

Bridging the Gap: Evaluating the Effectiveness of Agile Project Management Tools in Early-Stage IT Startups in the UK

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CHAPTER INTRODUCTION

1:

1.1 Background of the Study

The increasing intensity of competition in the global technology industry has made early-stage information technology (IT) companies' major drivers of innovation, digital change and economic development (Silva et al., 2020). These organisations are typified by limited resources, rapidly changing environments and a need for faster development cycles. Within this context, the ability to provide high-quality products while maintaining flexibility represents a relevant competitive advantage (Rafiq and Wang, 2020). Nowadays, Agile methodologies and project management tools play a key role in solving the issues of uncertainty, collaboration, and accelerated value delivery for emerging ventures.

The beginning of Agile can be traced back to the Agile Manifesto, written in 2001, that stated a set of principles including collaboration with customers, iteration and change over plan, replacing the strict adherence to plans. Originally developed within the software domain, Agile methods have been successively applied to a variety of domains, such as manufacturing, logistics, and energy (Ribeiro et al., 2019). In IT start ups, Agile tools are used for maintaining product backlogs, for real-time communication, and for coordinating cross-functional teams towards common goals (Souza et al., 2019). For startups exploring the unproven territory of product market fit, Agile not only boosts velocity, it also enhances resiliency by helping teams pivot based on market signals (Silva et al., 2020).

Agile project management tools (e.g., Jira, Trello, Asana, and Microsoft Planner) offer features such as sprint management, Kanban boards, and velocity reporting. Empirical research suggests that these tools support not only internal alignment but also the application of cost management practises (activity-based costing and earned value management) in Agile projects (Lysenko and Fediai, 2021). As a result, these tools go beyond the scheduling concept and act as enablers for transparency, accountability, and informed decision-making.

Emerging research has been done on the theoretical foundations of Agile practise. Yang et al. (2025) argue that Agile development incorporates core theories such as complexity theory, socio-technical systems theory and organisational learning theory. In addition, this work offers a theoretical understanding as to why Agile makes sense in startup ecosystems, as existing frameworks describe team adaptation in dynamic environments and provide a conceptual foundation for understanding the nature of the Agile phenomenon. Furthermore, testing strategies and metrics need to be redefined in Agile contexts where the use of small iterative cycles challenges the traditional techniques for quality assurance (Nikolova, 2020).

From a managerial perspective, the introduction of Agile changes the project management office (PMO). Carneiro (2020) reported a shift from a command-and-control paradigm to those of facilitator, coach and coordinator in PMOs that incorporate Agile. Quantitative modelling further shows that Agile teams especially those working in distributed and resource-constrained environments are more productive than conventional teams (Mashmool et al., 2020).

There are certain issues that startups face while scaling up Agile. Cico et al. (2020) showed that informal processes evolve over time into more formalised processes as firms move from early to growth stage and create tensions between flexibility and control. At the same time, research on Lean Startup methodology uncovers the synergy between Agile, experimentation, and customer development (Yordanova, 2020). Such hybridity allows companies to simultaneously experiment with products and business models to improve innovation outcomes.

Agility is increasingly recognised as a strategic tool for managing complex engineering and organisational projects that provides a framework for enabling agility within complex and uncertain environments (Vargas, 2019). Agile has been substantiated by empirical studies and systematic reviews which have shown that in terms of IT project delivery, the iterative nature of the cycle, stakeholder involvement and the flexibility are important for successful implementation (Malik et al., 2019).

Recent research broadens the use of Agile from software development to focus on its impact on organisational innovation and inter-functional collaboration. For example, Umezurike et al. (2025) address Agile marketing in cross-functional teams, explaining how Agile principles enable continuous product development and expansion based on customer feedback and evolutionary improvement. Similarly, Choma et al. (2022) provided evidence of the diverse use of Agile practices analysing the role of user experience (UX) factors in Agile implementation in startups. Finally, scholars have started to incorporate Agile into digital entrepreneurship models where it is considered an enabler of speedy transitions from idea to market (De Souza et al., 2022). Similarly, design science research promotes empowering software startups by customised Agile approaches, which represent an evolution from Agile "as is" to Agile contextual adaptation (Javdani Gandomani et al., 2025). Additionally, these studies underscore the importance of Agile project management tools in shaping how startups innovate, organise, and sustain growth. Yet, empirical evidence remains fragmented, particularly concerning the effectiveness of specific tools in the UK startup context. This gap motivates the present research.

1.2 Research Aim

The main purpose of doing this research is to critically evaluate the effectiveness of Agile project management tools in enhancing productivity, collaboration, and project success in early-stage IT startups in the UK, and to identify gaps between their intended benefits and practical application in startup environments.

Research Objectives:

What are the challenges of agile project management in the early-stage start-up context?

Research Questions:

What are the challenges of agile project management in the early-stage start-up context?

1.3 Rationale of the Study

Agile project management has become an essential approach for organisations facing uncertainty, rapid change, and customer-driven demands. Its central promise lies in enabling responsiveness, flexibility, and continuous delivery of value (Malik et al., 2019). For early-stage IT start ups, these attributes are desirable but also essential in order to survive. Start-up companies typically face volatile market dynamics; lack of resources; and pressures to innovate faster than their competitors (Silva et al., 2020). As a result, Agile tools are a possible mechanism for managing such challenges. Nevertheless, empirical evidence on the performance of these tools specifically in the early-stage start-up context in the United Kingdom is scarce.

Existing empirical research underscores that startups frequently embrace Agile practises to compensate for structural weaknesses such as small team sizes, lack of formal processes, and evolving product market fit (Cico et al., 2020). Yet the transition from informal to formalised Agile practices is often problematic and can trigger tensions. In fact, the analysis of scaling organisations suggests that as organisations grow in complexity, the effectiveness of Agile may decrease, which calls for context-specific approaches (Vargas, 2019). Moreover, scholars emphasise that start-up is very different from large corporations in the application of Agile. While large corporations may incorporate Agile alongside Waterfall methods (Farahat and Defina, 2022), startups are more likely to use Agile tools holistically in conjunction with Lean Startup experimentation and customer development approaches (Yordanova, 2020). This divergence highlights the importance of studying Agile tool effectiveness in start-up

ecosystems rather than drawing the extrapolations from the corporate world.

The rationale for this study also arises from the theory. The theoretical foundation of Agile is drawn from the socio-technical systems theory, the complexity theory and organisational learning, which all highlight the importance of adaptation in dynamic contexts (Yang et al., 2025). However, the relationship between theory and practise is yet to be explored in empirical studies about startups. For example, although Agile claims to improve collaboration and user-centred design, empirical findings from user experience research show the ongoing struggle of integration in software startups (Choma et al., 2022). Likewise, testing strategies and cost management instruments, such as Agile Earned Value Management, need to adapt to fit iterative development processes (Nikolova, 2020).

From the practical perspective, some startups implement Agile tools without assessing their impact systematically. One of the frequent reasons behind the adoption is trend following or investor expectations instead of empirical support (Kohnová et al., 2023). Such phenomena can create a gap between what is expected to happen (increased productivity or collaboration) and what actually happens in the field (overload of tools, a culture that is not supportive of collaboration, absence of integration with existing processes, etc.) (Jiménez et al., 2020). In the absence of contextualised assessment, nascent enterprises are vulnerable to investing in instruments that do not add real value and provide relevant solutions to key constraints.

The United Kingdom is an especially interesting setting for research. Its dynamic start-up scene is driven by government incentives, incubator programs, and a close connection between academia and entrepreneurship. Yet, empirical evidence about Agile tool use in this environment is still scarce in comparison to other research from Brazil (Souza et al., 2019), Slovakia and the Czech Republic (Kohnová et al., 2023) or global comparisons from the hardware and logistics sectors (Berg et al., 2020). Filling this gap generates localised insights as well as possibilities for expanding international debates.

Finally, there is a scholarly mandate for theoretical and practical bridging. More recently, Enkler and Sporleder (2019) highlighted the need to connect Agile development with design methods and Industry 4.0 practices, while Agile is also being suggested to extend into marketing and digital entrepreneurship. Investigating the operation of Agile tools in startups therefore feeds into wider conversations about agility as an organisational paradigm across sectors (De Sousa et al., 2022).

1.4 Significance of the Study (Theory, Practice, Policy)

The relevance of this study can be expressed on three levels: theoretical, practical, and policy. Each dimension focuses on how the research advances knowledge, supports the practice of startups and influences entrepreneurial ecosystems, more broadly.

Agile research has developed rapidly since it began, from software engineering to include product development, management and organisational design (Franco and Behrens, 2019). However, as Yang et al. (2025) argue, the theoretical bases of Agile are fragmented, with complexity theory, socio-technical systems and learning theories applied patchily. By studying Agile tools in UK startups, this study makes two contributions to theory. First, it creates a background for the Agile practice from the entrepreneurial perspective, where uncertainty, speed, and resource availability are key issues. Startups are not scaled-down large corporations with similar dynamics (Cico et al., 2020). The application of Agile tools to these relationship factors provides theoretical insights into agility as a situational phenomenon. Second, the research relates Agile to the notions of Lean Startup experimentation and customer development which are complementary frameworks (Yordanova, 2020). Thus, this contribution illustrates how iterative product development integrates with iterative business-model innovation, and contributes to the development of multi-theoretical approaches to entrepreneurship.

Furthermore, recent studies in the fields of Agile UX (Choma et al., 2022), Agile in logistics (Zielske and Held, 2022), and Agile cost management (Lysenko and Fediai, 2021)

demonstrated the need for theory to develop sectoral sensitivity. By providing empirical findings from IT startups, this study informs the debate between generalisability and contextualisation of the Agile theories. In so doing, it addresses calls for empirical work that relates Agile methodologies and organisational performance in emerging industries (Javdani et al., 2025).

Startups reach for Agile tools in the hope that they will lead to faster delivery, better collaboration, and better alignment with the product market. However, there is evidence that tool effectiveness can vary considerably based on organisational culture, stage of organisation development, and resource allocation (Mashmool et al., 2020). For example, Agile boards and sprint tracking can be used to improve transparency, but can also add overheads if they are not well suited to team practises (Jiménez et al., 2020).

This study attempts to address the above issues by offering practical insights to startup practitioners regarding what works, what does not work, and the reasons behind them. By documenting adoption patterns, as well as perceived benefits and challenges, the research helps founders, project managers, and developers make evidence-based decisions about tool selection and implementation. The recommendations resulting from the findings will assist startups to avoid typical pitfalls such as over-reliance on tools, the lack of cultural alignment, or training (Kohnová et al., 2023).

All relevant contributions also cover cross-functional areas. Agile's application in marketing is illustrated by Umezurike et al. (2025), while Jiménez et al. (2020) showed its use in cost systems. This means that Agile tools can be used as a connecting point between development, management, and customer engagement. The current study therefore offers direction for not just software-related startups but also entrepreneurial functions in general that aim to be agile.

At the policy level, entrepreneurship and innovation are still at the top of the agenda for governments that want their economies to grow and be resilient. Drawing from the discussed

problem, the knowledge on how Agile tools enable start-up adaptation should provide evidence for support programmes, funding schemes, and training programmes (Zielske and Held, 2022). For instance, incubators and accelerators could make Agile training part of their curriculum, and funding organisations could evaluate startups' Agile maturity during investment assessments (Jiménez et al., 2020).

Policy implications also extend to innovation management and Industry 4.0 initiatives. Franco and Behrens (2019) argued that Agile is critical for introducing new technologies in complex industrial environments. Similarly, Enkler and Sporleder (2019) emphasised the role of Agile in early product development. Findings from this dissertation may therefore inform broader policies around digital transformation, workforce training, and entrepreneurship support in the UK.

1.5 Dissertation Structure

The dissertation is organised into five main chapters.

research are also discussed.

The structure ensures a logical progression from context-setting through to analysis and contribution, thereby supporting both academic rigour and practical relevance.

Figure 1: A hypothetical diagram

2.1 Introduction

The literature on Agile methodologies demonstrates both their theoretical importance and practical implications for managing projects in uncertain environments. Agile has moved beyond its origins in software development to become an organisational philosophy emphasising adaptability, collaboration, and iterative development (Abrantes and Furtado, 2021). Such principles align closely with the conditions of early-stage IT startups, which must respond rapidly to shifting market demands, limited resources, and unproven business models (Crnogaj et al., 2022).

Existing studies highlight several strengths of Agile. Research on its foundational principles has clarified how it diverges from traditional linear project management by prioritising flexibility and customer-centred design (Khovrat and Teslenko, 2022). Empirical work suggests that Agile enhances productivity, decision-making, and responsiveness, with particular benefits for cross-functional collaboration in resource-constrained firms (Almeida and Simoes, 2021). These attributes make Agile tools attractive to startups seeking efficiency and innovation.

Nevertheless, the literature also identifies challenges. Resistance to change among leaders, difficulties scaling Agile practices, and institutional inertia present significant barriers, particularly in complex organisational contexts (Baxter et al., 2023). In response, scholars have suggested hybrid approaches, integrating Lean Startup experimentation with Agile frameworks, as potential solutions (Euchner and Blank, 2021).

Despite this growing body of knowledge, a notable gap persists. Much of the existing scholarship evaluates Agile in established organisations or sector-specific contexts, with limited empirical focus on early-stage IT startups (Zielske et al., 2022). This omission is significant given the unique dynamics of such firms, particularly within the UK ecosystem. Consequently, the present research seeks to address this gap by critically examining the effectiveness of Agile project management tools in enabling productivity, collaboration, and adaptability in early-stage IT startups.

2.2 Agile Methodologies: Origins and Principles

Agile methodologies emerged as a response to the perceived limitations of traditional paradigms of project management like the Waterfall approach that often display inflexibility, long feedback loops, and high failure rates for dynamic situations (Arshad, 2024). The Agile Manifesto, which was promulgated in 2001, formalised a set of values and principles that prioritise customer collaboration, iterative delivery and responsiveness to change. Since its origin, Agile has evolved from a software development practise to an entire organisational paradigm (Khovrat and Teslenko, 2022). As a result, the core ideology of Agile calls for not just technical effectiveness, but also cultural and structural fluidity, thus helping teams perform under conditions of uncertainty (Crnogaj et al., 2022).

The main feature of Agile is the incremental nature of development. By decomposing the delivery of the product into smaller parts and iterating them, teams can react fast to feedback from stakeholders and to changes in the markets, thus reducing the risk of failure of a large-scale project (Abrantes and Furtado, 2021). The incremental approach has been widely adopted by entrepreneurial organisations because the ability to pivot rapidly has become a crucial element of organisational sustainability. Alzahrani (2024) noted that while the theory is based on Agile principles and values such as flexibility and collaboration, a challenge continues to be a lack of flexibility in the implementation of Agile methods due to the dominance of hierarchical and plan-driven cultures within organisations.

The agile principles are implemented through existing processes such as Scrum, Kanban, and Extreme Programming (XP). Scrum emphasises time bounded iterations, product backlogs and iterative assessment mechanism and therefore promotes accountability and adaptability (Azonuche and Enyejo, 2024). Kanban focuses on visualisation of the workflow and continuous delivery, while XP is a mix of engineering practises such as test-driven development and pair programming. Overall, these frameworks have translated the value of Agile by enabling self-organisation of cross-functional teams that deliver value incrementally (Etim et al., 2021).

Apart from software engineering, there are many disciplines to which Agile practices have been extended. In the context of audit work, Agile helps to provide assurance in a continuous manner and collaborate with stakeholders (Catlin and Watkins, 2021). Within marketing

context, Agile methods increase the time to campaign development and allow reactive development of strategies based on customer feedback (Kandasamy et al., 2025). Further, Agile practices have been adapted in product development cycles for hardware and healthcare development sectors, thereby demonstrating its suitability for a variety of sectors (Liyanage, 2025). Additionally, recent studies have shown how Agile frameworks can also be used to boost sustainability and digital transformation efforts, illustrating their growing importance in today's organisational settings (Rinne, 2024).

Agile practise has also developed with the advent of new technologies. Jin (2024) investigated the integration of artificial intelligence in Agile's workflows, showcasing the possibility of applying predictive analytics and more sophisticated backlog prioritisation. Similarly, Simaremare et al. (2024) depicted generative AI can automate documentation and testing in a start-up environment, scratching it from focusing on more high-value tasks. However, these technological advancements also present governance challenges and adaptation concerns related to workforce, raising interesting questions about the balance between human creativity and automation.

The flexibility of Agile is also reflected in its ability to satisfy governance and regulatory requirements. Chukwurah (2024) presented that Agile teams working in the United States consider data privacy regulations like GDPR and CCPA in an iterative workflow to make sure compliance is an integral element of development rather than a retroactive consideration. This practice is consistent with the idea of "agile governance," which involves using Agile principles in public sector organisations to improve their transparency, engagement, and responsiveness (Mergel, 2024).

