

Agile Meets Digital: A Systematic Literature Review on the Interplay between Agile Project Management and Digital Transformation

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Abstract

While digital transformation has emerged as a critical organizational imperative, the integration of this process with agile project management methodologies remains insufficiently explored in contemporary literature. This ongoing study examines the interconnected dynamics between digital transformation initiatives and agile project management practices. We are conducting a systematic literature review employing the PRISMA framework to analyze peer-reviewed articles published since 2021. Our preliminary analysis suggests patterns in how agile methodologies may facilitate digital transformation processes, while also identifying potential challenges in their application. Through our current synthesis of the literature, we investigate how the inherent flexibility and iterative nature of agile project management could enhance digital transformation outcomes, particularly in areas of stakeholder engagement, rapid adaptation, and continuous learning. Although these domains operate at different organizational levels, our initial findings indicate several critical success factors common to both frameworks that may be leveraged to improve transformation outcomes. This work-in-progress study aims to identify significant research gaps, including the need for empirical validation of integrated agile-digital frameworks. We present our preliminary research agenda and invite academic discourse on this crucial intersection in modern business practice.

Keywords: digital transformation, agile project management, systematic literature review, PRISMA, organizational change, project success factors.

1. Introduction

In an era marked by rapid technological innovations and increasing market volatility, organisations face mounting pressure to adapt and innovate. Two concepts that have emerged as essential for navigating this evolving landscape are digital transformation and agile project management (Al-Mhdawi, Dacre, et al., 2023; Baxter et al., 2023; Dacre et al., 2019). Digital transformation is reshaping how organisations operate, leveraging technologies such as Artificial Intelligence (AI) (Dacre & Kockum, 2022; Dacre et al., 2020; Hsu et al., 2021a), big data (Kockum & Dacre, 2021), and cloud computing to drive efficiency and create new value propositions (Vial, 2019; Westerman et al., 2011). These advancements have become fundamental in enabling organisations to remain competitive by transforming business processes, enhancing customer engagement, and fostering innovation (Fitzgerald et al., 2014; Plekhanov et al., 2022).

Despite their rising prominence, the integration and interplay between digital transformation and agile project management remain underexplored (Ciampi et al., 2022; Mikalsen et al., 2018). Project managers often grapple with the complexities of embedding agile principles (Dong et al., 2021b; Dong et al., 2022; Eggleton et al., 2021) within digital transformation initiatives, which involve not just adopting new technologies but fundamentally changing organisational structures and cultures (Heubeck, 2023; Plekhanov et al., 2022). Similarly, the question of how digital innovations, such as real-time analytics and AI (Al-Mhdawi, Qazi, et al., 2023; Brookes et al., 2020; Hsu et al., 2021b), can bolster agile project management practices remains unanswered (Ciarli et al., 2021; Wiechmann et al., 2022). Addressing this gap is essential for organisations that seek to drive innovation, improve responsiveness, and enhance project outcomes in a digital-first world (Boojihawon et al., 2021; Karagiannaki et al., 2017).

Given this context, this study seeks to investigate whether agile project management can support and accelerate digital transformation initiatives and whether successful digital transformation reciprocally benefits agile teams. The research focuses on understanding the bidirectional relationship between these frameworks, identifying the critical factors that influence their interaction, and exploring how these elements collectively affect organisational outcomes (Annosi et al., 2020; Berkani et al., 2019).

This paper is structured as follows: First, we present digital transformation and agile project management to establish the theoretical foundation. We then present our research methodology, followed by initial insights and discussion. The paper concludes with implications for both theory and practice, along with suggestions for future research directions.

2. Theoretical Context

In the wake of the post-pandemic era (Barber et al., 2021; Dacre et al., 2022; Sonjit et al., 2021a), agile project management and digital transformation have emerged as critical operational strategies for organizations navigating an increasingly complex and dynamic business environment (Ciampi et al., 2022). Despite their widespread relevance and application, the integration and interplay between these concepts remain underexplored. Understanding this relationship is crucial, given that both strategies fundamentally aim to enhance organizational responsiveness and competitiveness.

