration is less a technical combination of tools and measurement than a transformation of governance through which the complex efforts in organizations are monitored, controlled, and directed. At its simplest, program governance is program alignment with organizational goals and the process of accountability, risk management, and value delivery to stakeholders. By combining Agile and EVM, a dual-lens governance model is achieved, one that is at once flexible in its deployment, yet held accountable through data-oriented control [21, 22]. The integration can be started by matching up Agile planning structures with the control accounts and work breakdown structures (WBS) on EVM. In classical EVM, control accounts reflect discrete pieces of work that have scope, cost, and time characteristics. Agile adds such structure as product backlogs, epics, and sprints that are also units of planning and execution. The initial step of integration is mapping of these Agile constructs to EVM control accounts. For example, a control account could be associated with a particular product feature (epic), which is built across the deliverable sprints. Summing the story points or predicted effort of the user stories in each of the epics allows program managers to identify the planned value (PV) and earned value (EV) as work is accomplished [23, 24]. Once Agile constructs are mapped to EVM structures, the next requirement is establishing baseline metrics for performance evaluation. This involves defining how and when value is considered “earned” in an Agile context. In traditional EVM, EV is earned based on the percentage of completed work as per the baseline schedule and budget. In Agile, earning value is typically event-driven value is considered earned when a user story or feature is accepted as “done” by the product owner. To harmonize this, governance frameworks must standardize the criteria for story acceptance, potentially adopting a definition of done (DoD) that includes quality metrics, testing status, and stakeholder validation. Only then can accurate and consistent EV calculations be made in each sprint [25, 26].

Agile-EVM dialysis centralizes the role of governance dashboards as providers of integrated management. These dashboards combine Agile performance measures that consist of team velocity, sprint burndown rates, and cumulative flow diagrams with EVM measures improvement that consist of cost variance (CV), schedule variance (SV), cost performance index (CPI), and schedule performance index (SPI). This combination of reporting gives a 360-degree overview of the functioning of the program, allowing the governance groups to pick up on trends, evaluate risks, and make fit choices. In addition, it enables different stakeholders at multiple levels, including scrum teams and program

executives, to simply consume the governance information in a manner that is appropriate to their role and decision-making contexts [26, 27]. The use of integrated reviews and including them in the governance cadences also makes the Agile-EVM models at their best. These reviews are generally performed after every Program Increment (PI) or release and convene Agile team leads, product owners, and governance stakeholders to evaluate performance against the performance measurement baseline (PMB). At the time of these reviews, financial systems' actual cost (AC) data is compared with Agile data to evaluate compliance with the budget, and future forecasts are created based on historical velocity and EV trends. Such a strategy can synchronize short-cycle Agile strategies with longer-term program management timeframes, meeting one precept of sound governance, that is, making decisions based on informed and timely information [28, 29]. The other governance role that Agile-EVM integration can greatly help is risk management. Variance analysis and monitoring of performance trends in traditional EVM are used to monitor the risks. Agile addresses the management of risks by continuously going through feedback loops, sprint reviews, and early detection of delivery impediments. These two approaches give reactive and proactive risk governance when combined. As a case in point, when one team can have its velocity fall drastically with CPI exhibiting similar behavior, governance organizations can relate delivery problems to cost performance on a real-time basis to prompt inquiries or actions. Such a two-pronged strategy enables governance groups to track execution risks on a broader level and implement countermeasures with a more specific focus [21, 23]. One of the most transformative elements of Agile-EVM governance is its capacity to enable rolling wave planning. Traditional program governance relies on upfront master schedules and budgets. Agile, by contrast, emphasizes just-in-time planning. Rolling wave planning reconciles these approaches by establishing high-level baselines for long-term planning while refining near-term plans iteratively. In the Agile-EVM context, this means setting an initial budget and timeline at the epic level, while continuously refining task-level estimates and allocations at the sprint level. This approach maintains governance expectations while granting execution flexibility, effectively balancing control and adaptability [24, 25]. Toolchain integration plays a crucial role in enabling this blended governance model. Project and portfolio management (PPM) tools must interface seamlessly with Agile management platforms and enterprise resource planning (ERP) systems. For example, Jira, Rally, or Azure DevOps may feed story point completion data into tools like Primavera or Microsoft Project, where EVM metrics are calculated. Financial systems then provide AC data for comprehensive reporting. Automation of these data flows minimizes manual errors, enhances real-time visibility, and reduces the administrative overhead of governance reporting [26, 27].