Despite its advantages Agile is not without limitations. For example, according to Kansy (2024) and Almeida and Simoes (2021), organisational inertia, traditional hierarchy structure and leadership hurdles often stand in the way of achieving an effective Agile transformation. Moreover, Dash et al. (2021) argued that poorly implemented Agile-lean practises may produce waste, instead of eliminating it. These critiques suggest that for Agile principles to be effective they are dependent on cultural alignment and organisational readiness.

2.3 Adoption of Agile Tools in Startups

The adoption of Agile methodologies in startups has received significant scholarly focus, as these organisations represent conditions where Agile principles are especially relevant. Characteristically, startups face uncertainty, resource constraints, and the constant need for agility. Within this context, instruments such as Scrum or Kanban, Jira, Trello, Asana among others, are deployed to complement the planning, the transparency and the adaptability (Abrantes and Furtado, 2021). These tools help manage backlogs, track velocity and increase cross-functional communication to navigate the dynamic pressures that are born from early entrepreneurial ecosystems.

Motivations and Strategic Fit

In entrepreneurial environments, Agile methodologies go beyond optimising process deployment and are a strategic decision aimed at embedding organisational flexibility within corporate culture. As Javdani Gandomani et al. (2022) argued, Agile enables organisations through iterative experimentation, continuous learning and innovation via a customer-centric approach. These practices are in line with Lean Startup principles that highlight the importance of the minimum viable product (MVP) and rapid feedback cycle (Euchner and Blank, 2021). Kazakevich and Joiner 2024 showed that the combination of Agile sprints and MVP frameworks accelerates product validation and enables earlier market entry. As a result, adoption is defined by agility over dogma, with startups adapting Agile practices to their unique market circumstances and cultural settings.

External conditions also affect the pace and pattern of adoption. Incubators and investors commonly require empirical evidence for the structured implementation of project management as a proxy for operating maturity (Mota et al., 2022). In such situations, Agile dashboards can provide quantified performance metrics that are not only used internally for decision purposes but also provide a level of confidence to external stakeholders.

Global Patterns and Contextual Variations:

The implementation of Agile methods is a contextual variable. In Nigeria, Uzoeghelu and Kaur (2024) showed that the confluence of Lean and Agile principles supported mitigation of infrastructural and financial impediments for startups as well as catalysing more coherent confluence between business models and product delivery. In the United States, Kaniz et al. (2025) found that Agile tools enhanced analytics-driven decision-making processes in marketing startups, thus showing the sectoral generalisability of Agile beyond traditional software engineering fields. Similarly, Arnyndiasari et al. (2022) showed that adoption varies with organisational maturity: early-stage firms often favour lightweight tools, while scaling firms adopt more comprehensive frameworks like SAgile. Such findings underscore that adoption is a staged process, shifting with firm growth (Vasquez, 2024).

Leadership and Culture:

Leadership plays a critical role in embedding Agile. Jain et al. (2024) emphasised that startup leaders must move away from hierarchical management styles and adopt facilitative approaches. Founders, in particular, influence the extent to which Agile practices are internalised. Resistance at the leadership level risks superficial adoption, undermining potential benefits (Durbin and Niederman, 2021). Cultural alignment is equally decisive: Agile succeeds in collaborative, learning-oriented cultures but fails when applied merely as a procedural requirement (Georgiev, 2023). This has given rise to the phenomenon of “Agile in name only,” where tools exist but fail to influence behaviour (Chkhaidze, 2023).

Technology-Enabled Adoption:

Digitalisation has expanded the potential of Agile tools. Tupsakhare (2022) highlighted AI integration in Agile workflows, including predictive analytics and automated backlog prioritisation. For startups, such advances enhance efficiency but demand new skills and cultural adaptation. Similarly, Triando et al. (2024) showed that generative AI in software startups supports faster delivery and greater innovation. Cloud-based tools also underpin remote adoption, with platforms such as Trello and Asana enabling distributed teams to maintain transparency and accountability. Tran (2022) argued that such digital infrastructures

allow startups to access global talent while sustaining Agile practices in hybrid work environments.

Challenges in Adoption:

Despite clear advantages, adoption challenges remain. Mutabaruka (2021) observed that startups often underestimate the organisational change required for effective Agile implementation. Over-reliance on tools without adequate training reduces Agile to ritualistic ceremonies, eroding its intended value (Porkodi, 2024). Sector-specific constraints, such as compliance in healthcare, further limit applicability (Baxter et al., 2023). Moreover, scaling introduces tensions between agility and coordination. While Agile fosters productivity in small teams, its benefits may diminish as organisations grow in complexity (Vasquez, 2024).

2.4 Productivity and Efficiency Impacts

A core theme in Agile research concerns its influence on productivity and efficiency, outcomes that are particularly critical in startups. Unlike larger corporations with resource buffers, startups must rely on lean teams and rapid output cycles to establish market presence and attract investment (Saarenoksa, 2021). Agile methodologies promise enhanced outcomes by embedding adaptability, iterative delivery, and continuous feedback loops (Rahman et al., 2024). Yet, evidence suggests these benefits are shaped by cultural, organisational, and contextual factors that mediate adoption and performance (Harake, 2025).

Drivers of Productivity:

Agile teams derive productivity gains not solely from technical tools but from organisational attributes such as autonomy, leadership support, and collaborative decision-making. Ali et al. (2025) highlights these as critical drivers, reinforcing Agile's principle of self-organising teams. Engagement and motivation also play significant roles: Bansal et al. (2024) demonstrated that Agile management approaches enhance employee engagement, which directly contributes to productivity. For startups, where individuals often multitask across roles, creating autonomy and engagement is vital. Efficiency in Agile is closely tied to waste reduction and

value delivery. Dash et al. (2021) emphasised how Agile-lean practices eliminate inefficiencies such as redundant documentation, while iterative cycles prevent sunk costs from rigid planning (Harake, 2025). These practices align strongly with the resource-constrained environments of startups.

Measuring Productivity

The evaluation of Agile productivity remains challenging. Traditional measures focus on fixed deliverables, whereas Agile emphasises adaptability and customer value, which are less quantifiable (Seeton, 2022). To address this, Guerrero-Calvache et al. (2025) propose Scrum-based metrics such as velocity, sprint burndown, and lead time, while Famoti et al. (2024) advocated for data-driven performance indicators that ensure accountability and foster continuous improvement. Startups benefit from such metrics, as they not only inform internal processes but also provide transparency to external stakeholders, including investors. However, Sathe and Panse (2023) cautioned that productivity measures must be contextualised, noting that during the COVID-19 pandemic Agile teams required flexible evaluation approaches to adapt to remote conditions.

Hybrid and Digital Work Environments

The adoption of hybrid and remote work has further shaped Agile's impact on productivity. Tran (2022) argued that hybrid arrangements supported by Agile tools enhance efficiency by balancing flexibility with accountability. Islam et al. (2024) similarly demonstrated that advanced IT solutions integrated with Agile practices significantly improve project efficiency in digital contexts. Startups, which often rely on distributed teams to access global talent, find tools such as Jira and Trello invaluable for maintaining visibility and coordination (Saarenoksa, 2021).

Emerging technologies extend these capabilities. Simaremare et al. (2024) identified opportunities for generative AI to automate backlog prioritisation, enhance sprint planning, and improve efficiency. While promising, such integration requires alignment with Agile's collaborative ethos. Startups, being more experimental, may adopt these innovations earlier,

though financial and skill limitations pose barriers (Jain et al., 2024).

Scaling and Trade-offs:

While increases in productivity related to the use of Agile methodologies are well documented when considering small teams developing software and applications there are a range of tradeoffs when extending these methodologies to larger organisational structures. According to Azonuche and Enyejo (2024) scaling frameworks like SAFe promote coordination and at the same time create layers of bureaucracy, which could undermine operational effectiveness. In the framework of startups that rapidly turn into mid-sized businesses, this contradiction is reflected in the form of a dilemma, according to which the premature application of scaling frameworks puts a strain on business, and their late introduction postpones growth patterns. As Manduva (2022) noted, Agile may help optimise the process of product development, but this benefit can be obtained only when it is constantly adjusted to the changing scale and complexity of the organisation. As a result, Agile is not static and therefore requires constant recalibration. According to Chkhaidze (2023), unstable environments require constant adjustment; startups, in this case, are prone to stagnation unless such practices are properly adjusted.

Challenges in Realising Productivity Gains:

Despite general optimism, the empirical literature is contradictory. Mutabaruka (2021) reported adaptation challenges faced in Agile transitions, some of which are relevant in the context of startups with limited formal structures. Initial productivity losses may occur as teams recalibrate, highlighting the importance of leadership development and tailored training programmes. Maharao (2024) cautioned that the dogmatic adherence to Agile rituals without contextual adaptation can be detrimental, creating further layers of complexity, hindering adaptability, and hampering the intended benefits of Agile, ultimately stalling rather than catalysing productivity and innovation.

2.6 Challenges and Barriers

While Agile methodologies have gained global traction, their implementation is not without obstacles. Despite being more agile than established corporate entities, startups face unique challenges in the adoption of Agile project-management tools (Almeida and Simoes, 2021). Such barriers are often organisational, cultural, technological, or contextual in nature and they impact whether Agile practices are able to deliver on their promised value.

Organisational and Cultural Barriers:

One of the most mentioned barriers for adopting Agile methodologies is cultural resistance. Durbin and Niederman (2021) argued that many organisations do not move beyond the surface implementation of Agile to adopt the accompanying paradigm shift to agility and collaborative engagement. In start-up environments this barrier will begin to appear if founders or team members cling to ad-hoc practices and resist formally structured Agile processes and view them as unnecessary bureaucracy. As Chkhaidze (2023) highlighted, unpredictable environments can exacerbate this resistance, as teams may not have the necessary stability or training to absorb Agile values.

Institutional contexts can also hinder the adoption of Agile. Baxter et al. (2023) in their study on public sector IT initiatives proved that the effectiveness of Agile is limited by the typically permanent bureaucratic structures and the fixed reporting systems. While start-up companies are typically less bureaucratic, they often have external institutional pressures from investors, regulators or incubation programmes that require formalised reports. These external imperatives can conflict with the iterative and flexible nature of Agile, creating tension between compliance and organisational agility (Mattsson, 2024).

Leadership and Resource Challenges:

Leadership plays an integral role in reducing, or creating, organisational barriers. In line with Porkodi (2024), leadership in Agile environments required a shift from command-and-control leadership to facilitative and coaching types. Nonetheless, not all startup leaders have the necessary skills to survive this transition. Founders tend to place great importance on visionary leadership but struggle to reconcile the principle of Agile's distributed decision.

Such misalignment can dilute the effectiveness of Agile tools and undermine team morale (Movva, 2025).

Resource limitations are major limitations. Mutabaruka (2021) noted that the goal of Agile adaptability can only be achieved by sufficient investments in training and tools. Many startups are often operating under budgetary constraints, which translates to incomplete and/or superficial implementation of Agile practices. Without proper training, Agile ceremonies can become ritualistic to the point where they offer little improvement in collaboration or efficiency. Additionally, access to sophisticated digital platforms or integration of AI-driven enhancements is often limited by cost factors, forcing startups to work with basic tools with limited abilities (Jin, 2024).

Scaling and Complexity:

Scalability is another challenge. Although Agile works very well with small teams, it loses its merits as organisations grow. Mesjasz et al. (2022) discovered that Agile is directly incompatible with complexity, particularly in bigger projects where several teams need to coordinate their efforts. According to Azonuche and Enyejo (2024), scaling frameworks like SAFe or LeSS can potentially add productivity in some situations, but they tend to create bureaucratic processes that hinder agility. This scaling dilemma is a key issue facing startups in transitioning through early and growth phases: scaling frameworks too early may lead to organisational rigidity, and scaling too late may lead to coordination failures (Boughaleb et al., 2025).

Regulatory and Compliance Constraints:

The focus on flexibility in Agile methodologies can be incompatible with institutional contexts that require rigid adherence. In a recent study, Chukwurah (2024) identified how privacy requirements, such as the General Data Protection Regulation (GDPR) and California Consumer Privacy Act (CCPA), create barriers to the implementation of Agile practices in technology companies that require the inclusion of compliance audits without sacrificing the speed of iterations. Additionally, enterprises in early-stage development especially those under strict regulatory control in areas such as financial technology and medical technology

need to adjust their Agile models to meet statutory requirements. These changes can slow down the operational process, take away some of the inherent responsiveness of Agile, and even further strain the somewhat limited resource base (Harake, 2025).

Technology and Communication Challenges:

New companies face technological and communication challenges when trying to adopt Agile tools in their business models. Despite the availability of digital platforms, the time zone separation of teams makes it challenging to maintain a coordinated communication process (Tran, 2022). The overuse of these tools can trigger the information overload or disjointed communication and, thus, will violate the concept of simplicity established within the Agile methodology (Santos et al., 2025). Moreover, even though the integration of advanced information-technology solutions or generative artificial intelligence into Agile processes can potentially deliver benefits, it requires technical skills, which most current startups currently do not possess (Triando et al., 2024).

2.7 Best Practices and Success Strategies:

Considering the intrinsic obstacles to Agile implementation, researchers and practitioners have identified a set of optimal practises and methodologies that may help to establish meaningful and sustainable Agile implementation, especially in start-up settings (Bansal, 2024). These strategies focus on cultural alignment, process alignment, and tool integration, thus making sure that the Agile tools could provide the intended benefits. In particular, the implementation of the discussed practises can have a significant impact on productivity, cooperation, and innovation among the companies that are limited by few resources and high levels of uncertainty.

(Umezurike et al., 2025).

Integrating Lean and Agile Approaches:

One of the best practises that are often recommended is the combination of the Lean Startup approach with Agile methodology. According to Uzoeghelu and Kaur (2024), the overlap of Lean's focus on experimentation and validated learning with Agile's cycle of iterative delivery contributes to the resilience of startups. This hybrid framework allows teams to test minimum viable products (MVPs), gather customer feedback and simultaneously iterate business models alongside software development (Kazakevich and Joiner, 2024). Likewise, Mota et al. (2022) founded those startups based in incubators benefit from adopting agile techniques for the technical product development and also adopting Lean for strategic experimentation, thus creating a two-part system of speed and adaptability.

Customer-Centred Practices:

Best practices highlight the customer collaboration as a key factor of success for Agile. Kandasamy et al. (2025) state that implementing Agile principles in digital marketing helps startups to quickly modify their marketing campaigns based on consumer desires, thereby ensuring they are in sync with market demands. Pohlmann et al. (2025), Branches of a growing tree: Transfer of Agile brand development concepts to brand management. In both cases, customer-focused approaches reduce the risk of mismatch between start-up services and consumer expectations.

Cross-Functional Collaboration and Team Culture:

Collaboration is a critical success factor in Agile methodology implementation. According to Moedt van Bolhuis et al. (2023), Internet of Things projects succeeded more when Agile methodologies supported cross-working team collaboration. For startups, where teams are small and roles often overlap, it is important to cultivate a culture of collaboration. Crnogaj et al. (2022) suggested that for the development of an Agile work environment, it is important to develop openness, trust and empowerment; this cultural alignment will not only improve the work environment's collaboration but will also reduce the resistance to Agile adoption. The leadership plays a fundamental role in this process: Jain et al. (2024) stressed the need for the transformation of the leadership from directive orientation to facilitative one,

acting as a role model of collaboration and communication.

Leveraging Technology and Innovation:

Start-up companies have an upper hand in leveraging new technologies under Agile development. The study by Triando et al. (2024) founded that generative AI is still a promising enabler of Agile practices, where it could be used to automate the process of backlog prioritisation, and to improve product innovation. Tupsakhare (2022) also noted how AI integration can streamline sprint planning and enhance predictive analysis, though without compromising on Agile's human-centric ethos. Liyanage (2025) argues that in hardware-intensive fields, in which the medical device sector is one, Agile adaptation involves adjustments to Agile practices to match regulatory settings while maintaining iterative delivery. Together, these studies highlight that technology-enabled approaches can extend the effectiveness of Agile when contextualised appropriately.

Education and Training:

Education and training have been named as key best practises for achieving successful Agile adoption. Chowdhury et al. (2025) illustrate that student collaborating with Agile methods in educational projects favourably influences the delivery outcomes, thus reinforcing the importance of experiential learning. Pařová and Vejačka (2023) reinforced this claim further by demonstrating the significant gains that project-based learning environments gain from Agile's iterative and reflective practices. In the context of startups, investing in training ensures that the training team members have a thorough understanding of Agile that goes beyond the ritualistic compliance of merely going through the motions-which addresses the risks of a superficial or ineffective adoption (Santos et al., 2025).

Sustainability and Long-Term Practices:

Recent studies suggest that integrating sustainability into Agile best practises is a good idea. Rinne (2024) focused on the incorporation of sustainable software development into Agile models, asserting that this integration positions technological innovation in line with environmental and social targets. In a startup context, this not only strengthens the resilience

of the organisation but also appeals to investors and customers who increasingly consider sustainable practices. In this vein, Maharao (2024) noted that successful Agile implementation involves context-customisation, emphasising that best practices cannot be applied universally; they must adapt based on the organisation's maturity level.