Digital transformation, although widely discussed, is a complex concept with varying interpretations. Early theoretical frameworks defined digital transformation as an organizational mechanism for leveraging technology to enhance performance (Westerman et al., 2011; Karagiannaki et al., 2017). Over time, this understanding has evolved, with contemporary studies emphasizing its role in driving significant business innovations, such as optimizing customer experience, streamlining operations, and enabling the creation of new business models (Fitzgerald et al., 2014; Liere-Netheler et al., 2018). For this study, digital transformation is conceptualized as the comprehensive process of reshaping an organization's operations, process management, and value creation through advanced digital technologies like big data, artificial intelligence (AI), and cloud platforms (Nwankpa & Roumani, 2016).

The impact of digital technologies extends beyond operational efficiencies to the catalyzation of new entrepreneurial models and production methods. These technologies serve as enablers of innovation and manifest in various forms, including digital artifacts (Ekbia, 2009), platforms (Tiwana et al., 2018), infrastructures (Aldrich, 2014), and digital products or services (Lyytinen et al., 2016). Examples like Netflix, Uber, and Airbnb demonstrate how digital transformation has revolutionized traditional business models and consumer engagement (Kuester et al., 2018). Netflix, for instance, transformed its

stakeholder and customer engagement strategies through digital platforms, while Uber and Airbnb applied sophisticated digital tools to connect diverse, individualized consumer needs. These cases highlight how digital transformation not only redefines industries but also alters consumer behavior, prompting organizations to adopt more agile and responsive models to meet these new demands (Vial, 2019; Plekhanov et al., 2022).

The increasing demand for personalized products and services, driven by advances in information technology, underscores the compulsion for agility in organizational operations. Digital transformation has also given rise to collaborative ecosystems, where diverse organizations collectively pursue innovation and growth through cooperative efforts and the utilization of collective intelligence (Anderson, 2014). As these transformation journeys unfold, many organizations have recognized a critical dependency on agile methodologies. Project managers are beginning to understand that agile practices are not just beneficial but essential for effectively managing the outcomes of digital transformation, compelling a deeper examination of agile project management approaches.

Agile project management, rooted in the principles of the Agile Manifesto and subsequent theoretical developments, encompasses a set of core values, practices, and frameworks, operationalized through methodologies like Scrum and Kanban (Highsmith, 2009). The Association for Project Management (APM, 2022) defines agile project management as an iterative approach to project delivery, characterized by flexibility and continuous stakeholder collaboration. However, agility is a complex concept that involves iterative work processes, adaptability to uncertainty, and active participation from multiple stakeholders (Antonopoulou & Dacre, 2021; Gkogkidis & Dacre, 2021) to shape desired outcomes (Baxter & Turner, 2020; Lei et al., 2017). Prange (2021) describes agility as an organization's ability to swiftly and effectively respond to unforeseen changes in market conditions, a capability that has become increasingly vital.

Unlike traditional waterfall project management models, which are often constrained by rigid processes and extensive documentation, agile methodologies prioritize streamlined operations and adaptive responses (Hassani et al., 2018). Agile teams are designed to be highly responsive, integrating customer feedback and evolving requirements into iterative development cycles to continuously refine products (Hron et al., 2021). This capability is particularly beneficial in the context of digital transformation, where organizations

frequently encounter rapidly changing demands facilitated by digital tools, such as real-time customer feedback through cloud platforms (Heubeck, 2023). The ability to adapt swiftly to these evolving requirements is essential for maintaining a competitive edge.

The proliferation of agile practices beyond the software industry over the past two decades has demonstrated the versatility and broad applicability of these principles (Ahammad et al., 2021). The widespread adoption of agility is driven by its tangible benefits, such as increased flexibility, enhanced adaptability, and the ability to make data-driven decisions. Organizations across various sectors have embraced agile methodologies to remain responsive to market fluctuations and competitive pressures (Solheim et al., 2023). Agility empowers organizations to detect and respond to market changes quickly, make informed decisions using digital tools, and enable product managers to stabilize and improve outcomes (Berkani, 2019). These collective capabilities have been shown to reduce costs and improve customer satisfaction, thereby enhancing the overall effectiveness of agile project teams and their organizations (Boojihawon et al., 2021).

While existing literature extensively largely explores digital transformation and agile project management independently, there remains a significant research gap in understanding their mutual influence and potential synergies.