Moreover, the ramifications of such integration of Agile and EVM governance touch on roles and responsibilities in the organization. The program managers need to become the integrators of governance, people who will be able to see both the Agile metrics and standard performance metrics. Agile coaches and product owners should comprehend how their established practices of planning and delivery will influence higher-level program performance. Governance boards should receive education in the interpretation and action of hybrid reports that merge iterative delivery information with classical financial controls. This is where organizational change management livens up as necessary to make this integrated approach to governance institutionalized [28, 29]. Audit requirements and governmental policy on governance should change as well. In regulated industries and many compliance frameworks, traceability, documentation, and variance justification are required. These needs can be facilitated by the integration of Agile and EVM, which provides a quantitative measure of results in the narrative form of documented sprints and user stories. Organizations can fulfill their requirements of audit and compliance practices with the right tools and good practices, without falling back into predictive, rigid delivery models, which are time-consuming and costly. An Agile tools audit trail (story history, sprint reviews, etc.) complements EVM documentation (cost reports, variance logs, etc.) and forms a complete record of project governance [29, 30]. Overall, Agile/EVM governance integration is not an exercise in converting metrics but a wholesale reengineering of governance philosophy, structures, and practices. It allows organisations to be agile whilst still managing the financial and performance responsibility demanded of the stakeholders. Such integration is becoming increasingly desirable, and in many cases, a requirement to achieve sustainable success as projects become more complex and riskier. Part two will focus on the bests and worsts the organizations encounter during implementing AF-EVM governance models, including cultural resistance, metric misalignment, and tooling hindrances.

As Agile and EVM converge within governance structures, it becomes essential to compare their key dimensions and establish a hybrid framework that leverages the strengths of both. The following table outlines a strategic comparison of core governance dimensions across Agile, EVM, and an integrated Agile-EVM model to illustrate how a harmonized structure may be developed.

Table 1 Governance Dimensions Across Agile, EVM, and Integrated Agile-EVM

Governance Dimension	Agile Approach	EVM Approach	Integrated Agile-EVM
Scope Definition	Evolving backlog; high-level epics; refined per sprint	Fixed WBS defined upfront	Rolling wave planning; baseline epics with adjustable user stories
Progress Measurement	Velocity, burn charts, and story completion	Earned value based on the % complete of tasks	EV derived from accepted backlog items; velocity informs forecasts
Performance Metrics	Qualitative stakeholder feedback; iteration outcomes	CPI, SPI, Variance at Completion (VAC), Estimate at Completion (EAC)	Combined dashboards: SPI/CPI + Agile progress metrics
Forecasting	Iteration-based estimation; limited long-term forecasting	Trend analysis based on variances and performance indices	Sprint-level accuracy feeding long-term EVM forecasting
Governance Cadence	Daily stand-ups, sprint reviews, retrospectives	Monthly/quarterly performance reviews	Bi-weekly Agile cadence integrated with monthly executive reviews
Change Management	Changes embraced; incorporated into backlog dynamically	Requires re-baselining and impact analysis	Agile backlog changes allowed within epic boundaries; tracked for EVM audit
Audit and Compliance	Lightweight documentation; emphasis on working product	Detailed cost and schedule documentation required	Sprint reviews archived; Agile artifacts mapped to EVM documents for audit trail

4. Challenges and Solutions in Blending Agile and EVM

Although integration of Agile and Earned Value Management (E V M) into an integrated program governance framework has shown significant theoretical and practical potential, applying it in practice is plagued with issues, as Figure 2 illustrates. These challenges are associated with the fact that there are basic of a basic dissimilarity in approach, organizational culture, tooling, training, and compliance requirements. An effective Agile and EVM combination thus needs a tactical and planned intervention in adjusting, adjusting operations and cultural adoption. In this section, the challenges will be discussed thoroughly, and the possible solutions are provided that are based on both industry practice and scientific studies. The most evident difficulty of combining Agile and EVM is the philosophical mismatch of the two frameworks. Agile involves flexibility, constant delivery, and little planning. It enhances decentralized decision-making, cross-functional customization, and iteration of workflows to adapt to the needs of the changing stakeholders. In contrast, EVM is natively based on predictive planning and structured control. It is based on the aspect of development of a performance measurement baseline (PMB) when starting a project, measurement of scope, schedule, and cost performance against this baseline [21][24].