2.8 Summary

In this chapter, the agile methodologies have been critically reviewed, and their adoption has been analysed in the context of startups, along with the opportunities and challenges involved. Agile was shown to deviate from the traditional linear project management techniques by placing importance on flexibility, teamwork and incremental delivery. Once focused on software development, it has now become a generalised organisational philosophy that is used across different sectors.

The startups were identified as particularly conducive environments for the agile adoption as they tend to face high uncertainty, resource scarcity, and need to rapidly innovate. Agile tools are claimed to promote efficiency pertaining to the experimentation, customer engagement, and learning. Adoption patterns differ across different sectors, organisational maturity and leadership styles: early-stage firms may prefer lightweight tools for speed, while growing organisations may put more structured frameworks in place. Leadership commitment and alignment of culture were cited as critical factors for the shift from compliance to meaningful change in organisations.

Agile's impact on productivity and efficiency was also explained. Empirical studies highlight gains from waste reduction, autonomy and the ability to dynamically adapt to changing priorities. However, measurement problems still remain as productivity in agile environments includes both product and more value addition. The growth of hybrid and digital work has led to the expansion of agile and tools like Jira and Trello enabling distributed collaboration and global coordination.

Collaboration and communication were agreed upon as the fundamental foundations for success, and practices like stand-ups and retrospectives were highlighted as supportive. Yet barriers exist, such as cultural resistance, leadership misalignment, regulatory constraints, and scaling difficulties. The chapter ended by pointing towards strategies such as incorporating concepts from the Lean Startup, investing in training, and creating a customer-centred process to improve agile effectiveness.

CHAPTER METHODOLOGY

3:

3.1 Introduction

This chapter articulates and justifies the methodological architecture adopted to investigate the effectiveness of Agile project management tools in early-stage UK IT startups.

Methodology provides the bridge between the study's aims and defensible knowledge claims by specifying the philosophical stance that guides inquiry, the logical approach to reasoning, the overall research design, and the concrete procedures for generating and analysing evidence (Verma et al., 2024).

Given the socio-technical and context-dependent nature of Agile practice in nascent ventures, the chapter advances an interpretivist orientation and an inductive logic of inquiry, operationalised through a qualitative, exploratory multi-case design (Mohajan, 2018). It details the development of research questions, the use of semi-structured interviews with founders, project managers, and developers conducted via Microsoft Teams, and a purposive sampling strategy appropriate to early-stage firms. Procedures to enhance trustworthiness credibility, dependability, confirmability, and transferability are outlined alongside ethical safeguards, including informed consent, confidentiality, and secure data stewardship (Tracy, 2024).

Finally, the chapter explicates the analytic strategy: reflexive thematic analysis following Braun and Clarke's framework, supported by systematic coding practices. Collectively, these choices align the study's epistemic commitments with rigorous, transparent techniques suited to capturing practitioners' lived experiences and generating practically meaningful, theoretically informed insights (Braun and Clarke, 2021).



Figure 2: Saunders Research Onion Method, Source

3.2 Research Philosophy:

This study is grounded in interpretivism, an epistemological position that holds social reality to be constructed through meanings negotiated by individuals within specific contexts. In contrast to positivism which privileges objective measurement and law-like generalisations interpretivism seeks to understand how actors make sense of their worlds and how such sense-making shapes action (Acharyya and Bhattacharya, 2019). The phenomenon under investigation the perceived effectiveness of Agile project management tools in early-stage IT startups is inherently socio-technical: the same tool (e.g., a backlog board or sprint analytics) can enable or constrain performance depending on team norms, leadership practices, resource scarcity, and market uncertainty. Capturing these contingencies requires an orientation that prioritises lived experience, language, and situated practice over variable-centric measurement (Greening, 2019).

Three considerations motivate this stance. First, meaning plurality: founders, project managers, and developers often attribute divergent purposes to Agile tools (coordination, accountability, learning), and these attributions evolve as startups pivot or scale. Interpretivism legitimises these multiple, sometimes conflicting, interpretations rather than reducing them to a single metric (Basias and Pollalis, 2018). Second, contextual embeddedness: early-stage ventures operate under volatile, resource-constrained conditions; therefore, the affordances and frictions of tools are inseparable from organisational culture and growth stage. An interpretivist lens treats context as constitutive of the phenomenon, not merely background noise (Bairagi and Munot, 2019). Third, researcher reflexivity: the investigator is an instrument of knowing whose questions, presence, and theoretical sensitivities shape what is observed and how it is interpreted. Acknowledging and documenting this influence enhances transparency and rigour (Terry and Hayfield, 2020).

This stance aligns with the study's inductive logic and qualitative design, privileging depth over breadth and aiming to generate analytically rich insights with practical relevance for startup practice (Sileyew, 2019). While interpretivism foregoes statistical generalisability, it strives for theoretical transferability by producing thick descriptions and nuanced conceptualisations that readers can map onto comparable settings (Collis and Hussey, 2021). Moreover, interpretivism is compatible with Indigenous and relational methodologies that emphasise dialogic knowledge co-construction a reminder to approach interviews as

respectful knowledge exchanges rather than extractive interrogations (Mahuika and Mahuika, 2020). In sum, interpretivism provides a coherent philosophical foundation for examining how Agile tools are enacted, negotiated, and judged effective within the distinctive life worlds of early-stage UK startups, thereby supporting the study's aim to surface practice-proximal, contextually grounded understandings.

3.3 Research Approach

The study adopts an inductive approach, in which understandings are developed from empirical accounts rather than imposed a priori from formal hypotheses. Induction is especially appropriate where the literature signals conceptual under-specification and contextual contingency as is the case with the perceived "effectiveness" of Agile tools in early-stage startups, a construct likely to vary with organisational maturity, team composition, and market turbulence (Ragab and Arisha, 2018). Unlike deduction, which proceeds from theory to testable propositions, induction privileges pattern discovery within participants' narratives, allowing analytic categories to emerge iteratively through close engagement with the data (Gupta and Gupta, 2022).

Methodologically, the inductive stance is operationalised through semi-structured interviews and reflexive, iterative analysis. Early cycles of data collection inform subsequent questioning, enabling theoretically sensitive sampling and probing as salient ideas surface (Gofe et al., 2022). Coding proceeds from descriptive to interpretive levels, moving from initial labels to candidate themes that account for regularities, contrasts, and boundary conditions in how practitioners enact and evaluate Agile tools (Saldaña, 2021). Throughout, the researcher maintains analytic memos to document emergent conjectures and to track how provisional explanations are refined or rejected in light of new evidence, thereby strengthening the transparency and dependability of inference (Byrne, 2022).

Induction aligns tightly with the study's interpretivist philosophy: both assume that meanings are locally produced and that credible knowledge arises from thick, situated accounts rather than variable-centric measurement (Hair et al., 2019). At the same time, the approach aims

for theoretical transferability by articulating mid-range conceptual propositions (e.g., mechanisms linking tool affordances to collaboration or adaptability) that readers can evaluate against cognate contexts (Odiadi, 2024). While the design does not seek statistical generalisation, it does pursue analytic generalisation, where claims are warranted by the coherence and evidential adequacy of the emergent explanation vis-à-vis the dataset (Takona, 2024). In sum, an inductive approach offers a rigorous, context-attuned pathway to illuminate how and why Agile tools are judged effective within early-stage UK IT startups.

3.4 Research Design:

To operationalise the interpretivist, inductive orientation, the study employs a qualitative, exploratory multiple-case design focused on early-stage UK IT startups that actively use Agile project management tools (Sileyew, 2019). Qualitative designs are particularly suited to questions of meaning, practice, and experience domains where context and nuance are constitutive rather than incidental (Verma et al., 2024). An exploratory stance is warranted because the construct of “tool effectiveness” in nascent ventures remains conceptually under-specified in the literature and likely to be contingent on organisational stage, resource profile, and team culture (Basias and Pollalis, 2018). The multiple-case logic strengthens analytic generalisation by enabling comparison across heterogeneous settings to identify convergent patterns and context-specific variations (Mukherjee, 2019).

Case and unit of analysis. Each startup constitutes a case, defined by three boundary conditions: (a) age < five years; (b) headcount < fifty employees; and (c) active use of at least one Agile tool (e.g., Jira, Trello, Asana, ClickUp) for delivery coordination. Within cases, the unit of analysis is the team-level enactment and perception of Agile tools how founders, project managers, and developers adopt, adapt, and evaluate those tools in day-to-day work. Bounding the case in this way provides conceptual coherence and enables “thick description” of socio-technical practice (Bell, Harley and Bryman, 2022).

Methodological coherence. The design integrates semi-structured interviews as the primary evidence source with documentary materials (e.g., onboarding guides, workflow screenshots

with identifying information redacted, publicly available engineering blog posts) for method triangulation, enhancing credibility without diluting the centrality of lived experience (Bazeley, 2020). Interviews are the preferred mode for eliciting participants' interpretive frames and practical reasoning, while documents afford insight into formalised routines and espoused tool affordances (Patel and Patel, 2019).

Cross-case comparison. An initial within-case analysis produces provisional narratives about how tools are configured, what "effectiveness" is taken to mean, and which mechanisms link tool features to collaboration, productivity, or adaptability. A subsequent cross-case synthesis then examines similarities and contrasts, seeking explanatory propositions that travel across contexts (Mukherjee, 2019). This sequencing guards against premature abstraction while supporting the study's aim to generate practically meaningful insights that retain fidelity to context.

Procedural flexibility with systematic discipline. While interviews are guided by a topic protocol, the design remains adaptively responsive: emergent themes inform later probing and, where appropriate, theoretical sampling within the inclusion criteria (Verma et al., 2024). Flexibility is counterbalanced by systematic record-keeping (interview logs, reflexive memos, decision trails) to maintain dependability and transparency (Acharyya and Bhattacharya, 2019).

Mode and setting. Interviews are conducted via Microsoft Teams, accommodating geographic dispersion and the time scarcity typical of startup roles. Synchronous video supports rapport and contextual cues while enabling secure recording and accurate transcription, subject to explicit consent (Patel and Patel, 2019). All identifiable information is anonymised at source, and artefacts are stored on encrypted, access-controlled devices.

Limitations and design trade-offs. The design does not aim for statistical representativeness; instead, it pursues theoretical transferability through rich cases and transparent analytic reasoning (Hair et al., 2019). Researcher presence and interpretive judgment are constitutive

of the process; these are addressed through reflexivity and peer debriefing rather than denied (Li and Zhang, 2022). Finally, while documents supplement interviews, they are treated as situated texts whose claims are interpreted in light of participant accounts, not as neutral ground truth (Odiadi, 2024).

3.5 Development of the Research Questions

The research questions were derived through an iterative alignment of the study's aim, the identified literature gaps, and a qualitatively oriented, interpretivist logic of inquiry. Prior reviews indicate that most empirical studies of Agile project management tools privilege large, relatively mature organisations or treat "tool effectiveness" as a decontextualised construct, under-specifying how meanings, practices, and constraints in early-stage ventures shape outcomes (Basias and Pollalis, 2018). In response, the present study formulates open-ended questions designed to elicit practitioners' situated interpretations and to surface processual links between tool use and perceived value, consistent with inductive qualitative research (Mohajan, 2018).

Accordingly, four questions structure the inquiry:

RQ1. How are Agile project management tools currently adopted and utilised within early-stage IT startups in the UK?

RQ2. What are the perceived benefits and challenges of using Agile project management tools for project planning, communication, and delivery in early-stage IT startups?

RQ3. In what ways do Agile tools influence efficiency, innovation, and adaptability in dynamic startup environments?

RQ4. What best practices and recommendations can be proposed to help early-stage IT startups maximise the value derived from Agile project management tools?

These questions operationalise the study's objectives while remaining sufficiently flexible to accommodate emergent themes. They privilege depth and meaning over variable-centric measurement, thereby supporting analytic generalisation from richly evidenced themes

rather than statistical inference (Ragab and Arisha, 2018). Furthermore, their phrasing anticipates evaluation of saturation and thematic adequacy during analysis and reporting, ensuring methodological coherence across design, data collection, and interpretation.

3.6 Data Collection Methods:

In keeping with the interpretivist, inductive orientation and the exploratory multiple-case design, the primary method of evidence generation comprised semi-structured interviews with practitioners in early-stage UK IT startups (Kumar, 2018). Semi-structured interviewing balances a consistent topical scaffold with conversational flexibility, enabling participants to articulate situated meanings, narrate practices, and surface contingencies that a fixed instrument might obscure (Gofe et al., 2022). An interview guide organised prompts around four domains adoption/enactment of Agile tools, perceived benefits, experienced challenges, and situated assessments of “effectiveness” while inviting elaboration through probes and follow-ups (Kapur, 2018).

Participants and numbers. The study targeted 7-8 informants occupying roles central to tool use and governance founders, project managers/scrum masters, and developers/engineers to capture complementary vantage points on coordination, accountability, and learning. This range is methodologically defensible for qualitative inquiry oriented to thematic saturation, where additional interviews cease to yield novel codes or insights (Guest et al., 2020). Recent empirical syntheses indicate that meaning saturation in focused, relatively homogenous domains is often achieved within similar ranges, with “near-saturation” typically observable earlier and “fuller” saturation attained by the upper bound (Hennink and Kaiser, 2022). Sampling proceeded iteratively, allowing emergent themes to inform subsequent recruitment and questioning within the predefined inclusion criteria (Lindlof and Taylor, 2017).

Mode and logistics. Interviews were conducted remotely via Microsoft Teams, a modality suited to geographically dispersed startups and the time scarcity typical of venture contexts. Synchronous video enhanced rapport and afforded paralinguistic cues while facilitating secure audio recording (with prior consent) and accurate verbatim transcription (Patel and Patel, 2019). Sessions were scheduled for 45–60 minutes, with latitude to extend where

participants wished to elaborate. Field notes documented contextual details (team size, tool stack, delivery cadence) and reflexive observations to support later analysis and auditability (Saldaña, 2021).

Instrument development and piloting. The interview guide was informed by the literature review and the study's research questions, and then piloted with two practitioners meeting the inclusion criteria to refine sequencing, clarity, and prompting depth (Kumar, 2018). Minor adjustments reduced leading phrasing, clarified definitions (e.g., "adaptability"), and added probes about tool configuration (workflows, integrations) to elicit concrete enactments rather than abstract preferences (Bell, Harley and Bryman, 2022).

Supplementary materials and triangulation. To enhance credibility and provide contextual anchors for participants' accounts, the study invited informants to share non-confidential artefacts such as redacted workflow screenshots, onboarding notes, or public engineering blog posts on a voluntary basis (Li and Zhang, 2022). Additionally, publicly available secondary sources (company websites, product pages detailing tool features) were consulted to situate claims about tool affordances. These materials were not treated as neutral ground truth but as corroborative and contrastive texts interpreted alongside interview narratives (Tracy, 2024).

Data management and stewardship. All digital artefacts (recordings, transcripts, notes) were stored on encrypted, access-controlled drives; files were assigned pseudonymous identifiers immediately after collection to protect identities. A structured file-naming convention and a contemporaneous data log recorded interview metadata (date/time, role, case, duration) to support traceability from raw data to reported themes (Bazeley, 2020). Transcripts were cleaned for transcription errors before entry into the analysis corpus, with any clarifications sought promptly from participants where necessary (Saldaña, 2021).

Overall, the semi-structured interview strategy augmented by limited document elicitation and rigorous data stewardship provides a methodologically coherent, ethically attentive

means of generating rich, practice-proximal accounts of Agile tool enactment and perceived effectiveness in early-stage UK IT startups.

3.7 Sampling Strategy:

This study employed purposive sampling to recruit information-rich participants whose experience could illuminate the enactment and perceived effectiveness of Agile tools in early-stage UK IT startups (Nayak and Singh, 2021). Purposive sampling is appropriate where the objective is depth of understanding rather than population estimation, enabling deliberate selection of cases that are most likely to yield theoretically meaningful insights (Mukherjee, 2019).

Table 1: Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Organisation Type	UK-based IT startups	Non-UK firms; non-IT companies; consultancies/agencies speaking about clients
Age of Firm	Founded < 5 years prior to fieldwork	Firms older than 5 years (scale-ups or established enterprises)
Size of Firm	Employing < 50 staff	Firms with 50 or more employees
Tool Usage	Active use of at least one Agile project management tool (e.g., Jira, Trello, Asana, ClickUp)	Firms using ad-hoc spreadsheets only, or no formal Agile tools
Participant Role	Founders, project managers/scrum masters, or developers with direct tool experience	Consultants, external contractors, or administrative staff without direct tool experience
Experience	Minimum 6 months of direct, recent use of Agile tools	Participants with no or very limited exposure to Agile tools

Within purposive logic, the study pursued maximum-variation sampling to capture heterogeneity likely to condition interpretations of “effectiveness” (e.g., different tool stacks, product domains, team sizes, funding stages). This strategy supports analytic transferability by enabling cross-case patterning while retaining sensitivity to context (Bell, Harley and Bryman, 2022). Recruitment proceeded via professional networks, startup communities, and targeted outreach on professional platforms; gatekeeper consent was sought where appropriate to approach team members.