3. Methodology

The paucity of research examining the relationship between agile project management and digital transformation necessitates a comprehensive analysis of existing literature. This study employs a systematic literature review (SLR) methodology to examine pertinent literature published since 2001, a pivotal year marked by the publication of the Manifesto for Agile Software Development. The selection of SLR as the primary research methodology is justified by its proven capacity to systematically collect, evaluate, and synthesize existing scholarly work through a rigorous and replicable process (Okoli, 2015).

3.1 Systematic Literature Review Framework

The systematic literature review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, which evolved from the Quality of Reporting of Meta-Analyses (QUOROM) statement. PRISMA has emerged as a gilded standard for conducting systematic reviews, offering established reporting standards for

both systematic reviews and meta-analyses (Sarkis-Onofre et al., 2021). This methodological framework ensures transparency, reproducibility, and comprehensiveness in the review process.

3.2 PRISMA Implementation

The implementation of PRISMA in this study adheres to two primary components. First, the systematic review protocol follows the 27-item PRISMA checklist, which ensures methodological rigor across multiple dimensions. The checklist guides the research question formulation, search strategy development, and specification of inclusion and exclusion criteria. Furthermore, it informs the data extraction procedures, quality assessment protocols, and synthesis methodology implementation.

The second component comprises the four-stage review process outlined by Pagea et al. (2020). The initial search stage involves comprehensive database querying using predefined search terms. Specifically, this review employs keywords related to agile project management and digital transformation, including “Agile” and (“Digital transformation” or “digitali*ation”). The search was conducted using the combined databases of Scopus and Web of Science, yielding 737 initial results.

This structured methodological approach enables the identification of existing theoretical frameworks, ongoing debates (Reynolds & Dacre, 2019), and potential future research directions while maintaining academic standards throughout the review process. The systematic nature of PRISMA ensures that the examination of literature regarding agile project management and digital transformation remains transparent, and replicable, thereby strengthening the validity of the research findings.

4. Research Insights and Discussion

Our preliminary analysis suggests a bidirectional relationship between agile project management and digital transformation, characterized by mutual reinforcement and complementary capabilities (Mikalsen et al., 2018). This section presents emerging insights on this interplay from two distinct perspectives, the influence of agile methodologies on digital transformation processes and the impact of digital transformation on agile project management practices.

4.1 Emerging Patterns: Agile Project Management's Impact on Digital Transformation

Initial findings indicate that the iterative and incremental nature of agile project management methodologies, particularly illustrated in the Scrum framework, appears to provide a structured approach to organizing teams for service and product delivery in dynamic environments (Cervone, 2011; Kadenic et al., 2023). Evidence suggests that through the implementation of prioritized backlogs, project teams can potentially manage development focus while optimizing production processes and resource allocation through sustained stakeholder engagement, which may lead to reductions in both management costs and implementation timeframes (Endres et al., 2022).

Moreover, our review highlights that digital transformation initiatives aim to enhance operational efficiency and reduce labour costs through the strategic use of advanced technologies such as artificial intelligence and big data analytics (Al-Mhdawi, O'Connor, et al., 2023; Dacre, Eggleton, Gkogkidis, et al., 2021; Eggleton et al., 2023; Gong et al., 2022). These digital innovations drive organisational change by reshaping internal structures, business processes, and even employee skill sets (Plekhanov et al., 2022). The inherent adaptability of digital transformation further aligns with the principles of agile project management (Sonjit et al., 2021b, 2021c), enabling organisations to maintain agile frameworks in response to rapidly shifting external environments. Digital platforms, for instance, enhance agile teams' capacity to establish and sustain effective communication channels with customers, thereby strengthening competitive positioning (Wiechmann et al., 2022).

4.2 Digital Transformation's Enhancement of Agile Practices

Digital transformation initiatives can generate substantial positive outcomes for agile project management practices, particularly through the apparent dissolution of departmental silos, potentially enabling more comprehensive data unification and analysis capabilities (Helfat et al., 2015). Early findings indicate that contemporary digital technologies can fundamentally alter organizational operational paradigms, possibly streamlining workflows while simultaneously reducing employee workload and operational overhead (Ciampi et al., 2022). The potential advantage of modern digital technologies over traditional information technology systems, particularly in the deployment of big data analytics and artificial intelligence platforms, may enable

organizations to access comprehensive market data and inform decision-making processes more effectively (Ciarli et al., 2021).