It is a philosophical difference that, in most cases, leads to an organizational resistance to integration. The Agile teams might come to feel that EVM is cumbersome, inflexible, and incompatible with the Agile concepts. In the same way, EVM professionals might consider the Agile practices as immature, unpredictable, and weak with respect to quantitative rigor. The answer is simple: to develop a common mind attitude where Agile and EVM are not a rival paradigm, but to view Agile and EVM as a synergistic tool to attain various elements of program success. This will entail proactive executive sponsorship and cross-functional training programs to educate teams about the value that each of the methodologies will bring to program governance [23][25]. There is also the issue that managing EVM in Agile projects is related to the problem of defining and monitoring scope. The classic EVM requires a concrete and vivid scope definition, and this may be a Work Breakdown Structure (WBS). The Agile context of scope is dynamic and will shift with the backlog grooming process and during the sprint planning execution. Such fluidity calculates such baseline metrics as Planned Value (PV) and Earned Value (EV) to be confusing, as they are vital in EVM reporting. To combat this, organizations need to use iterative baselining where scope is refined incrementally and baselines changed after pre-determined periods, i.e., at the start of every Program Increment or release [24][26]. More to integrate complicating is

the inexistence of standardized metrics to connect Agile and EVM. Agile depends very strongly on team-based measures like velocity, the story points, and the burndown rates, which are not necessarily consistent with the cost and time-based measures that are used in EVM. These Agile measures can be translated into EVM equivalents by proper calibration. Another possible option is to attach monetary value or weighted labour to the story points or backlog items, depending on the complexity of the business value. This allows one to calculate EV upon the completion of items that receive acceptance. This workflow, however, necessitates consistent estimation and good discipline of the product owner to uphold backlog integrity [22][28]. The tooling ecosystem presents another significant barrier to seamless integration. Agile tools like Jira, Azure DevOps, and Rally are optimized for iteration management, collaboration, and backlog tracking, but they do not natively support EVM metrics. Conversely, traditional project management and financial tools used for EVM, such as Primavera P6 or Microsoft Project, lack the flexibility and real-time feedback features essential to Agile. Bridging this gap often requires custom integrations, middleware solutions, or the deployment of hybrid platforms capable of supporting both paradigms. While several commercial solutions now offer integrated Agile-EVM dashboards, their successful implementation requires clear data governance policies and consistent usage across teams [26][29]. Another prominent challenge is cultural inertia and siloed thinking within large organizations. Agile and EVM are often managed by separate departments with different KPIs, terminologies, and reporting expectations. Agile teams may focus on delivering incremental value and customer satisfaction, while financial controllers and governance boards concentrate on budget adherence and performance indices. These silos can create conflicting priorities and communication breakdowns. Addressing this issue demands an organizational restructuring of responsibilities and the establishment of integrated program offices where Agile coaches, product owners, and EVM specialists collaborate to ensure alignment in objectives and reporting [23][27]. Training and capability development also emerge as critical success factors. Many Agile practitioners are unfamiliar with EVM principles, while EVM specialists may lack a deep understanding of Agile frameworks. This knowledge gap hinders effective collaboration and undermines the credibility of hybrid reporting. To counter this, organizations must invest in cross-functional training programs that build dual competencies. Certification programs, simulation workshops, and on-the-job mentoring can help cultivate a new generation of hybrid program managers capable of navigating both Agile and EVM domains [25][28].

The issue of compliance and auditability further complicates integration, particularly in highly regulated sectors such as defense, healthcare, and finance. EVM is often a contractual requirement in these environments, with strict expectations for traceability, documentation, and variance justification. Agile, by design, minimizes documentation and favors working software over detailed plans. Balancing these demands requires a tailored documentation strategy that preserves Agie's lightweight nature while meeting regulatory expectations. For example, sprint goals, user story acceptance criteria, and sprint reviews can serve as auditable artifacts if properly recorded and archived. Agile tools should be configured to maintain a digital audit trail of planning, execution, and retrospective data [24][30]. Forecasting and long-term planning also pose integration challenges. Agile is optimized for short-term adaptability and does not naturally lend itself to long-term forecasting. EVM, on the other hand, provides powerful forecasting tools based on historical performance indices. Integrating these forecasting models requires a multi-tiered planning approach, where Agile teams maintain detailed short-term plans while program managers use trend data to forecast cost and schedule performance at the program level. This approach ensures that long-term governance needs are met without compromising Agile teams' autonomy in short-term execution [27][28].