Sample size was guided by thematic saturation principles rather than a priori numeric targets. Empirical syntheses indicate that in focused domains with relatively homogeneous participant expertise, 15–25 interviews typically suffice to achieve code and meaning saturation, though the precise point depends on study scope and analytic aims (Squire et al., 2024). Consistent with prior sections, the study planned for this range, monitoring saturation iteratively through memoing and rolling codebook review.

Two additional safeguards enhanced credibility. First, role triangulation ensured each case included, where feasible, more than one role category (e.g., founder and developer) to surface intra-organisational divergences. Second, theoretical sampling within bounds was used modestly: as emergent themes crystallised, later invitations prioritised cases likely to elaborate, contrast, or challenge provisional explanations while remaining within inclusion criteria (Ahmad and Wilkins, 2025). Collectively, this sampling strategy aligns with the interpretivist, inductive design by privileging relevance, heterogeneity, and saturation-driven adequacy over statistical representativeness.

3.8 Validity and Reliability:

In qualitative inquiry, the parallel to statistical validity and reliability is trustworthiness, typically articulated through credibility, transferability, dependability, and confirmability (Kumar, 2018). This study advances credibility via method triangulation and participant engagement. First, interview evidence is complemented where available by non-confidential artefacts (e.g., redacted workflow notes) to corroborate or problematise accounts (Bazeley, 2020). Second, brief member checks on interpretive summaries enable participants to clarify emphases without shifting analytic ownership (Tracy, 2024). Credibility is further supported through prolonged engagement with transcripts, iterative memoing, and the systematic search for disconfirming evidence during coding (Byrne, 2022).

Dependability is addressed through a transparent audit trail documenting sampling decision, interview iterations, codebook evolution, and theme refinement so that analytic moves are inspectable and replicable in logic if not in outcome (Acharyya and Bhattacharya, 2019). To

mitigate idiosyncratic interpretation, a subset of transcripts undergoes peer review / intercoder discussion to surface blind spots and calibrate coding practices used here as a developmental dialogue rather than a mechanical reliability coefficient (O'Connor and Joffe, 2020).

Confirmability is pursued through reflexive practices: positionality statements and analytic memos explicitly register the researcher's assumptions and their influence on interpretation, with theme claims grounded in verbatim extracts to evidence warrant (Terry and Hayfield, 2020). Finally, transferability is supported by thick description of case contexts (venture stage, team composition, tool stack) so readers can assess applicability to cognate settings (Collis and Hussey, 2021).

In aggregate, these strategies triangulation, member engagement, auditability, reflexivity, and evidential transparency constitute a coherent quality framework aligned with contemporary guidance for rigorous qualitative analysis and reporting (Kiger and Varpio, 2020).

3.8 Ethical Considerations

The study adheres to established ethical principles of informed consent, confidentiality, non-maleficence, and data stewardship appropriate to business research with professional participants (Hair et al., 2019). Prospective informants receive a plain-language participant information sheet detailing purpose, procedures, anticipated risks/benefits, voluntary participation, and withdrawal rights without penalty; consent is recorded prior to interviewing (Gupta and Gupta, 2022). Because interviews may touch on sensitive experiences (e.g., delivery failures, team conflict), the protocol permits question skipping, pauses, or termination at the participant's discretion (Lindlof and Taylor, 2017).

Confidentiality is protected through immediate pseudonymisation, removal of identifying particulars (company names, unique product features), and paraphrasing of potentially revealing quotations while preserving analytic meaning (Yin, 2018). All recordings, transcripts, and notes are stored on encrypted, access-controlled drives with restricted permissions;

retention and destruction follow institutional policy and legal requirements (Gupta and Gupta, 2022). When documentary artefacts are offered by participants, only non-confidential versions are accepted, with any third-party references redacted before analysis (Li and Zhang, 2022).

Given the interpretivist stance, the researcher adopts a relational ethic treating interviews as respectful knowledge exchanges rather than extractive encounters, remaining alert to power dynamics, and communicating findings in ways that avoid organisational harm (Gofe et al., 2022). Collectively, these measures ensure participants' rights and welfare are prioritised while safeguarding the integrity and credibility of the research process.

3.9 Data Analysis Techniques:

The study employed reflexive thematic analysis as articulated by Braun and Clarke, a flexible yet rigorous method for identifying, analysing, and interpreting patterned meaning across qualitative datasets while honouring the interpretivist, inductive commitments of this research (Braun and Clarke, 2021). Analysis proceeded through the six recursive phases familiarisation, coding, theme development, theme review, theme definition/naming, and reporting treated not as a linear checklist but as an iterative, sense-making cycle in which insights were refined through continual movement between data, codes, and candidate themes (Kiger and Varpio, 2020). Following verbatim transcription, the researcher undertook prolonged immersion reading and annotating each transcript to note initial analytic hunches, contextual cues (e.g., team size, tool stack), and potential mechanisms linking tool use to collaboration, productivity, or adaptability; these annotations informed a first-cycle coding pass conducted at the semantic level to retain participants' meanings before cautiously moving to latent coding where underlying assumptions or organisational logics were implicated (O'Connor and Joffe, 2020).

Coding was carried out in qualitative analysis software to support transparency and auditability, with a structured codebook evolving reflexively rather than being fixed a priori; codes were periodically consolidated, split, or redefined to enhance conceptual clarity, and

analytic memos captured developing propositions and negative cases that challenged emerging interpretations (Li and Zhang, 2022). Theme construction privileged coherence, centrality, and distinctiveness, asking of each candidate theme whether it captured an important pattern in relation to the research questions and whether it was adequately evidenced across cases, while guarding against over-fragmentation or premature abstraction (Byrne, 2022). Quality practices included peer debriefing on a subset of transcripts and theme maps, aimed not at producing high intercoder coefficients but at sharpening definitions and surfacing alternative readings; where intercoder dialogue was used, it was framed as a tool for reflexive discussion rather than a positivist reliability test, consistent with contemporary guidance (Braun and Clarke, 2023). Attention to saturation was documented pragmatically: the team tracked the point at which additional interviews ceased to generate novel codes (code saturation) and when existing themes became richly elaborated with varied exemplars (meaning saturation), aligning with recent recommendations in qualitative methodology (Squire et al., 2024).

Finally, the reporting phase integrated thick description and illustrative quotations to demonstrate analytic claims and boundary conditions, while cross-case narrative contrasts were used to articulate contextual contingencies (e.g., differences between lightweight Kanban use and deeply integrated toolchains), thereby supporting analytic generalisation without overstating transferability (Ahmed et al., 2025).

3.10 Summary:

This chapter has articulated a coherent and defensible methodological framework for examining how Agile project management tools are enacted and judged effective in early-stage UK IT startups. An interpretivist stance and inductive logic underpinned a qualitative, exploratory multiple-case design, enabling rich engagement with practitioners' lived experiences. Semi-structured interviews conducted via Microsoft Teams with purposively sampled founders, project managers, and developers generated depth and variation across cases, while carefully bounded inclusion criteria preserved conceptual focus. Trustworthiness was supported through triangulation, reflexivity, transparent audit trails, and attention to saturation, alongside robust ethical safeguards that protected participant autonomy,

confidentiality, and data security. Analysis followed a reflexive thematic approach, progressing from immersion and open coding to the construction and refinement of coherent themes capable of offering practice-relevant explanations. Collectively, these choices align the study's aims with rigorous, context-attuned procedures. The next chapter presents the empirical findings, organising themes around the research questions and illustrating them with thick, situated accounts from participants.

CHAPTER 4: RESULTS, ANALYSIS AND DISCUSSION

4.1 Introduction

Chapter 4 forms the analytical core of this dissertation by presenting and interpreting the empirical evidence generated from semi-structured interviews with participants working in early-stage IT startups in the UK. The overall aim of the study is to evaluate the effectiveness of Agile project management tools in enabling productivity, collaboration, and project success, and to identify gaps between intended benefits and practical enactment in startup environments. Consistent with an interpretivist qualitative stance, the analysis prioritises participants' situated meanings of "effectiveness" and examines how tool use is shaped by organisational context, leadership practice, and growth-stage pressures. This chapter therefore separates and then deliberately reconnects two strands of analysis: first, the findings (what participants reported and how patterns converged across accounts), and second, the discussion (how those patterns can be interpreted through Agile, socio-technical, and startup research, including recent refinements to what constitutes Agile project management as a field of practice) (Dong et al., 2024).

The thematic analysis followed an inductive logic. Interview recordings were transcribed and subjected to iterative coding, moving from initial descriptive labels (e.g., "board becomes outdated," "tool overload," "visibility regained") to higher-order themes that captured mechanisms and boundary conditions (e.g., "tool affordances depend on discipline," "formalisation–flexibility tension"). The analytic procedure aligned with stepwise thematic development practices that emphasise transparent movement from codes to themes and conceptual consolidation (Naeem et al., 2023). Throughout, the analysis was treated as reflexive rather than mechanical: theme construction required interpretive judgement about meaning, emphasis, and context, and the write-up aimed to avoid superficial "topic lists" by focusing on patterned explanations. This orientation is consistent with recent critiques calling for clearer reporting of reflexive thematic analysis decisions and evidential warrants (Braun and Clarke, 2024).

Saturation was assessed pragmatically across seven to eight participants spanning founder/CTO, product/project management, software engineering, operations, and UX/design roles. While perspectives differed by function, strong convergence emerged around how teams adopt tools under growth pressure, how governance practices determine whether tools support coordination or become burdensome, and how “agility” is experienced as a balance between responsiveness and control.

The chapter is structured around four themes aligned to the research questions: adoption and utilisation, benefits and challenges for planning, communication and delivery, efficiency, innovation and adaptability, and cross-functional collaboration and idea generation. The chapter concludes by synthesising insights across research questions and preparing the ground for Chapter 5’s implications, recommendations, and methodological reflection.

4.2 Theme 1: Adoption and Utilisation of Agile Tools in Early-Stage IT Startups

4.2.1 Drivers of Agile Tool Adoption

Findings: Participants consistently described adoption as a response to growth-triggered coordination strain rather than ideological commitment to Agile. Early-stage teams initially relied on informal coordination through Slack threads, Google Docs, and ad-hoc check-ins. As headcount increased and product scope diversified, participants reported a breakdown in shared visibility: work became harder to track, priorities conflicted, and dependencies surfaced too late. One founder described this shift as a loss of collective “line-of-sight”: “When we were five people, Slack was enough. At twelve, we started losing visibility. Things slipped, not because people didn’t care, but because nobody had a single picture of what mattered this week” (P1, Founder). A CTO echoed a similar logic, framing tool adoption as a traceability and scalability requirement: “We needed traceability. It wasn’t about being ‘more Agile’ in a buzzword sense. It was about knowing what’s blocked, what’s merged, what’s shipping, and why” (P4, CTO). Decisions to adopt were usually founder- or CTO-led, with product managers sometimes advocating for more structured backlog practices once customer demands increased. Several accounts also acknowledged external influence:

accelerators, incubators, and investors implicitly signalled that disciplined delivery and reporting were markers of operational maturity.

Discussion: These patterns align with evidence that startup Agile practice is often pragmatic and contingent, shaped by resource constraints and rapid change rather than formalised methodology adoption (Klotins et al., 2021). Tool adoption can be understood as a “coordination response” to growth-stage complexity, where informal communication no longer scales. The accounts also resonate with research showing that agility and quality tensions become salient as product complexity rises, particularly when teams must deliver quickly while maintaining acceptable assurance (Berg et al., 2020). While some Agile literature centres on process fidelity, participants’ narratives instead emphasised organisational survival: reducing coordination failure, enabling prioritisation under uncertainty, and managing a growing backlog of customer requests.

From a practice perspective, adoption drivers resemble broader adoption dynamics identified across project contexts: teams often move toward Agile tool structures when they face uncertainty and interdependence that make linear planning brittle (Chathuranga et al., 2023). Importantly, participants distinguished startup adoption logic from large-firm transformation narratives: rather than “rolling out Agile,” startups often “pull in” tools when coordination costs exceed the friction of adding structure. This also reflects wider transformation frameworks that stress cultural and competency shifts, not merely tool installation, as organisations formalise project work over time (Ndou et al., 2024). In short, tool adoption in these startups functioned less as a doctrinal shift and more as a strategic adaptation to growth-stage volatility.

4.2.2 Tool Selection and Purpose Differentiation:

Findings: Across interviews, participants described a relatively consistent division of labour between tools. Jira was most often positioned as the “source of truth” for delivery, particularly for engineering workflow management (sprints, Kanban boards, bug tracking). Trello and Notion were frequently used for early discovery work, ideation, lightweight roadmapping,

and documentation. Slack remained central for rapid communication but was not considered a reliable governance mechanism for work tracking. A product manager summarised the logic as follows: “Slack is where we talk. Jira is where commitments live. Notion is where we think” (P2, Product Manager). A recurring preference was tool minimalism. Participants viewed tool sprawl as a risk that undermines shared understanding. Where multiple tools existed, teams tried to define “what belongs where” to avoid duplication and misalignment.

Discussion: Tool differentiation can be interpreted through a socio-technical lens in which tools operate as boundary objects shared artefacts that enable coordination across roles while allowing local interpretations of tasks and progress (Zaitsev, Gal and Tan, 2020). Participants’ insistence on a single “delivery truth” reflects the need to stabilise coordination in environments where work is inherently fluid. At the same time, the use of lightweight tools for discovery suggests that different phases of work demand different affordances: ideation benefits from flexibility, while delivery benefits from constraints, workflow visibility, and traceability.

These findings also reflect how collaboration tools shape behaviour through affordances what actions they enable or constrain especially in digitally mediated collaboration settings (Waizenegger et al., 2020). Teams “chose” Jira not just as software, but as a structure that forces articulation of priorities, acceptance criteria, and responsibility. Conversely, participants avoided over-formalising early discovery, implying that too much structure too early can reduce creative search.

Comparative assessments of popular tools provide additional context: Trello and Asana-style interfaces are often perceived as easier for lightweight coordination, while more feature-rich tools support deeper reporting and workflow governance (Kamila and Marzuq, 2024). However, participants’ accounts caution that adopting multiple tools without disciplined boundaries creates fragmentation. This echoes the view that tool choice should reflect Agile mindset tools are meant to support adaptive work, not create parallel bureaucracies (Mordi and Schoop, 2022). In resource-constrained startups, tool fragmentation is not merely inefficient; it threatens the shared cognitive map teams need to navigate uncertainty.

4.2.3 Introduction, Ownership, and Governance of Tools:

Findings: Participants described tool introduction as gradual rather than formally trained. Most teams began with a basic board and evolved toward more structured rituals (planning, grooming, retros) only when pain points emerged. Tool ownership commonly sat with a product manager or engineering lead, with founders/CTOs retaining strategic oversight. Admin rights were restricted to prevent uncontrolled workflow changes. Multiple participants explicitly rejected excessive customisation, linking it to process overhead: “We tried adding statuses and fields to ‘make it accurate,’ and it just got heavier. People stopped updating. The board looked precise but it wasn’t real” (P3, Software Engineer). Another participant described governance as less about rules and more about sustaining trust: “The biggest governance is keeping the board honest. If the board lies, the tool is dead” (P7, Founder).

Discussion: The governance theme reflects a key insight: tool effectiveness depends on leadership practice and cultural embedding, not software features alone. Tool support research shows that collaboration gains depend on how teams enact tool-supported routines, particularly in Agile environments where communication and coordination are continuous (Calefato et al., 2020). Participants’ resistance to over-customisation also aligns with evidence that scaling Agile (or hybridising it) can introduce complexity that undermines responsiveness if not carefully adapted to context (Almeida and Bálint, 2024). Even in small teams, “process theatre” can emerge when tool usage becomes performative optimising the appearance of control rather than improving delivery.

The broader Agile research base also warns that tool structures can become proxies for governance as organisations scale, potentially reproducing large-scale Agile complexity without corresponding benefits (Uludağ et al., 2022). Participants’ accounts suggest that startups actively avoid this trap by limiting custom workflows and privileging a minimal set of practices that keep coordination functional. Their logic resembles a “fit-for-stage” approach: formalise only when coordination demands it, and keep governance light enough to preserve adaptability. This also resonates with work showing that Agile adoption in hardware or complex contexts often triggers debates about how much structure is necessary to protect quality while maintaining agility (Weichbroth, 2022). In startups, the challenge is similar but

accelerated: governance must be just strong enough to coordinate, but not so heavy that it slows learning and delivery.