These technological developments facilitate enhanced team collaboration (Dacre et al., 2015; Dacre et al., 2018) and increase organisational agility in responding to market dynamics (Singh et al., 2020). Digital transformation accelerates the development and launch of new products, services, and strategic initiatives (Ciarli et al., 2021). For instance, by integrating digital tools, agile teams can better synthesise market data and align it with customer needs, thus driving innovation and value creation (Wiechmann et al., 2022). The focus on customer communication inherent in agile methodologies is further strengthened through the use of cloud platforms, which support real-time, bilateral information exchange and foster deeper engagement (Gkogkidis & Dacre, 2020a).

4.3 Understanding of Bidirectional Benefits

Although these initial insights require further empirical validation, they point to a potentially symbiotic relationship between agile project management and digital transformation. This relationship appears to create a reinforcing cycle that enhances organisational capabilities. Specifically, as digital tools streamline and improve agile practices, these refined practices may, in turn, facilitate more successful digital transformation initiatives. Consequently, organisations may benefit from viewing agile project management and digital transformation not as separate endeavours but as interconnected components of a holistic strategy for organisational improvement.

5. Conclusion

While this research is ongoing, our initial findings suggest that agile methodologies and digital advancements can complement and reinforce each other, potentially enhancing organisational effectiveness and responsiveness (Ciampi et al., 2022; Mikalsen et al., 2018).

5.1 Theoretical Implications

Our early analysis contributes to the theoretical understanding of how agile project management practices can support digital transformation initiatives. The findings highlight that the iterative, flexible nature of agile methodologies aligns with the dynamic and often

unpredictable requirements of digital transformation. This alignment suggests that existing theories on organisational adaptability and project success may benefit from integrating agile principles as a key component of digital transformation strategies (Fitzgerald et al., 2014; Highsmith, 2009). Additionally, our research identifies critical factors, such as stakeholder engagement, rapid adaptation, and continuous learning, that underpin the successful integration of agile and digital frameworks (Annosi et al., 2020; Baxter & Turner, 2020). These factors offer a basis for developing new theoretical models that explore how agile practices can be systematically employed to facilitate digital transformation. However, given the preliminary nature of these insights, further validation is required to strengthen the findings.

5.2 Practical Implications

For practitioners, our initial findings provide practical guidance on how to leverage agile project management within digital transformation efforts. Our review suggests that digital technologies, such as AI and big data analytics, can enhance the effectiveness of agile project teams (Ciarli et al., 2021; Plekhanov et al., 2022). The integration of these tools into agile practices can improve decision-making, streamline workflows, and foster better collaboration (Wiechmann et al., 2022). Practically, this means that organisations should consider adopting a dual focus, where agile project management and digital transformation are aligned and treated as interconnected strategies to maximise their impact (Berkani et al., 2019; Hassani et al., 2018).

5.3 Directions for Future Research

First, empirical studies are needed to validate the initial patterns and relationships identified in this paper. Quantitative research could assess the impact of agile methodologies on the success of digital transformation initiatives, examining metrics such as project efficiency, time-to-market, and stakeholder satisfaction (Boojihawon et al., 2021; Solheim et al., 2023). Second, future research should explore industry-specific dynamics. Understanding how the interplay between agile project management and digital transformation varies across different sectors could provide tailored insights and reveal unique challenges and opportunities (Gligor et al., 2013; Kuester et al., 2018). Lastly, research should consider the cultural and organisational factors that influence the integration of agile and digital practices. Investigating how organisational culture (Dacre et al., 2014), leadership styles (Dacre, Eggleton, Cantone, et al., 2021; Tite et al., 2021b),

and team dynamics (Dong et al., 2021a; Gkogkidis & Dacre, 2020b, 2023; Tite et al., 2021a) affect the success of these initiatives would offer valuable insights into creating environments conducive to digital and agile transformation (Helfat & Martin, 2015; Prange, 2021).

In conclusion, our study underscores a symbiotic relationship between agile project management and digital transformation, where each framework enhances the other, driving greater organizational agility and innovation. This integrated approach not only offers the potential to accelerate digital initiatives but also positions organizations to thrive in an era marked by rapid technological change and evolving market demands. As the digital landscape continues to transform, embracing agile methodologies alongside advanced digital tools will be crucial for building resilient, future-ready organizations capable of sustained success.

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