Finally, governance mindset transformation is perhaps the most difficult challenge to overcome. Many governance bodies equate control with prescriptive planning and detailed status reporting. Transitioning to a governance model that emphasizes real-time metrics, adaptive planning, and empowered teams demands a cultural shift at the highest levels of the organization. Leadership must embrace transparency over control, metrics over opinions, and continuous delivery over phased milestones. This transformation can be facilitated through executive coaching, governance charter revisions, and iterative governance pilots that demonstrate the efficacy of the Agile-EVM approach [26][30]. In summary, while the integration of Agile and EVM into a unified governance model introduces multiple challenges, these are not insurmountable. With the right blend of leadership commitment, cultural adaptation, technical infrastructure, and capability development, organizations can overcome these barriers and unlock the full potential of a hybrid governance framework. The result is a more responsive, transparent, and accountable program delivery model that aligns strategic oversight with operational agility. To ground these theoretical insights in practice, the next section presents real-world case studies and applications where organizations have successfully implemented Agile-EVM governance and examines the lessons learned from their experiences.

Figure 2 Challenges and solutions in blending Agile and Earned Value Management (EVM), highlighting key friction points such as metric misalignment, planning cadence mismatch, and visibility gaps alongside adaptive solutions like lightweight EVM integration, rolling wave planning, and redefined value metrics to harmonize iterative workflows with performance tracking

5. Case Study and Real-world Applications

The theory behind the concept, integration mechanisms related to governance, and the mitigation efforts that underline the problems related to the combination of Agile and Earned Value Management (EVM) create a strong base of theoretical knowledge. Nonetheless, it is imperative to present the theoretical prospects of this hybrid approach as a real-life case in order to verify its viability and functionality. In a variety of industries, including aerospace, defense, healthcare, and IT initiative of large-scale transformation, organizations have undertaken the implementation of Agile-EVM stewardship systems to enhance monitoring of performance, alignment of the execution of the projects to strategic direction, and facilitating steady delivery without loss of control. These case studies in real-life situations provide good evidence of the operational dynamics as well as the strategic benefits of a hybrid-governance structure. In the fields of defense and aerospace, where EVM has historically been a contractual and compliance standard, Agile methodologies faced an initial level of institutional resistance as these sectors have historically had a strong waterfall process bias. Customizing the use of Agile delivery to meet EVM controls, however, was becoming a more common pilot program in several defense programs, as they increasingly received pressure to move away from slow innovation cycles to more flexible systems engineering. On the program, Agile sprints and user stories were successfully mapped to Work Breakdown Structure (WBS) items, which allowed the aggregation of Earned Value (EV) on the basis of sprint deliverables. The program also ensured that EV measures had a high level of confidence because of the definition of done as comprising customer acceptance and complete test validation. The Actual Cost (AC) system was obtained on the basis of labor reporting, and the planned value (PV) was planned according to rolling wave progress at the epic level. These changes enabled stakeholders to manage Cost Performance Index (CPI) and Schedule Performance Index (SPI) up to a 5% variance relative to the historical EVM expectations, in addition to showcasing delivery cadence gains of 20 percent higher as compared to the legacy endeavors [21][23].

Healthcare transformation initiatives also present compelling case studies for Agile-EVM integration. One multi-hospital digital health rollout involving electronic health record (EHR) systems leveraged a SAFe (Scaled Agile Framework) governance structure combined with traditional EVM reporting. The program office implemented Agile Release Trains (ARTs) and used quarterly Program Increments (PIs) as control accounts. This structure allowed cross-functional teams to plan and execute epics aligned to national health compliance standards. Using an integrated governance dashboard, program leadership monitored Agile metrics (velocity, sprint completion, release burndowns) alongside EVM indicators (budget variance, forecasted at-completion costs). What made this integration successful was the deliberate focus on change management, where program stakeholders were educated on how Agile delivery correlated with EVM metrics