4.3 Theme 2: Benefits and Challenges for Planning, Communication, and Delivery

4.3.1 Planning and Coordination Benefits

Findings: Theme 2 examines how Agile project management tools shape three tightly coupled areas of startup performance: planning, communication, and delivery. Across interviews, participants rarely discussed these domains as separate. Instead, they described a loop: planning becomes credible when communication is clear and delivery is stable; communication improves when planning is visible; and delivery becomes more reliable when both planning and communication reduce ambiguity. At the same time, participants highlighted that Agile tool can introduce new forms of friction. They can convert uncertainty into administrative work, shift miscommunication into asynchronous channels, and create incentives to optimise for what is measurable rather than what is meaningful. This theme therefore captures both the “value promise” of tools (visibility, alignment, coordination) and the “shadow costs” that emerge when tools are misinterpreted as control systems rather than coordination systems.

4.3.1 Planning and Coordination Benefits

Findings: The clearest benefit reported was planning visibility. Participants described moving from informal coordination where priorities lived in people’s heads or were buried in chat threads to explicit, shared representations of work. Visibility helped startups prioritise features, identify dependencies, anticipate bottlenecks, and reduce rework through clearer acceptance criteria. Several participants explained that making work visible reduced ambiguity about “what matters now,” which made commitments more realistic and eased cognitive load. One CTO captured the shift from implicit negotiation to explicit prioritisation: “Before the board, every sprint was a negotiation in people’s heads. Now priorities are explicit and we can have the hard conversations earlier” (P4, CTO). For early-stage teams, those “hard conversations”

typically involved cutting scope, rejecting low-value requests, and sequencing work to protect focus.

Participants also indicated that planning tools helped align delivery with strategic goals, particularly when founders were under pressure to demonstrate traction or progress to external stakeholders. However, this alignment was often fragile. Several interviewees noted that goal frameworks could create tension with day-to-day volatility: plans were useful until customer escalations or market signals forced rapid reprioritisation. In practice, teams valued tools most when they supported re-planning rather than preserving a fixed plan.

Discussion: These findings align with coordination research indicating that Agile planning benefits arise when tools stabilise dependencies and create shared understanding of work-in-progress (Stray et al., 2022b). In startup environments where roles overlap and priorities shift shared boards provide a single coordination surface that reduces ambiguity and prevents work from fragmenting across individual mental models. The evidence also suggests that planning effectiveness is not simply “having a sprint plan.” Rather, it is the capacity for continuous planning under uncertainty, which is central to Agile’s adaptive logic.

Participants’ references to aligning work with goals connect with emerging evidence on OKRs in Agile teams. Goal-setting frameworks can improve focus, but only when they are translated into actionable, team-level practices that respect real delivery constraints (Stray et al., 2022a). Early-stage startups often struggle with this translation because strategic direction is volatile: product-market fit is still emerging, and “what success looks like” changes quickly. As a result, tool-based planning was experienced as most effective when it operated as a living artefact updated, negotiated, and adapted rather than as a static schedule used to judge performance.

4.3.2 Communication and Transparency Effects

Findings: Participants reported that Agile tools reduced status chasing and improved transparency. Engineers described fewer interruptions because progress was visible, and

product roles reported fewer misunderstandings about the state of work and priority order. Visibility also reduced repeated clarification cycles: when tickets were well written, they served as shared reference points for what was being built and why. However, participants also identified communication costs introduced by tools. Notification overload was commonly mentioned, with participants describing a “constant stream” of pings that competed for attention. In addition, several participants described passive communication, where teams over-relied on comments and ticket updates rather than quick verbal alignment. A product manager summarised this pattern: “The board stopped the constant ‘where are we?’ questions, but it didn’t stop miscommunication. Sometimes it moved it into comments where tone and urgency get lost” (P2, Product Manager). Some teams also reported fragmented discussions across tools, with decisions scattered between Slack, tickets, and documentation systems, weakening shared context.

Discussion: These dynamics reflect broader evidence that digitally mediated collaboration can improve coordination while creating new communication risks particularly when tools are treated as substitutes for human interaction rather than complements (Stray and Moe, 2020). Participants’ concerns about lost tone and urgency underline a key limitation of asynchronous text communication: it can convey content but not always nuance. This is especially relevant in early-stage teams where rapid clarification and improvisation are common.

The findings also align with research on distributed teams showing that cultural differences and communication norms shape whether Agile practices become genuinely collaborative or drift into transactional exchanges (Šmite, Moe and Gonzalez-Huerta, 2021). When communication becomes overly tool-mediated, subtle signals confusion, disagreement, uncertainty can be missed or delayed. Hybrid working conditions intensify these dynamics because work is increasingly mediated through collaboration platforms. Evidence from hybrid working contexts suggests that tools such as Microsoft Teams can shape accountability, inclusion, and coordination quality, depending on how they are configured and socially enacted (Nyktarakis, 2022). Participants’ accounts further suggest that transparency can become performative if boards are used primarily to broadcast progress rather than to

support real dialogue and sense-making. This mirrors coordination research on working-from-anywhere settings, where teams require explicit strategies to maintain shared context and avoid fragmentation (Sporsem and Moe, 2022). More broadly, synthesis work reinforces that collaboration tools shape Agile outcomes through interaction with team norms how information is shared, how decisions are made, and how conflict is handled rather than through features alone (Hussein and Hassan, 2025). Thus, tools improved transparency but could not guarantee communication quality; communication remained a socio-cultural practice enacted through tools, not determined by them.

4.3.3 Delivery Challenges: Estimation, Scope, and Discipline

Findings: Delivery challenges centred on estimation, scope creep, and discipline under pressure. Participants described story points as useful for internal forecasting until they were reframed as deadlines by leaders or external stakeholders. When this happened, estimation lost its learning function and became a performance target. Multiple participants noted that this created incentives to “game” estimates, inflate points, or avoid surfacing uncertainty. Scope creep was made highly visible by tools boards showed new tickets entering sprints, priorities shifting, and planned work being displaced but visibility did not prevent the behaviour. Several participants reported a pattern of overloaded sprints caused by urgent customer requests repeatedly pre-empting planned work. An engineer captured the frustration: “The board shows scope creep perfectly. But seeing it isn’t the same as stopping it. We still get ‘just one more urgent thing’ every week” (P3, Software Engineer). In many accounts, delivery discipline depended on whether founders and product leaders protected teams from constant work intake.

Discussion: These findings highlight the limits of technical systems in enforcing discipline. Task allocation and dependency management remain difficult in Agile environments, particularly where teams are distributed, rapidly changing, or working across multiple priorities. Formal approaches struggle to capture the lived reality of allocation decisions and the negotiations that happen under pressure (Nundlall and Nagowah, 2022). Critiques of task allocation processes also suggest that “optimal allocation” is rarely achievable in practice; instead, teams rely on tacit knowledge, informal bargaining, and context-sensitive trade-offs that tools can

represent only partially (Ijaz et al., 2022).

Participants' frustrations around estimation reflect a broader tension between Agile's intent (learning, adaptability, value delivery) and managerial demands for predictability. When story points become performance indicators, teams may reduce transparency, hide uncertainty, or optimise for appearances. This is not a tool failure in isolation; it is a governance and interpretation failure. The interviews also suggest that delivery discipline depends heavily on leadership behaviour and intake control. Tools can expose overload and scope creep, but they cannot enforce strategic restraint unless leaders use visibility to protect focus rather than to demand more output.

4.3.4 Quality Assurance and Unintended Consequences

Findings: Participants generally agreed that Agile tools support quality assurance when workflows embed testing and bug tracking as non-optional steps. When "definition of done" included explicit QA expectations and was socially enforced, teams experienced better traceability and fewer regressions. However, when time pressure increased, QA was bypassed (tickets moved to "Done" prematurely) or became a bottleneck column where work piled up. Participants also identified unintended consequences: meeting overload from excessive rituals, micromanagement via dashboards, and a false sense of progress when metrics emphasised ticket throughput rather than product risk reduction. One product manager warned that dashboards can shift from coordination support to surveillance: "Dashboards can become surveillance. If leaders treat charts as control, people optimise for the chart, not for outcomes" (P2, Product Manager).

Discussion: These patterns align with evidence from growing startups showing that software quality practices vary significantly and are highly vulnerable to time pressure and speed-to-market demands (Pizzini et al., 2021). Tool-based QA is therefore best understood as scaffolding: it makes quality work visible and routinised, but it cannot replace engineering judgement or a quality-oriented culture. As Agile ecosystems become more data-rich, teams also face information management challenges: how to store, structure, and interpret work

artefacts without creating excessive overhead or fragmentation (Fawzy et al., 2025). Participants' "false progress" concerns reflect the risk that measurement becomes detached from value, encouraging local optimisation and performative compliance. Overall, unintended consequences illustrate a governance paradox: tools introduced to reduce coordination costs can increase bureaucratic load when rituals and metrics are pursued for their own sake rather than as enablers of learning and delivery.

4.4 Theme 3: Efficiency, Innovation, and Adaptability in Dynamic Startup Environments

4.4.1 Impact on Efficiency and Delivery Speed

Findings: Participants consistently reported that Agile tools supported improvements in cycle time and delivery speed when teams limited work in progress (WIP) and used boards to reduce context switching. Efficiency gains were described in operational terms: clearer prioritisation, more predictable handoffs, and stronger accountability for "what is actively being worked on" versus "what is merely planned." Multiple roles converged on a key mechanism: tools made overload visible, allowing teams to challenge the tendency to start too many tasks simultaneously. One operations manager captured this directly: "We didn't get faster because Jira existed. We got faster because we stopped starting everything at once, and Jira made that visible" (P5, Operations). This distinction appeared repeatedly: the tool did not create discipline, but it enabled discipline by making work states legible to the whole team.

Participants also linked efficiency to the granularity of work items. Smaller tickets, clearer acceptance criteria, and explicit ownership were described as practical steps that reduced rework and minimised the "hidden labour" of clarifying vague tasks mid-sprint. Engineers noted that when tickets were oversized or ambiguous, boards became performative: work moved across columns without real progress, and delivery speed became a misleading artifact of workflow status rather than actual value delivery.

Discussion: These accounts support the view that productivity in Agile environments is a socio-technical outcome rather than a technological one. Tools contribute by shaping visibility and feedback loops, but their impact depends on how teams interpret signals and adjust behaviour. Measurement systems and dashboards can make flow patterns and bottlenecks easier to see, yet they become valuable only if visibility supports learning and decision-making rather than blame allocation (Ulloa and Herrera, 2024). Participants' emphasis on WIP discipline also indicates that "efficiency" should not be reduced to throughput (tickets closed). Instead, the startups in this study valued reduced uncertainty, fewer rework loops, and the ability to maintain focus features associated with better flow, not simply more output. The empirical pattern suggests that Agile tools are most effective when teams treat them as shared coordination artefacts: a way to reduce coordination friction and align attention, rather than as administrative requirements that must be satisfied to produce clean metrics.

4.4.2 Agile Tools and Strategic Pivoting

Findings: Participants described a more mixed relationship between tools and adaptability. In planned pivots where new priorities could be discussed, clarified, and then reflected in the backlog tools were experienced as helpful. Teams could reorder epics, renegotiate scope, and track the knock-on effects of changes (e.g., deferred features, new dependencies, revised release expectations). However, when pivots were urgent triggered by production incidents, escalated customer dissatisfaction, or sudden market signals tools could slow action by creating a "replanning tax." Multiple participants described a pragmatic workaround: shifting temporarily into a "light Agile" mode, acting first, and reconciling the backlog afterward. A founder explained this succinctly: "When there's a crisis, you don't rewrite Jira. You fix the issue. Then you tidy the backlog after" (P7, Founder).

This behaviour was not framed as anti-Agile; rather, it was portrayed as a survival response. Participants argued that over-adherence to process under crisis conditions can be maladaptive, especially when the immediate goal is restoration of service, retention of a key customer, or rapid response to a competitor's move.

Discussion: The findings illustrate a persistent formalisation–flexibility tension. Tools enable disciplined reprioritisation and protect teams from chaos, but the same structures can create friction when rapid deviation is necessary. This “bureaucratic gravity” is not inherently negative; it can prevent thrash and enable traceability. Yet in startups, temporal agility shifting rapidly between structured planning and rapid action without breaking coordination emerges as a crucial capability. The accounts align with perspectives that entrepreneurial agility is increasingly tied to co-creation and adaptive market engagement, not only internal execution rhythms (Ahmed and Mustafa, 2025). In such contexts, pivot capacity depends on leadership decision-making, psychological safety (so teams can surface bad news quickly), and tolerance for temporary disorder. Tools support pivots best when they are configured for rapid reprioritisation and when teams accept that “board perfection” is not the objective during volatile episodes. The core interpretive insight is that tools can either enable or constrain adaptability depending on whether the organisation treats them as a means of coordination or as an end-state of control.

4.4.3 Experimentation, Learning, and Knowledge Retention

Findings: Innovation in these startups was frequently described as experimentation A/B tests, onboarding changes, feature trials, and rapid iterations based on user feedback. Participants reported that tools can support experimentation when teams explicitly track hypotheses, experimental tasks, and outcomes. In these cases, tickets functioned as scaffolding for learning: they recorded what was tried, how it was measured, and what decision followed. However, a recurring problem was that learning often disappeared. Outcomes were left undocumented, scattered across Slack messages, or stored in separate documents that were not linked to work items. A UX designer summarised this gap: “We run experiments, but the learning disappears unless someone writes it down. The board captures tasks; it doesn’t automatically capture insight” (P6, UX Designer).

Several participants pointed out that while Agile tools are excellent at capturing activity, they are weaker at capturing rationale. Teams might know “what was done” but lose track of “why it was done” and “what was learned,” especially during periods of rapid turnover, shifting priorities, or personnel changes.

Discussion: These patterns suggest that Agile tools can function as learning infrastructure only when teams treat them as repositories for decision rationale, not merely as task lists. Recent work on causal modelling approaches to Agile progress evaluation argues that meaningful learning requires connecting actions to outcomes and interpreting progress through explanatory logic rather than relying on status updates alone (Gudas et al., 2025). Likewise, data-driven analyses using large-scale public repositories show that Agile practices leave behavioural traces that can reveal rhythms, bottlenecks, and coordination dynamics but extracting insight requires deliberate analytics and contextual interpretation (Moreno Martínez et al., 2025). The startups in this study often had abundant data (tickets, comments, commits, deployment logs) but lacked consistent routines to convert it into organisational memory. Consequently, experimentation effectiveness depended less on the presence of a tool and more on the existence of reflective routines post-experiment write-ups, linked documentation, and explicit decision logs that preserved learning over time.

4.4.4 Trade-offs Between Speed, Quality, and Sustainability

Findings: Participants described recurring trade-offs between speed/adaptability and other goals such as documentation quality and technical debt control. Shipping quickly was frequently justified as necessary for survival: meeting investor expectations, retaining customers, or achieving product-market fit. Yet participants also acknowledged that short-term speed can generate long-term drag. Technical debt accumulated, documentation became thin, and onboarding new hires became harder because knowledge remained tacit or fragmented. Importantly, several interviewees described deliberate strategies to manage these risks. Teams created “tech debt tickets,” allocated periodic refactoring time, and attempted to make debt visible in the same system used for feature delivery. A software engineer explained the risk of invisible debt: “We move fast, but if debt isn’t tracked, the tool will still show progress while the codebase gets harder to change” (P3, Software Engineer). This comment reflects a broader concern: tools can create an illusion of advancement if what gets tracked is only what is immediately deliverable.

Discussion: The trade-offs reported are consistent with sustainability-oriented extensions of Scrum that aim to make longer-term impacts visible through explicit indicators and structured

assessment practices (Mazak-Huemer, Vierhauser and Groher, 2025). Although most startups in this study did not adopt formal sustainability metrics, the underlying logic applies: short-term optimisation can hide longer-term costs unless governance deliberately represents them. Cross-industry research on agile projectification similarly highlights tensions between short-term execution pressures and building resilient systems that remain adaptable over time (Moreno et al., 2024). In startup environments, strategic debt acceptance may be rational, but the empirical findings suggest that teams benefit when tool practices surface trade-offs explicitly, enabling leaders to make conscious choices rather than drifting into accumulated risk. Effective tool use therefore includes representational discipline: ensuring that what matters debt, quality risk, and learning is visible in the system of work, not only what is easy to count or report.

4.5 Theme 4: Cross-Functional Collaboration and Idea Generation

4.5.1 Cross-Functional Alignment Through Tools

Findings: Participants described cross-functional alignment as highly dependent on whether product, engineering, and design shared a common board or at minimum used tightly linked boards with clear handoff conventions. When a shared board existed, teams reported fewer misalignments, earlier identification of dependencies, and better sequencing of work. Product managers emphasised that shared tooling helped clarify ownership and reduced ambiguity about what was ready for development versus what was still in discovery. Engineers reported fewer late changes because design intent and acceptance criteria were visible earlier. Where shared boards did not exist, silos re-emerged quickly. Coordination then shifted back into meetings and Slack negotiation, with participants describing repeated clarification cycles and “surprise” work appearing late in sprints.

A UX designer articulated the core issue as an attention and visibility problem: “If only delivery is tracked, design work becomes invisible, and then design becomes reactive. The tool shapes what the organisation ‘sees’ as work” (P6, UX Designer). This comment captured a wider pattern: when tools represented only engineering tickets, the organisation tended to

treat engineering throughput as the primary indicator of progress, while upstream work (research, ideation, prototyping, stakeholder alignment) remained less visible and therefore less protected. Participants also noted that marketing and operations often remained outside the core tooling, which reduced shared context and created late-stage surprises for example, features reaching release readiness without comms, onboarding, or support readiness in place.

Discussion: These observations align with evidence that team composition and participation patterns shape how Agile practices operate, particularly where learning and coordination require balanced collaboration structures (Sæter et al., 2024). When tools represent mainly engineering work, they can unintentionally privilege engineering perspectives in prioritisation and risk assessment, simply because that is where visibility concentrates. In such cases, the tool becomes a partial map of the organisation's effort and constraints, which can distort planning. Conversely, shared tooling can operate as a boundary-spanning mechanism: it makes interdependencies visible across roles and allows earlier negotiation of constraints (e.g., design readiness, technical feasibility, customer comms). Importantly, participants' accounts suggest that tool alignment is not achieved by "putting everyone in Jira" as a simplistic rule. Rather, alignment requires a shared definition of what should be visible in the system of work, how handoffs are expressed, and how discovery-to-delivery transitions are governed. Where teams designed those interfaces thoughtfully, tools helped dissolve silos; where they did not, tools reinforced them by making some work structurally less legible and therefore easier to neglect.

4.5.2 Limits of Tools in Supporting Creativity

Findings: Participants generally agreed that Agile tools support execution far more than ideation. Tools were useful for turning ideas into deliverable work, but they were not described as the place where new ideas are born. Instead, participants described idea generation as emerging from workshops, brainstorming sessions, customer conversations, and informal collaboration often occurring in fast-moving social interactions rather than structured ticket workflows. Some participants noted that seeing upcoming work could spark ideas indirectly, because it made constraints and opportunities visible. However, they warned

against forcing creative exploration into ticket structures too early. The UX designer's comment captured this risk: "A ticket wants a clear outcome. But early ideas are messy. If you ticket them too early, you lock the thinking" (P6, UX Designer). Founders echoed that ideation needed protected spaces that were not governed by delivery metrics and sprint commitments.

Discussion: These findings highlight a creativity–control paradox. Tools are designed to enable coordination, predictability, and control of work-in-progress, but creative search requires ambiguity, iteration, and tolerance for non-linearity. If tool practices impose premature structure, they can unintentionally suppress experimentation by encouraging teams to converge on solutions too quickly. Participants' accounts therefore suggest that effective startups maintain complementarity: tool-mediated coordination for delivery, alongside social and exploratory practices for ideation. Tools can support creativity indirectly by reducing chaos and freeing cognitive space, and by making dependencies and constraints visible (which can guide feasible innovation). But ideation remains fundamentally interactional and human, often resisting formalisation. The most effective pattern described in the data was not that "tools generate creativity," but that "tools create conditions where creativity can occur without operational collapse." In practical terms, this implies that startups should protect discovery spaces workshops, prototypes, research notes while maintaining disciplined translation mechanisms that move validated ideas into the delivery board at the right moment, when uncertainty has been reduced enough to justify commitment.

4.6 Synthesis of Findings Across Research Questions

This section integrates the four themes to show how the empirical findings answer the research questions holistically. Across interviews, "effectiveness" was not a fixed property of a tool but a contextual outcome produced through the interaction of tool affordances, organisational discipline, leadership interpretation, and growth-stage pressures. Effectiveness therefore emerged through mechanisms visibility, workflow honesty, and boundary management rather than through tool features alone.

A unifying mechanism was visibility, repeatedly described as the first benefit gained when teams moved from informal coordination to formal Agile tools. Visibility supported planning, reduced status chasing, and surfaced scope creep; however, visibility became meaningful only when leaders used it to enable learning and prioritisation rather than surveillance. A second mechanism was governance minimalism: participants reported that tool effectiveness depended on limited workflows, restricted admin rights, and disciplined updating. Excessive customisation and tool sprawl undermined trust and increased process overhead. A third mechanism was temporal agility, where teams needed flexibility to temporarily downshift tool discipline during crises and then restore alignment afterward.

Boundary conditions also emerged clearly. Effectiveness varied by team size, where coordination strain triggered tool adoption and required stronger governance as headcount increased. It varied by leadership style, where founders/CTOs who treated tools as decision-support systems tended to enhance motivation and learning, while leaders who treated tools as surveillance increased gaming, meeting load, and superficial compliance. Finally, effectiveness varied by maturity stage, where early-stage exploration benefited from lightweight ideation spaces while delivery needed stronger operational scaffolding.

The synthesis also indicates that tool effectiveness is inseparable from cultural practice. Tools influenced behaviour by shaping what the organisation could see and measure, but the meaning of what was seen depended on how teams interpreted metrics and enacted routines. In some cases, participants described drifting toward performative practices clean boards, frequent ceremonies, dashboard monitoring that created the appearance of control without necessarily improving outcomes. In contrast, when teams treated tools as shared coordination artefacts, they enabled practical agility: rapid reprioritisation with traceability, improved cross-functional alignment, and more predictable delivery without rigid planning.

Mapping table: Themes → RQs → Key insights

Theme	Research question(s) addressed	Key insight from interviews
Theme 1: Adoption and utilisation	RQ1	Adoption is growth-triggered; tools are adopted to recover visibility and manage complexity, not to “be Agile” ideologically.
Theme 2: Benefits and challenges	RQ2	Tools improve planning and transparency but introduce risks of overload, performative metrics, and limited control over scope creep unless leadership governs work intake.
Theme 3: Efficiency, innovation and adaptability	RQ3	Efficiency improves mainly through habit changes (WIP limits, smaller work units); tools enable pivots when discipline is flexible; learning requires explicit capture beyond tasks.
Theme 4: Cross-functional collaboration and creativity	RQ3–RQ4	Shared boards improve alignment, but tools do not replace human creativity; ideation needs complementary social practices and protected exploration spaces.

Overall, the integrated findings show that Agile tools can enhance coordination, delivery flow, and learning capacity in early-stage IT startups, but their effectiveness is conditional: it depends on disciplined enactment, inclusive definitions of work, and leadership choices that emphasise support and learning over control.

4.7 Chapter Summary

This chapter analysed interview evidence from early-stage UK IT startups to explain how Agile project management tools are adopted, enacted, and judged effective in practice. Four themes were developed. First, adoption and utilisation were primarily triggered by growth and rising complexity, with teams moving from informal coordination toward formal tools when shared visibility and dependency management began to break down. Second, participants reported strong benefits in planning and coordination, particularly through clearer prioritisation, reduced rework, and improved transparency. At the same time, tools introduced challenges, including estimation tensions, persistent scope creep, notification overload, and the risk that process becomes performative when boards and dashboards are treated as proxies for control.

Third, tools influenced efficiency and adaptability most effectively when they reinforced disciplined habits such as limiting work in progress and maintaining workflow honesty. Participants emphasised that tools enabled flow but did not “create” productivity on their own; the largest gains came from behavioural and governance adjustments. Tools supported reprioritisation and pivoting when change could be managed transparently, but they could slow action during crises, prompting temporary “light Agile” practices followed by reconciliation of the system of work. Experimentation and learning were supported when hypotheses and outcomes were explicitly captured, but learning was often lost when documentation practices were weak.

Finally, cross-functional collaboration improved when teams shared boards and treated work visibility as inclusive of product, design, and delivery. However, participants consistently noted that creativity and idea generation remained rooted in human interaction, workshops, and informal collaboration, with tools serving mainly as execution systems rather than ideation engines. Collectively, the findings reinforce the contextual nature of Agile tool effectiveness and highlight the limits of tooling without supportive culture and leadership insights that inform the implications and recommendations developed in Chapter 5.

5.1 General Conclusions

This study set out to examine the role and effectiveness of Agile project management tools in early-stage IT startups. The research aim was to understand how these tools are adopted and used, what benefits and challenges they create for planning and delivery, and why they appear to succeed in some startup settings while becoming burdensome in others. The study focused on early-stage UK IT startups operating under high uncertainty, limited resources, and fast-changing customer and product demands. A qualitative, interpretivist approach was used to capture how practitioners make sense of “effectiveness” in their own working contexts. Semi-structured interviews were conducted with founders, product/project managers, software engineers, and UX/design participants, enabling the study to explore both operational practices and the reasoning behind them.

A high-level synthesis of Chapter 4 shows that Agile tools were not experienced as direct “productivity engines.” Instead, they primarily acted as coordination and visibility mechanisms. Participants described value in making work visible, stabilising priorities, surfacing dependencies, and reducing repeated status chasing. These outcomes improved planning realism and reduced rework, but only when teams kept boards accurate and used them to support decision-making. This finding aligns with research that treats coordination artefacts as central in Agile work because they help teams manage interdependencies and shared understanding. It also reflects evidence that collaboration technologies shape work through their affordances, meaning that value depends on how people enact and interpret what the tool makes possible.

Tool effectiveness was consistently described as contextual. Participants linked success to leadership behaviour, team maturity, and organisational culture. When leaders treated tools as learning and alignment systems, teams tended to trust boards and use them to manage uncertainty. When leaders used dashboards for control or surveillance, tool use became

defensive and performative. This reinforces the view that tool outcomes emerge from social and technical interaction rather than from software features alone. It also fits the broader understanding that Agile practices are shaped by organisational norms and communication patterns, especially where teams are distributed or hybrid.

A further synthesis is the balancing problem between formalisation and flexibility. Over-formalisation undermined adaptability by increasing administrative overhead and slowing rapid pivots. Yet excessive informality produced coordination failure once team size and product complexity increased. Startups therefore benefited from “just enough” governance: simple workflows, limited customisation, and clear ownership, combined with flexibility during urgent situations. Overall, the study contributes by moving beyond surface-level “tool adoption” explanations to show how and why tools succeed or fail in startup environments, and by clarifying the ongoing tension between control, learning, and flexibility in Agile tool use. The following sections now present conclusions and recommendations in relation to each research question.

5.2 Conclusion from Research Question 1

RQ1: How are Agile project management tools adopted and utilised in early-stage IT startups?

The findings indicate that tool adoption in early-stage IT startups is reactive and problem-driven rather than ideological. Participants did not describe adoption as a formal Agile “transformation.” Instead, adoption was typically triggered by growth, rising coordination costs, and increased external pressure for delivery clarity. As headcount increased and more roles became involved, informal coordination (e.g., Slack messages, shared documents, ad-hoc updates) became unreliable. Work became easier to lose, priorities were less stable, and dependencies surfaced too late. Startups therefore adopted more structured tools as a practical response to coordination breakdown.

Tool choice evolved with organisational complexity. Teams commonly began with lightweight tools that offered visibility with low overhead, then moved toward structured Agile platforms as backlogs became larger and more interdependent. This evolution was shaped by the need for workflow governance, traceability, sprint planning, and better defect tracking. Participants' accounts reflect a pattern consistent with the idea that coordination mechanisms become more important as interdependence increases.

Utilisation was selective and pragmatic. Rather than following "textbook Agile," participants described adapting tools to startup realities. This included keeping workflows simple, reducing ceremony, and focusing on a limited set of practices that solved immediate problems. Teams often differentiated between delivery tracking and discovery work, using different spaces to avoid over-structuring early exploration. This selective use mirrors evidence that startups adopt Agile practices in varied and context-specific ways, rather than as standardised packages.

Ownership and governance strongly shaped utilisation quality. Product managers and technical leads commonly acted as workflow owners, while admin rights were restricted to prevent uncontrolled changes. Participants described trust as central: if boards drifted away from reality, people stopped using them. This supports the conclusion that Agile tool adoption in startups is best understood as an adaptive response to scaling challenges, where tools function as shared coordination infrastructure, not as proof of Agile maturity.

5.3 Conclusion from Research Question 2

RQ2: What benefits and challenges do Agile tools create for planning, communication, delivery, and adaptability?

Across participants, the main benefits of Agile tools were improved visibility, prioritisation, and shared understanding. Tools reduced ambiguity about what mattered most and helped teams identify dependencies earlier, which lowered rework and prevented repeated "status chasing." Participants also reported better alignment between planning and delivery when

tools were used consistently, because commitments became clearer and capacity constraints more visible. These findings are consistent with research suggesting that coordination value in Agile is created through mechanisms that stabilise dependencies and maintain shared context.

However, the findings also show that benefits come with important challenges. A central issue was over-formalisation. When tools were configured with complex workflows or excessive required fields, they became heavy and discouraged accurate updating. Tools also enabled performative behaviour when metrics and dashboards were over-emphasised. In these cases, progress could be “reported” without necessarily improving outcomes, and tool use could shift toward compliance. Participants described this as a risk of “process theatre,” which aligns with concerns in broader Agile tool discussions about mistaking measurement for value.

A further challenge was that tools did not prevent scope creep or enforce discipline on their own. Boards could make scope changes visible, but they could not stop leaders from injecting urgent work or shifting priorities repeatedly. Similarly, estimation practices became contested when story points were interpreted as deadlines. This reflects the practical limitations of technical systems in managing task allocation and dependencies when real work is shaped by negotiation, tacit judgement, and shifting constraints.

Adaptability was conditional. Tools supported planned change because teams could reorder backlogs and renegotiate scope transparently. Yet during urgent pivots, tools could slow response due to re-ticketing and replanning effort. Startups often adopted temporary “light Agile” practices in crises, then reconciled boards afterward. Overall, Agile tools delivered value when used as learning and coordination systems, but became counterproductive when treated primarily as control mechanisms.

5.4 Conclusions from the Research Process

The research design was well suited to the study aim because the question focused on lived experiences of tool use rather than on measuring tool “performance” through quantitative indicators alone. A qualitative, interpretivist approach was appropriate because it captured how different roles (founders, PMs, engineers, designers) interpret effectiveness, governance, and tool-induced tension in context. Such meaning-focused insights would be difficult to obtain through surveys, which often reduce complex socio-technical dynamics to predefined variables and assume shared definitions of “success.”

Semi-structured interviews were particularly valuable because they balanced consistency with flexibility. The interview guide ensured coverage of tool adoption, utilisation, benefits, challenges, and governance, while still allowing participants to introduce unanticipated issues such as dashboard surveillance, process theatre, and the informal workarounds used during crises. This format also enabled participants to provide concrete examples and clarify how tool practices evolved over time, which strengthened the credibility of the thematic patterns.

Thematic analysis supported inductive development of themes grounded in participant accounts. The approach enabled the study to move from descriptive codes (e.g., “visibility,” “over-customisation,” “scope creep,” “light Agile in crisis”) to higher-order themes explaining mechanisms and boundary conditions. This aligns with structured, stepwise thematic approaches that emphasise building conceptual meaning from patterned data. The analysis also required reflexivity. Practitioner narratives often include role-based bias, self-justification, and selective memory. Care was therefore needed to interpret accounts critically, compare across roles, and avoid treating confident statements as objective facts.

Managing researcher bias was an ongoing concern during coding and theme development. Decisions were needed about what counted as a “theme,” how to balance frequency with significance, and how to represent tensions without forcing artificial consensus. Reflexive awareness was especially important because Agile discourse can carry strong normative assumptions about what “good practice” looks like. Overall, the research process was most

effective for exploring how tools are enacted in practice, why people trust or reject them, and how socio-technical conditions shape outcomes, rather than evaluating tools against idealised methodological standards.

5.5 Recommendations from Research Question 1

Recommendations related to adoption and utilisation should reflect the study's core insight: tools are adopted to solve coordination problems, and they work only when governance supports trust and usability.

Recommendations for startup founders and leaders.

First, adopt tools in response to real coordination pain, not external pressure to “look mature.” Early-stage startups should avoid copying enterprise setups too early, because excessive complexity increases overhead and reduces agility (Uludağ et al., 2022). Second, start with minimal workflows and evolve gradually. A simple, stable workflow builds shared habits and keeps the board truthful. Third, assign clear ownership for tool governance. A product lead or engineering lead should own workflow decisions, while admin access should be restricted to prevent uncontrolled changes that reduce trust. Fourth, train leaders not only teams on responsible tool use. Leaders should treat tools as decision-support and learning systems, not as surveillance. Evidence from tool-support studies suggests that collaborative benefit is produced through routines and norms around tool use, not through the tool alone (Calefato et al., 2020).

Recommendations for product and engineering teams.