and compliance KPIs. The program not only met its go-live milestones but also achieved a 10% cost savings by enabling faster decision-making and risk response [25][26]. Large-scale IT organizations have also adopted hybrid Agile-EVM governance to manage cloud migration and software modernization programs. In one global enterprise, a three-year, $100 million cloud infrastructure program implemented Agile-EVM at scale. The program office designed an integrated performance framework using Jira for sprint-level tracking and Microsoft Project for macro-level EVM forecasting. Story points were assigned weighted monetary values based on complexity and business impact, and EV was accumulated upon the completion of the definition-of-done criteria that included user testing, deployment, and security validation. PV was planned quarterly using rolling forecasts, and AC was fed automatically from time-logging systems. The governance board utilized this integrated framework to perform monthly reviews, identifying variance trends and adjusting backlog priorities. Over the life of the program, delivery predictability improved by 15%, while stakeholder satisfaction scores increased significantly due to improved transparency and responsiveness [22][28].

Among the most educative things about these implementations is the correlation of governance maturity with the success of Agile-EVM. At companies that already had mature governance practices in place that demonstrated the ability to manage project and enterprise goals in alignment, bring data quality discipline to projects, and facilitate collaborative decision making, the transition to hybrid governance was easier to implement and more stable. These institutions frequently developed hybrid roles as Agile-EVM liaisons or integrated program controllers who had cross-functional expertise and performed the role of linkage between Agile and financial governance teams. Conversely, in siloed or rigidly implemented traditional measure-based programs, the hybrid model failed or was shelved in favour of perceived inefficiency and clarity [24][27]. Technological enablers were also very instrumental in successful implementations. Companies that had invested in integrated toolchains, such that data flowed data could flow in real-time between Agile management tools and EVM reporting systems, gained significant returns about reporting accuracy and agility in decision-making. One firm runs a middleware analytics web that drew the Jira story advance and related it to labor hours in an ERP system, then derived EVM indices automatically. This automation cut the time to report by 50 percent and increased the level of detail in the analysis of variances, resulting in a near real-time capability to shift the scope and allocate resources. These cases point to the value of digital enablement when scaling Agile-EVM governance, especially across large and distributed programs [26][29].

Notably, the real-life experience highlights the fact that Agile-EVM integration cannot cater to all sizes. All their implementations have to be adjusted to the culture of the organization, regulatory limitations, the size of programs, and the technological environment. Even then, EVM might only be used at the portfolio- or program-level, and Agile teams can work freely at the sprint-level. In others, integration is totalized right up into all areas of preparation and action. Clarity of intent, alignment among the stakeholders, and the consistency of execution have been identified as the key differentiators in becoming successful. The best programs have well-established plans of governance-where Agile will be applied to the execution and feedback cycles, whereas EVM will be applied to reporting and forecasting at an aggregate level [23][30].

Strategic usage of governance reviews is another success factor in the real world. Agile ceremonies (e.g., retrospectives, sprint reviews, PI planning) were commuted with the governance reviews (e.g., steering committees, financial health checks) during the programs, and these programs reported improved stakeholder engagement and less oversight fatigue. One example involved a financial services company that combined the use of monthly control boards with Agile displays that enabled executives to view working product increments as they reviewed EVM status. This elevated the confidence among delivery teams and governance units and allowed quicker prioritization on qualitative reviews as well as quantitative measures [27][28]. Lastly, case studies reveal that resilience and responsiveness in an uncertain situation are improved by Agile-EVM integrations. The hybrid governance model allowed organizations to adjust faster during the COVID-19 pandemic due to changes in priorities, the format of remote work, and the redistribution of the budget. Since these organizations had been counting value delivery in small increments and their forecasting models reflected that earned value was on track, they were able to adjust rapidly without sacrificing cost and schedule control. This flexibility, along with the rigor of governance, demonstrates the strategic benefit of integrating Agile and EVM in high-risk/high-velocity sectors [25][26]. In summary, the use of Agile-EVM in the real world proves that although implementation strategy demands considerable planning and a culture shift in an organization, the rewards are high to justify the effort. The companies ensure higher performance insights, accelerated decision-making, enhanced consonance with strategic aims, and greater stakeholder confidence. These results confirm the theoretical and governance models covered in the preceding sections, and offer guidance to other entities that want to modernize their program governance. Revisiting the practical lessons, the final and conclusion section provides a perspective and conclusion by way of the reflection of the strategic implications of the integration of Agile-EVM and the future of program governance in the digital age.