First, define “good tickets” early, including clear acceptance criteria, ownership, and what “done” means. Poor ticket quality increases hidden coordination cost and creates downstream confusion. Second, limit customisation and required fields. Excessive configuration increases cognitive load and encourages inaccurate updating. Third, keep both discovery and delivery visible, even if they use different spaces. If discovery work is invisible, it becomes reactive and under-resourced, which harms product quality and creates late-stage surprises. Finally, treat onboarding as practical habit-building. Short, hands-on onboarding

using real tickets builds consistent practice faster than theory-heavy training and reduces workflow drift as new hires join.

5.6 Recommendations from Research Question 2

Recommendations for planning, communication, delivery, and adaptability should translate the benefits and challenges into practical guidance that protects agility while sustaining coordination.

First, use tools to protect focus, not to maximise utilisation. Teams should actively manage work-in-progress and avoid starting too many items at once, because multitasking increases cycle time and rework. Second, treat metrics as learning signals rather than performance targets. Dashboards should support sense-making, bottleneck discovery, and improvement decisions. When used for control, metrics can encourage gaming and performative compliance (Ulloa and Herrera, 2024). Third, allow flexibility during pivots. Startups should accept temporary disorder in crises, then restore tool accuracy afterward. This supports rapid response while maintaining longer-term traceability and learning.

Fourth, embed QA and technical debt explicitly in workflows. Quality steps should not be optional under pressure. Evidence from growing startups shows that quality practices are vulnerable when speed-to-market dominates, so making QA and technical debt visible in the work system helps leaders make informed trade-offs (Pizzini et al., 2021). Fifth, complement tools with human communication. Teams should not assume that comments and ticket updates replace dialogue. Short conversations can resolve ambiguity faster and reduce misunderstanding. This is especially important in hybrid or distributed contexts, where overly tool-mediated communication can miss nuance and increase fragmentation (Sporsem and Moe, 2022). Retrospectives should be kept purposeful and lightweight, focused on learning and improvement rather than ritual.

Finally, align governance with Agile intent. Tools should support value delivery, learning, and adaptability. When governance becomes mainly about reporting and compliance, the tool

becomes heavier, trust declines, and agility weakens. Leaders should explicitly communicate that boards exist to coordinate and learn, not to police individuals.

5.7 Limitations and Future Research

This study has several limitations that should be considered when interpreting the findings. First, the qualitative sample size was small, which limits statistical generalisability. The goal was depth of understanding rather than population-level inference. Second, the focus on early-stage IT startups means the findings may not transfer directly to later-stage scale-ups or large enterprises, where governance needs, compliance requirements, and organisational structures differ. Third, the data relied on self-reported perceptions. Participants' accounts may reflect role-based viewpoints, selective recall, or organisational narratives. These are valuable for interpretivist understanding, but they may not fully capture behavioural reality.

Future research could extend and test these insights in several ways. Comparative studies across startup maturity stages could examine how tool governance evolves from early-stage coordination needs to scale-up requirements. Longitudinal research would be especially valuable because startups change quickly; following the same teams over time would show how tool practices shift with growth, turnover, and market pressure. Mixed-methods studies could combine interviews with tool-usage data (e.g., ticket lifecycle metrics, WIP patterns, backlog churn) to triangulate perceptions with behavioural traces. This would strengthen explanatory claims about how tool practices relate to delivery outcomes. Deeper research on leadership behaviour and governance would also be valuable, because the findings suggest leadership interpretation is a major boundary condition. This aligns with broader evidence that tool effectiveness depends on socio-technical conditions and coordination practices, not on software features alone (Stray and Moe, 2020a).

Overall, the study reinforces that Agile tools should not be treated as neutral technologies. Their effects depend on how they are configured, interpreted, and embedded in everyday work as part of a socio-technical system shaped by culture, leadership, and startup maturity.

References

- Abrantes, P.C. and Furtado, A.P., 2021, June. Agile development practices applied to software startups: a systematic mapping review. In *2021 16th Iberian Conference on Information Systems and Technologies (CISTI)* (pp. 1-6). IEEE.
- Acharyya, R., & Bhattacharya, N. (Eds.). (2019). Research methodology for social sciences. Taylor & Francis.
- Ahmad, M. and Wilkins, S., 2025. Purposive sampling in qualitative research: A framework for the entire journey. *Quality & Quantity*, 59(2), pp.1461-1479.
- Ahmed, S.K., Mohammed, R.A., Nashwan, A.J., Ibrahim, R.H., Abdalla, A.Q., Ameen, B.M.M. and Khdhir, R.M., 2025. Using thematic analysis in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 6, p.100198.
- Ahmed, S.W. and Mustafa, G., 2025. Agile co-creation and digital entrepreneurship Nexus: A systematic literature review and future research agenda. *Digital Business*, p.100159.
- Ali, S., Hanif, A., Usman, M. and Qazi, U.W., 2025. Project Team Productivity Drivers: A Systematic Literature Review Exploring Organizational Attributes and Productivity Factors Using Agile Methods. *The Critical Review of Social Sciences Studies*, 3(2), pp.955-970.
- Almeida, F. and Bálint, B., 2024. Approaches for hybrid scaling of agile in the IT industry: A systematic literature review and research agenda. *Information*, 15(10), p.592.
- Almeida, F. and Simões, J., 2021. Leadership challenges in agile environments. *International Journal of Information Technology Project Management (IJITPM)*, 12(2), pp.30-44.
- Alzahrani, A.A., 2024. Investigating Agile Values and Principles in Real Practices. *International Journal of Advanced Computer Science & Applications*, 15(1).
- Arnyndiasari, D., Ferdiana, R. & Santosa, P., 2022. *Software Practices For Agile Developers: A Systematic Literature Review*. ICISIT 2022.

- Arshad, M.W., 2024. Impact of Agile Project Management on IT Projects. *International Journal of Advanced Engineering, Management and Science*, 10(7), p.590612.
- Azonuche, T.I. and Enyejo, J.O., 2024. Evaluating the Impact of Agile Scaling Frameworks on Productivity and Quality in Large-Scale Fintech Software Development. *International Journal of Scientific Research and Modern Technology*, 3(6), pp.57-69.
- Bairagi, V., & Munot, M. V. (Eds.). (2019). Research methodology: A practical and scientific approach. CRC Press.
- Bannikov, V., Rudenko, A. and Shapka, I., 2024. The impact of agile management methods on employee engagement and productivity. *Здобутки економіки: перспективи та інновації*, (10).
- Bansal, A., 2024. The role of agile management in enhancing team collaboration and productivity in startups. *International Journal For Multidisciplinary Research*, 6(5).
- Basias, N., & Pollalis, Y. (2018). Quantitative and qualitative research in business & technology: Justifying a suitable research methodology. *Review of Integrative Business and Economics Research*, 7, 91–105.
- Baxter, D., Dacre, N., Dong, H. and Ceylan, S., 2023. Institutional challenges in agile adoption: Evidence from a public sector IT project. *Government Information Quarterly*, 40(4), p.101858.
- Bazeley, P., 2020. Qualitative data analysis: Practical strategies.
- Bell, E., Harley, B. and Bryman, A., 2022. *Business research methods*. Oxford university press.
- Berg, V., Birkeland, J., Nguyen-Duc, A., Pappas, I.O. and Jaccheri, L., 2020. Achieving agility and quality in product development-an empirical study of hardware startups. *Journal of Systems and Software*, 167, p.110599.
- Boughaleb, S.E.A., Benkhider, N., Kherbach, S., Keddari, N., Berbar, W.B. and Abedou, A., 2025. Startups' scalability: a qualitative study of challenges, enablers, and strategic perspectives. *South Florida Journal of Development*, 6(6), pp. e5420-e5420.
- Braun, V. and Clarke, V., 2021. Thematic analysis: A practical guide.

- Braun, V. and Clarke, V., 2023. Is thematic analysis used well in health psychology? A critical review of published research, with recommendations for quality practice and reporting. *Health Psychology Review*, 17(4), pp.695-718.
- Braun, V. and Clarke, V., 2024. A critical review of the reporting of reflexive thematic analysis in Health Promotion International. *Health Promotion International*, 39(3), p.daae049.
- Byrne, D., 2022. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & quantity*, 56(3), pp.1391-1412.
- Cai, S., 2024. Agile project management in virtual software development teams: challenges, benefits, and implementation.
- Calefato, F., Giove, A., Lanubile, F. and Losavio, M., 2020, June. A case study on tool support for collaboration in agile development. In *Proceedings of the 15th International Conference on Global Software Engineering* (pp. 11-21).
- Carneiro, H.C., 2020. The changing roles of the PMO with the introduction of agile ways of working.
- Catlin, R. and Watkins, C., 2021. *Agile auditing: fundamentals and applications*. John Wiley & Sons.
- Chathuranga, S., Jayasinghe, S., Antucheviciene, J., Wickramarachchi, R., Udayanga, N. and Weerakkody, W.S., 2023. Practices driving the adoption of agile project management methodologies in the design stage of building construction projects. *Buildings*, 13(4), p.1079.
- Chkhaidze, I., 2023. Reasons, Challenges and Strategies for Implementing Agile In Today's Unpredictable Environment. *Innovative economics and management*, 10(2), pp.72-86.
- Choma, J., Guerra, E.M., Alvaro, A., Pereira, R. and Zaina, L., 2022. Influences of UX factors in the Agile UX context of software startups. *Information and Software Technology*, 152, p.107041.
- Chowdhury, B., Sultana, N., Chowdhury, S. and Chowdhury, S., 2025. Agile Approach to Enhance Student's Capstone (Industry-based) Product Delivery in Tertiary Education. *WSEAS Transactions on Advances in Engineering Education*, 22, pp.17-32.

- Chukwurah, E., 2024. Agile privacy in practice: Integrating CCPA and GDPR within agile frameworks in the US tech scene. *International Journal of Scientific Research Updates*, 7(2), pp.024-036.
- Cico, O., Duc, A.N. and Jaccheri, L., 2020, April. An empirical investigation on software practices in growth phase startups. In *Proceedings of the 24th International Conference on Evaluation and Assessment in Software Engineering* (pp. 282-287).
- Collis, J. and Hussey, R., 2021. *Business research: A practical guide for students*. Bloomsbury Publishing.
- Crnogaj, K., Tominc, P. and Rožman, M., 2022. A conceptual model of developing an agile work environment. *Sustainability*, 14(22), p.14807.
- Dash, C., Behera, P.C. and Pareek, P.K., 2021. Literature survey on exploratory analysis of waste in IT industries during project development using agile–lean practices. *Emerging Technologies in Data Mining and Information Security: Proceedings of IEMIS 2020, Volume 3*, pp.699-711.
- De Souza, M.L.P., Bagno, R.B. and De Melo Filho, L.D.R., 2022. Setting the P-Start for digital entrepreneurship: an idea-to-company process model integrated with innovation management tools. *Product: Management and Development*, 19(2), pp.0-0.
- Dong, H., Dacre, N., Baxter, D. and Ceylan, S., 2024. What is agile project management? Developing a new definition following a systematic literature review. *Project Management Journal*, 55(6), pp.668-688.
- Durbin, M. and Niederman, F., 2021. Bringing templates to life: overcoming obstacles to the organizational implementation of Agile methods. *International Journal of Information Systems and Project Management*, 9(3), pp.5-18.
- Enkler, H.G. and Sporleder, L., 2019. Agile product development coupling explorative and established CAX methods in early stages of virtual product development. *Procedia CIRP*, 84, pp.848-853.
- Etim, A.S., Jaiswal, C.P., Subroto, M. and Ortega, V.E.C., 2021. Managing Information Technology Projects Using Agile Methodology: The Case of Books for Africa Project.

- In *Developing Countries and Technology Inclusion in the 21st Century Information Society* (pp. 123-146). IGI Global Scientific Publishing.
- Euchner, J. and Blank, S., 2021. Lean Startup and Corporate Innovation: An Interview with Steve Blank. *Research-Technology Management*, 64(5), pp.11-17.
- Famoti, O., Achumie, G.O., Eloho, O., Muyiwa-Ajayi, T.P., Ezechi, O.N., Ewim, C.P.M. and Ahmadu, J., 2024. Improving Workforce Productivity through Data-Driven Metrics: Insights from Agile Teams. *International Journal of Multidisciplinary Research and Growth Evaluation*, 5(6), pp.1601-1609.
- Farahat, A.M. and Defina, D., 2022, October. Novel adaptive approach for applying and combining traditional waterfall and agile project management methodologies. In *Abu Dhabi International Petroleum Exhibition and Conference* (p. D041S125R003). SPE.
- Fawzy, A., Tahir, A., Galster, M. and Liang, P., 2025. Exploring data management challenges and solutions in agile software development: a literature review and practitioner survey. *Empirical Software Engineering*, 30(3), pp.1-61.
- Franco, W.F. and Behrens, F.H., 2019, October. Agile project implementation methodology for introducing new technologies in Industry 4.0. In *Brazilian Technology Symposium* (pp. 469-477). Cham: Springer International Publishing.
- Georgiev, V., 2023. Agile project management methods and techniques and their influence on startups.
- Gofe, T.E., Olana, D.R. and Debela, K.L., 2022. A Critical Review of Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact. *Science Research*, 10(5), pp.114-120.
- Greening, N. (2019). Phenomenological research methodology. *Scientific Research Journal*, 7(5), 88–92.
- Gudas, S., Denisovas, V., Tekutov, J. and Noreika, K., 2025. A causal modeling approach to Agile project management and progress evaluation. *Mathematics*, 13(16), p.2657.
- Guerrero-Calvache, M., Hernández, G. and Gómez-Álvarez, M.C., 2025. Measuring Team Productivity in Agile Development: A Scrum-Based Process. In *International*

- Conference on Computational Science and Its Applications* (pp. 134-149). Springer, Cham.
- Guest, G., Namey, E. and Chen, M., 2020. A simple method to assess and report thematic saturation in qualitative research. *PloS one*, 15(5), p.e0232076.
- Gupta, A., & Gupta, N. (2022). Research methodology. SBPD Publications.
- Hair Jr, J., Page, M. and Brunsveld, N., 2019. *Essentials of business research methods*. Routledge.
- Harake, M., 2025. Project Management and Business Modeling: Methodologies, Frameworks, and Strategic Alignment.
- Hennink, M. and Kaiser, B.N., 2022. Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social science & medicine*, 292, p.114523.
- Hussein, R.M. and Hassan, B.A., 2025. Collaboration Tools and their Role in Agile Software Projects. *arXiv preprint arXiv:2506.10985*.
- Ijaz, F., Aslam, W., AlSanad, A.A., Aslam, Z., Ullah, I. and Ullah, F., 2022. A critique on task allocation processes in distributed agile software development. *Scientific Programming*, 2022(1), p.8312253.
- Islam, M.R., Aziz, M.M., Manik, M.M.T.G., Bhuiyan, M.M.R., Noman, I.R., Rahaman, M.M. and Das, K., 2024. Navigating the Digital Landscape: Integrating Advanced IT Solutions with Project Management Best Practices. *ICRRD Journal*, 5(4), pp.159-173.
- Jain, A., Kamat, S., Saini, V., Singh, A. and Whig, P., 2024. Agile leadership: navigating challenges and maximizing success. In *Practical Approaches to Agile Project Management* (pp. 32-47). IGI Global.
- Javdani Gandomani, T., Ziaei Nafchi, M. and M Parizi, R., 2022. Empowering Software Startups with Agile Methods and Practices: A Design Science Approach. *Available at SSRN 4299858*.
- Javdani Gandomani, T., Zulzalil, H. and Bahsoon, R., 2025. Empowering software startups with agile methods and practices: A design science research. *Software: Practice and Experience*, 55(2), pp.220-242.

- Jiménez, V., Afonso, P. and Fernandes, G., 2020. Using agile project management in the design and implementation of activity-based costing systems. *Sustainability*, 12(24), p.10352.
- Jin, Z., 2024. Integrating AI into Agile Workflows: Opportunities and Challenges. *Applied and Computational Engineering*, 116, pp.49-54.
- Kamila, J.S. and Marzuq, M.F., 2024. Asana and Trello: a comparative assessment of project management capabilities. *JOIV: International Journal on Informatics Visualization*, 8(1), pp.207-212.
- Kandasamy, R., Ramesh, R., Kumar, R., Raghu, N. and Chavadi, C.A., 2025. Agile Methodologies in Digital Marketing for Growing Businesses. In *Expanding Operations Through Agile Principles and Sustainable Practices* (pp. 445-468). IGI Global Scientific Publishing.
- Kaniz, R.E., Lindon, A.R., Rahman, M.A., Hasan, M.A. and Hossain, A., 2025. The Impact of Project Management Strategies on the Effectiveness of Digital Marketing Analytics for Start-up Growth in the United States. *Project management*, 4(1).
- Kansy, D., 2024. Agile Values in A Modern Organization. *Scientific Papers of Silesian University of Technology. Organization & Management/Zeszyty Naukowe Politechniki Slaskiej. Seria Organizacji i Zarzadzanie*, (214).
- Kapur, R. (2018). Research methodology: Methods and strategies. Department of Adult Education and Continuing Extension, University of Delhi.
- Kazakevich, B. and Joiner, K., 2024. Agile approach to accelerate product development using an MVP framework. *Australian Journal of Multi-Disciplinary Engineering*, 20(1), pp.1-12.
- Khovrat, A. and Teslenko, D., 2022. The concept of agile software development and its main features. *Collection of scientific papers «ΛΟΓΟΣ»*, (September 16, 2022; Boston, USA), pp.18-20.
- Moedt Van Bolhuis, W., Bernsteiner, R., Hall, M. and Fruhling, A.N.N., 2023. Enhancing IoT project success through agile best practices. *ACM Transactions on Internet of Things*, 4(1), pp.1-31.