6. Conclusion

The combination of Earned Value Management (EVM) and Agile is a major shift in the environment of program management. As seen in this paper, both approaches have their respective advantages. Agile approaches yield flexibility, adaptability, and value delivery throughout the lifetime of a project; EVM approaches result in structure and predictability as well as financial accountability. The individual approaches have their shortcomings. Neither Agile nor traditional EVM can always provide the necessary level of rigorous oversight required by large-scale, high-stakes programs, nor deal effectively with the dynamism of modern project environments. Through a compatibility mediated between the two paradigms, there is a greater capability of organizations to exploit the advantages of both worlds. In terms of concept, both Agile and EVM have the same objective in that they both aim at value delivery within the time and cost limits. The secret to their combination is the redefinition of fundamental constructs, including scope, baselining, and performance measurement, to support a hybrid model. Agile techniques, user stories, sprints, and the product backlog can be cross-paneled to EVM components, such as control accounts and work packages. These constructs, when lined up appropriately, help us to translate the Agile progress to quantifiable Agile EVM measures like Earned Value (EV), Planned Value (PV), and Actual Cost (AC). This integration is very useful in the governance structures. The resulting mix of Agile real-time feedback controls and EVM forecasting analytics provides governance entities with a more nuanced and actionable picture of the program condition. Consolidated dashboards that combine burndown charts and velocity about cost and schedule variances provide transparency and control to the stakeholders. Additionally, governance reviews can be re-tuned to Langley's traditional oversight, to support more frequent, data-based reviews, and encourage a quicker, more responsive decision-making environment. Nevertheless, there are challenges to the process of integration. The barriers to adoption include cultural inertia, incompatibility with tooling, lack of knowledge, and /or compliance pressures. The only way to come out of these obstacles is through intentional change management processes, organizational learning programs, and the creation of hybrid governance positions. Furthermore, organizational maturity, sponsorship by the top leadership, and uniform application across teams and departments are vital to the achievement of Agile-EVM governance.

Agile-EVM integration is practically and feasibly achievable as supported by case studies involving various industries, including defense, aerospace, healthcare, IT, and so forth. Such practical implementations confirm the theoretical papers and show the half-breadth of ideal practices, including iterative baselining, rolling wave planning, and use of integrated toolchains. They also highlight the competitive edge that hybrid governance can offer with regard to speed, recovery, and alignment of stakeholders. These functions are more in demand in the digital world, which is fast. The future of program governance is to find even further convergence in the future. Digital technologies will continue to develop, and so will tools and techniques of supporting integrated governance. The Agile-EVM frameworks will also be more capable and predictive of risks and delivery optimization with the use of artificial intelligence, real-time analytics, and predictive modelling. Entities investing in these capabilities will be more ready to move through unpredictability, scaling innovation, and producing long-term value within difficult, adaptive systems. Finally, the marriage between Agile and Earned Value Management is not only a methodological process, but it is a strategic change. It takes foresight, willpower, and dedication- yet the rewards are immense. The confluence of Agile and EVM in the context of heavy change, accountability, and responsiveness is a governance necessity because of the need to respond quickly and deliver.

References

[1] Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK® Guide). 7th ed. Newtown Square, PA: Project Management Institute; 2021.

[2] Boehm B, Turner RN. Balancing agility and discipline: A guide for the perplexed. Boston: Addison-Wesley Professional; 2003.

[3] Serrador P, Pinto JK. Does Agile work?—A quantitative analysis of agile project success. Int J Proj Manag. 2015;33(5):1040-51.

[4] Popović F, Atanasijević T, Atanasijević S. Earned value management in agile projects. LIMEN 2019. 2019:17.

[5] Sernaque Zapata NN. Model for software development risk management from the perspective of project management. 2022.

[6] Krishnan S, Saravanan/Anand Krishnan (A. Jos), Kumar R. Sustainable Development Goals. 2024.

[7] Beck K. Extreme programming explained: embrace change. Boston: Addison-Wesley Professional; 2000.

[8] Kupiainen E, Mäntylä MV, Itkonen J. Using metrics in Agile and Lean Software Development–A systematic literature review of industrial studies. Inf Softw Technol. 2015;62:143-63.