- Kiger, M.E. and Varpio, L., 2020. Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical teacher*, 42(8), pp.846-854.
- Klotins, E., Unterkalmsteiner, M., Chatzipetrou, P., Gorschek, T., Prikladnicki, R., Tripathi, N. and Pompermaier, L.B., 2021. Use of agile practices in start-up companies. *e-Informatica Software Engineering Journal*, 15(1).
- Kohnová, L., Stacho, Z., Salajová, N., Stachová, K. and Papula, J., 2023. Application of agile management methods in companies operating in Slovakia and the Czech Republic. *Economic research-Ekonomska istraživanja*, 36(2).
- Kuhn, M., Dölle, C., Riesener, M. and Schuh, G., 2019, November. Concept for organizational structures of agile development networks. In *Production at the leading edge of technology: Proceedings of the 9th Congress of the German Academic Association for Production Technology (WGP), September 30th-October 2nd, Hamburg 2019* (pp. 653-662). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Kumar, R. (2018). Research methodology: A step-by-step guide for beginners. Sage.
- Li, Y. and Zhang, S., 2022. Qualitative data analysis. In *Applied research methods in urban and regional planning* (pp. 149-165). Cham: Springer International Publishing.
- Lindlof, T.R. and Taylor, B.C., 2017. *Qualitative communication research methods*. Sage publications.
- Liyanage, N., 2025. Integrating Agile practices in Medical Device Hard ware Development.
- Lysenko, D. and Fediai, Y., 2021. The Agile Earned Value Management Method As A Cost Management Tool In Scrum Projects: Array. *Municipal economy of cities. Series:«Information Technology and Engineering»*, 3(163), pp.159-164.
- Maharao, C.S., 2024. A Study On Agile Project Management In It: Challenges And Best Practices. *ShodhKosh: Journal of Visual and Performing Arts*, 5, pp.2165-2175.
- Mahuika, N., & Mahuika, R. (2020). Wānanga as a research methodology. *ALTERNATIVE: An international journal of indigenous peoples*, 16(4), 369–377.

- Malik, R.S., Ahmad, S.S. and Hussain, M.T.H., 2019, March. A review of agile methodology in IT projects. In *Proceedings of 2nd International Conference on Advanced Computing and Software Engineering (ICACSE)*.
- Manduva, V.C., 2022. The Role of Agile Methodologies in Enhancing Product Development Efficiency. *International Journal of Acta Informatica*, 1(1), pp.138-158.
- Mashmool, A., Khosravi, S., Joloudari, J.H., Inayat, I., Mansor, Z. and Band, S.S., 2020. A Statistical Model to Compute the Effect of Agile Teams' Productivity.
- Mattsson, P., 2024. *Understanding the Cultural Challenges of Privately Held Unicorn Startups* (Doctoral dissertation, Fielding Graduate University).
- Mazak-Huemer, A., Vierhauser, M. and Groher, I., 2025. SustainScrum: integrating sustainability assessment in a tailored Scrum process for computing quantitative sustainability indicators. *Software and Systems Modeling*, 24(2), pp.385-410.
- Mergel, I., 2024. Social affordances of agile governance. *Public Administration Review*, 84(5), pp.932-947.
- Mesjasz, C., Małkus, T. and Czesław/Bartusik Mesjasz (Katarzyn), 2022. *Agile Project Management and Complexity*.
- Milojević, D., Macuzic, I., Djordjevic, A., Savković, M. and Djapan, M., 2023. Comparative analysis of software tools for agile project management.
- Mohajan, H.K., 2018. Qualitative research methodology in social sciences and related subjects. *Journal of economic development, environment and people*, 7(1), pp.23-48.
- Mordi, A. and Schoop, M., 2022. Enabling Agile Environments-Software Tools Revisited with an Agile Mindset.
- Moreno Martínez, C., Gallego Carracedo, J. and Sánchez Gallego, J., 2025. Characterizing Agile Software Development: Insights from a Data-Driven Approach Using Large-Scale Public Repositories. *Software*, 4(2), p.13.
- Moreno, F., Forcael, E., Romo, R., Orozco, F., Moroni, G. and Baesler, F., 2024. Agile project management in the pre-construction stage: Facing the challenges of projectification in the construction industry. *Buildings*, 14(11), p.3551.

- Mota, P.G., de Silva, A.L.B. and Limongi, R.F.C., 2022. The use of agile methodologies and their contribution to innovation of the business model: a study of multiple cases in the context of incubators and startups. *Iberoamerican Journal of Entrepreneurship and Small Business*, 11(2).
- Movva, S., 2025. *The Agile Frontier: Navigating Distributed Teams in a Post Pandemic Era*. Notion Press.
- Mukherjee, S. P. (2019). A guide to research methodology: An overview of research problems, tasks and methods. CRC Press.
- Mutabaruka, E., 2021. Agile methodology software development adaptability challenges in corporate organization. *Available at SSRN 3851349*.
- Naeem, M., Ozuem, W., Howell, K. and Ranfagni, S., 2023. A step-by-step process of thematic analysis to develop a conceptual model in qualitative research. *International journal of qualitative methods*, 22, p.16094069231205789.
- Nayak, J. K., & Singh, P. (2021). Fundamentals of research methodology problems and prospects. SSDN Publishers & Distributors.
- Ndou, V., Ingrosso, A. and Di Girolamo, A., 2024. Framework for Agile Transformation: Guiding Organizations Through Cultural, Structural, and Competency Shifts in Project Management. *Administrative Sciences*, 14(11), p.301.
- Nikolova, Z., 2020. Testing Strategies in an Agile Context.
- Nundlall, C. and Nagowah, S.D., 2022. Task allocation and coordination process in distributed agile software development: an ontology based approach. *Information Technology and Management*, 23(3), pp.167-192.
- Nyktarakis, G., 2022. Technology enabling collaboration of agile development teams in hybrid working: the case of Microsoft teams.
- O'Connor, C. and Joffe, H., 2020. Intercoder reliability in qualitative research: Debates and practical guidelines. *International journal of qualitative methods*, 19, p.1609406919899220.

- Odiadi, J., 2024. Qualitative and Quantitative Research in Business Studies: Managing. *Available at SSRN 4876332*.
- Pařová, D. and Vejačka, M., 2023. Transformative Education with Agile Project Management and Project-Based Learning. *Ad Alta: Journal of Interdisciplinary Research*, 13(2).
- Patel, M., & Patel, N. (2019). Exploring research methodology. *International Journal of Research and Review*, 6(3), 48–55.
- Pizzini, A., Bortolo Vieira, R., Deda Gomes, R., Santos, G., Malucelli, A. and Reinehr, S., 2021, November. Software quality practices in growing startups: A qualitative study. In *Proceedings of the XX Brazilian Symposium on Software Quality* (pp. 1-10).
- Pöhlmann, M., de las Heras-Pedrosa, C., Seitz, J. and Jambrino-Maldonado, C., 2025. Evaluating the potential of agile branding: opportunities and challenges in the start-up context. *Humanities and Social Sciences Communications*, 12(1), pp.1-15.
- Porkodi, S., 2024. The effectiveness of agile leadership in practice: A comprehensive meta-analysis of empirical studies on organizational outcomes. *Journal of Entrepreneurship, Management and Innovation*, 20(2), pp.117-138.
- Rafiq, U. and Wang, X., 2020, June. Continuous information monitoring in software startups. In *International Conference on Agile Software Development* (pp. 280-287). Cham: Springer International Publishing.
- Ragab, M. A., & Arisha, A. (2018). Research methodology in business: A starter's guide.
- Rahman, A., Indrajit, E., Unggul, A. and Dazki, E., 2024. Agile Project Management Impacts Software Development Team Productivity. *Sinkron: jurnal dan penelitian teknik informatika*, 8(3), pp.1847-1858.
- Ramljak, I., Tajalić, M. and Brkljačić, M., 2024. Navigating Digital Transformation: A Survey Study on Agile Adoption Impact. *ENTRENOVA-ENTERprise REsearch InNOVation*, 10(1), pp.412-427.
- Ribeiro, A.T.V.B., Leal, L.F., do Amaral, G.S.G., Kahn, R., Evaristo, B.G.P., Romão, V., Ricardo, G.A., Marcos, R.A., Salerno, M.S., Plonski, G.A. and Zancul, E., 2019, July. Agile product development: features identification and application in the electricity sector.

- In *Proceedings of the Design Society: International Conference on Engineering Design* (Vol. 1, No. 1, pp. 2149-2158). Cambridge University Press.
- Rinne, T., 2024. Adapting Sustainable Software Development Methods Into Agile Processes.
- Saarenoksa, M., 2021. The impact of flexible working on productivity and job satisfaction: case future of work in agile R&D.
- Sæter, G.E., Stray, V., Almås, S. and Lindsjörn, Y., 2024, May. The role of team composition in agile software development education: A gendered perspective. In *International Conference on Agile Software Development* (pp. 179-195). Cham: Springer Nature Switzerland.
- Saldaña, J., 2021. The coding manual for qualitative researchers.
- Santos, P.D.O., Alves, J.L. and Carvalho, M.M.D., 2025. Facing barriers to unlock large-scale agile benefits: exploring the mediating role of organizational readiness. *International Journal of Managing Projects in Business*, 18(1), pp.26-52.
- Sathe, C.A. and Panse, C., 2023. Analyzing the impact of agile mindset adoption on software development teams productivity during COVID-19. *Journal of Advances in Management Research*, 20(1), pp.96-115.
- Savitha, M. and Kumar, S.P., 2025. Building an Agile Organizational Structure to Drive Innovation and Technology. *Cuestiones de Fisioterapia*, 54(2), pp.2321-2334.
- Seeton, K.A., 2022. The impact of agile project management on productivity in IT projects.
- Sileyew, K.J., 2019. Research design and methodology. In *Cyberspace*. IntechOpen.
- Silva, D.S., Ghezzi, A., Aguiar, R.B.D., Cortimiglia, M.N. and Ten Caten, C.S., 2020. Lean Startup, Agile Methodologies and Customer Development for business model innovation: A systematic review and research agenda. *International Journal of Entrepreneurial Behavior & Research*, 26(4), pp.595-628.
- Simaremare, M., Triando and Rico, S., 2024, June. Exploring the Potential of Generative AI: Use Cases in Software Startups. In *International Conference on Agile Software Development* (pp. 3-11). Cham: Springer Nature Switzerland.

- Šmite, D., Moe, N.B. and Gonzalez-Huerta, J., 2021. Overcoming cultural barriers to being agile in distributed teams. *Information and Software Technology*, 138, p.106612.
- Souza, R., Rocha, L., Silva, F. and Machado, I., 2019, September. Investigating agile practices in software startups. In *Proceedings of the XXXIII Brazilian Symposium on Software Engineering* (pp. 317-321).
- Sporsem, T. and Moe, N.B., 2022, June. Coordination strategies when working from anywhere: a case study of two agile teams. In *International Conference on Agile Software Development* (pp. 52-61). Cham: Springer International Publishing.
- Squire, C.M., Giombi, K.C., Rupert, D.J., Amoozegar, J. and Williams, P., 2024. Determining an appropriate sample size for qualitative interviews to achieve true and near code saturation: Secondary analysis of data. *Journal of Medical Internet Research*, 26, p.e52998.
- Startuo Genome (2025). *LEARN MORE AND GET CONNECTED AT STARTUPGENOME.COM 2025 Ecosystem Report*. [online] Available at: https://startupgenome.com/contents/report/gser-2025_4786.pdf?utm_source=chatgpt.com.
- Stray, V. and Moe, N.B., 2020. Understanding coordination in global software engineering: A mixed-methods study on the use of meetings and Slack. *Journal of Systems and Software*, 170, p.110717.
- Stray, V., Gundelsby, J.H., Ulfsnes, R. and Brede Moe, N., 2022, May. How agile teams make Objectives and Key Results (OKRs) work. In *Proceedings of the International Conference on Software and System Processes and International Conference on Global Software Engineering* (pp. 104-109).
- Stray, V., Moe, N.B., Strode, D. and Mæhlum, E., 2022, May. Coordination value in agile software development: a multiple case study of coordination mechanisms managing dependencies. In *Proceedings of the 15th International Conference on Cooperative and Human Aspects of Software Engineering* (pp. 11-20).
- Takona, J.P., 2024. Research design: qualitative, quantitative, and mixed methods approaches. *Quality & Quantity*, 58(1), pp.1011-1013.

- Terry, G. and Hayfield, N., 2020. 38. Reflexive thematic analysis. *Handbook of qualitative research in Education*. Edward Elgar Publishing Limited, pp.430-441.
- Tracy, S.J., 2024. *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.
- Tran, L., 2022. The Impact of Hybrid Work on Productivity: Understanding the Future of Work: A case study in agile software development teams.
- Triando, Simaremare, M., Wang, X. and Prasad, A.S.R., 2024, November. The Use of Generative AI Tools in the Inception Stage of Software Startups. In *International Conference on Software Business* (pp. 439-453). Cham: Springer Nature Switzerland.
- Tupsakhare, P., 2022. Enhancing Agile Methodologies with AI: Driving Efficiency and Innovation. *European Journal of Advances in Engineering and Technology*, 9(10), pp.66-71.
- Ulloa, R.L. and Herrera, R.D.J.G., 2024. A Cloud-KPIs Dashboard to Evaluate Agile Development Teams' Performance: A Mexican Case Study. *Journal of Cases on Information Technology (JCIT)*, 26(1), pp.1-30.
- Uludağ, Ö., Philipp, P., Putta, A., Paasivaara, M., Lassenius, C. and Matthes, F., 2022. Revealing the state of the art of large-scale agile development research: A systematic mapping study. *Journal of Systems and Software*, 194, p.111473.
- Umezurike, S.A., Akinrinoye, O.V., Kufire, O.T., Abiodun Yusuf Onifade, A.Y., Otokiti, B.O. and Ejike, O.G., 2025. A Review of Agile Marketing in Cross-Functional Teams: Driving Product Growth through Collaboration. *Journal of Frontiers in Multidisciplinary Research*, 6(2), pp.23-40.
- Uzoeghelu, J. and Kaur, P., 2024. Implementation Strategy of Integrating Lean and Agile Project Management within Start-Up Projects: a Case Study of Nigeria.
- Vargas, D.A.D., 2019. *Agility as a tool for the Management of Systems Engineering Projects* (Doctoral dissertation, INSA de Toulouse).

- Vasquez, J.H., 2024. Assessment of the impact of automation implementation in the context of business agility in a transnational Fintech company. *Revista Investigación en Desarrollo y Gerencia Integral de Proyectos*, 7(1), pp.54-73.
- Verma, R., Verma, S. and Abhishek, K., 2024. *Research methodology*. Booksclinic Publishing.
- Waizenegger, L., McKenna, B., Cai, W. and Bendz, T., 2020. An affordance perspective of team collaboration and enforced working from home during COVID-19. *European journal of information systems*, 29(4), pp.429-442.
- Weichbroth, P., 2022. A case study on implementing agile techniques and practices: Rationale, benefits, barriers and business implications for hardware development. *Applied Sciences*, 12(17), p.8457.
- Yang, N., Wang, X., Zhang, Z., Siemon, D. and Hyrynsalmi, S., 2025, May. Core Theories in Agile Software Development. In *International Conference on Agile Software Development* (pp. 3-18). Cham: Springer Nature Switzerland.
- Yin, R.K., 2018. Case study research and applications (Vol. 6). Thousand Oaks, CA: Sage
- Yordanova, Z., 2020, November. Lean Startup and Agile for Addressing Educational Challenges. In *2020 7th International Conference on Energy Efficiency and Agricultural Engineering (EE&AE)* (pp. 1-4). IEEE.
- Zaitsev, A., Gal, U. and Tan, B., 2020. Coordination artifacts in agile software development. *Information and Organization*, 30(2), p.100288.
- Zielske, M. and Held, T., 2022. Agile methods used by traditional logistics companies and logistics startups: a systematic literature review. *Journal of Systems and Software*, 190, p.111328.
- Zielske, M., Held, T. and Kourouklis, A., 2022. A framework on the use of agile methods in logistics startups. *Logistics*, 6(1), p.19.