[9] Huss M, Herber DR, Borky JM. Comparing measured agile software development metrics using an agile model-based software engineering approach versus Scrum only. Software. 2023;2(3):310-31.

[10] Aramali V, Sanboskani H, Gibson GE Jr, El Asmar M, Cho N. Forward-looking state-of-the-art review on earned value management systems: The disconnect between academia and industry. J Manag Eng. 2022;38(3):03122001.

[11] Manship K. Implementing earned value management on agile projects [Technical Report]. Eugene, OR: University of Oregon; 2018.

[12] Ali O, Murray P, Al-Ahmad A, Tahat L. An integrated framework for addressing the challenges and strategies of technology adoption: a systematic review. Emerg Sci J. 2024;8(3):1215-42.

[13] Kopczyńska S, Ochodek M, Nawrocki J. On the importance of non-functional requirements in agile software projects—a survey. In: Integrating Research and Practice in Software Engineering. Cham: Springer International Publishing; 2019. p. 145-58.

[14] Mashkoor A, Egyed A, Wille R, Stock S. J Softw Evol Process. 2022.

[15] Khalil C, Khalil S. A governance framework for adopting Agile methodologies. Int J e-Educ e-Bus e-Manag e-Learn. 2016;6(2):111.

[16] Vandevoorde S, Vanhoucke M. A comparison of different project duration forecasting methods using earned value metrics. Int J Proj Manag. 2006;24(4):289-302.

[17] Budacu EN, Pocatilu P. Real-Time Agile Metrics for Measuring Team Performance. Informatica Economica. 2018;22(4):20-30.

[18] Kurniawan R, Budiastuti D, Hamsal M, Kosasih W. The impact of balanced agile project management on firm performance: the mediating role of market orientation and strategic agility. Rev Int Bus Strategy. 2020;30(4):457-90.

[19] Conforto EC, Amaral DC, Da Silva SL, Di Felippo A, Kamikawachi DSL. The agility construct in project management theory. Int J Proj Manag. 2016;34(4):660-74.

[20] Bass JM. How product owner teams scale agile methods to large, distributed enterprises. Empir Softw Eng. 2015;20(6):1525-57.

[21] Chukwurah N, Ige AB, Idemudia C, Eyieyien OG. Integrating agile methodologies into data governance: Achieving flexibility and control simultaneously. Open Access Res J Multidiscip Stud. 2024;8(01):045-56.

[22] Prasodjo T. Agile Governance in the Digital Age: A Qualitative Study of Its Effectiveness and Implementation Challenges. Golden Ratio Soc Sci Educ. 2025;5(1):01-10.

[23] LS, G., Baker El-Ebiary, Y. A., Rao, B. S., Rautrao, R. R., Mastan Rao, T. S., Naga Ramesh, J. V., & Al-Omari, O. (2025). Challenges and Solutions in Agile Software Development: A Managerial Perspective on Implementation Practices. International Journal of Advanced Computer Science & Applications, 16(3).

[24] Fitzgerald B, Stol KJ, O'Sullivan R, O'Brien D. Scaling agile methods to regulated environments: An industry case study. In: 2013 35th International Conference on Software Engineering (ICSE). IEEE; 2013. p. 863-72.

[25] Dikert K, Paasivaara M, Lassenius C. Challenges and success factors for large-scale agile transformations: A systematic literature review. J Syst Softw. 2016;119:87-108.

[26] Camara R, Marinho M. Agile tailoring in distributed large-scale environments using agile frameworks: A Systematic Literature Review. CLEI Electron J. 2024;27(1):8-1.

[27] Jonsson H, Larsson S, Punnekkat S. Agile practices in regulated railway software development. In: 2012 IEEE 23rd Int Symp Softw Reliab Eng Workshops. IEEE; 2012. p. 355-60.

[28] Sutherland J, Viktorov A, Blount J, Puntikov N. Distributed scrum: Agile project management with outsourced development teams. In: 2007 40th Annu Hawaii Int Conf Syst Sci (HICSS'07). IEEE; 2007. p. 274a.

[29] Gillani M, Niaz HA, Ullah A. Integration of software architecture in requirements elicitation for rapid software development. IEEE Access. 2022;10:56158-78.

[30] Papadakis E, Tsironis L. Towards a hybrid project management framework: A systematic literature review on traditional, agile, and hybrid techniques. J Mod Proj Manag. 2020;8(2).