The Influence of Business-IT Alignment Maturity and Agile Methodology on IT Project Success Under Conditions of Technological Turbulence

Even after more than 30 years and the mainstreaming of Agile, a significant number of IT projects still fail to show evidence of success (Smith & Kumar, 2023;17th Annual State of Agile Report, 2024). In fact, according to a recent study, the failure rate of IT projects is nearly 30% (Smith & Kumar, 2023). The Standish Group's 2022 CHAOS Report: Beyond Infinity (Johnson, 2022) reported only 42% of Agile projects succeeded as "on-time, on-budget, on-scope" based on an audit of tens of thousands of software projects. In contrast, the results from PMI's Pulse of the Profession (2024) reported that 75.4% of respondents that "regularly" used Agile self-reported as having strong performance at achieving business objectives – it is important to note that this metric has moved away from the traditional "iron triangle" and instead focuses on business value. While the two reports use different definitions for success, the collective data points to Agile as having a higher success rate in project development than Waterfall.

Root-cause analysis points to lack of organizational support and business alignment of IT projects as key factors in under-performance (Smith & Kumar, 2023). PMI's global research of 5,000 practitioners found the top three causes of failure as changing priorities, unclear goals, and lack of communication – all related to a lack of business-IT alignment (Smith & Kumar, 2023).

Business-IT alignment is commonly referred to as the strategic "fit" between an organization's IT strategy, resources, and processes with the business's goals and objectives (Smith & Kumar, 2023). There is a strong body of research that has established the positive benefits of alignment on performance, competitiveness, profit, and innovation, among other areas. The early models included Henderson and Venkatraman's (1993) Strategic Alignment Model (SAM), which defined alignment using a 2×2 matrix of business strategy, organizational infrastructure, IT strategy, and IT infrastructure.

Luftman and Brier (1999) built on this early work and added that alignment needs to be seen as an ongoing activity or level of maturity that is continually being refined. Luftman (2000) proposed the Strategic Alignment Maturity Model (SAMM) made up of 6 dimensions: communication, competency/value measurement, governance, partnership, scope/ architecture, and skills. These dimensions characterize a highly integrated business-IT model. With this higher level of alignment, the IT projects will better incorporate business needs creating a foundation of trust, common vision, and communication.

Literature Review

Definitions of project success from the 1960s–1980s usually involved completing the project within the cost, time, and quality constraints ("iron triangle" or triple constraint). Early conceptual frameworks were efficiency-oriented around project management, like Barnes' (1969) criteria for success in contract-based projects, which was specifically on the need to tightly control time and costs. As a result, such

measures became entrenched as a baseline measure of project success. In the late 1980s and 1990s, there was a broad recognition of client satisfaction as an important measure of success, and with Baccarini (1999) and others, the recognition of the need to differentiate project management success (efficiency) from product success (effectiveness). A project could be on time and on budget but not realize the expected benefits, or on the contrary, be a failure in terms of time and cost, while benefits were realized.

More recent success criteria have become dominated by stakeholder-focus (Muller & Jugdev, 2012; Luftman et al., 2017; Eggleton et al., 2023) where these criteria go beyond the internal constraints to focus on whether the project meets the needs and expectations of stakeholders, as well as the intended business results. This reflects the importance of measures beyond those of the traditional triple constraints of scope, time, and cost of the Project Management Institute (PMI). Organizations assess projects in terms of their strategic value chain impact. By this standard, an IT project that delivers a high-quality system providing business value to a firm's value chain partners would be considered successful, even if not finished on time or over budget.

Business-IT Alignment and Alignment Maturity

The alignment of business and IT strategy is a concept that first came into common use with Henderson & Venkatraman's (1993) Strategic Alignment Model (SAM). This concept was originally used as a description of how IT use has evolved from primarily supporting organizational units to being an active driver on the firm's value chain. Strategic alignment of an organization is the process of ensuring that the organization's IT strategy and business strategy are mutually supportive, in other words, the IT investments and projects can be used as an enabler of the business strategy while the business strategy can take advantage of the capabilities provided by the IT strategy. Henderson & Venkatraman's (1993) Strategic Alignment Model (SAM) framework viewed alignment along two dimensions: external (alignment of the business with value chain partners) and internal (alignment of business infrastructure and IT infrastructure). The SAM framework also conceptualized that alignment is a dynamic state and is a competency that requires continual development.

Alignment Maturity Models

Building on the SAM framework, Luftman's (2000, 2017) Strategic Alignment Maturity Model (SAMM) was an early and much-cited framework, which was followed by the Capability Maturity Model Integration (CMMI) framework (Software Engineering Institute, 2010; Chrissis et al., 2011). The Digital Maturity Model (DMM) (Berghaus & Back, 2016; Thordsen & Bick, 2023) includes SAMM to assess the alignment of business and IT as a foundational precondition for developing digital capabilities on the path to digital transformation maturity. Digital Maturity Models in general help companies assess their digital transformation maturity in multiple domains (e.g., strategy, technology operations, data, and culture), while SAMM has a validated measure for strategy/ IT alignment to assess the degree to which a firm's strategies are integrated, related, and coherently developed to support shared business goals. While DMMs assess an organization's overall progress across multiple domains—such as strategy,

technology, operations, data, and culture—SAMM specifically measures how effectively an organization's IT and business strategies are aligned to support shared objectives where the SAMM dimension of governance assesses the alignment of IT decision-making structures with business strategy reinforcing the "strategic governance" dimension of digital maturity. Using the CMMI model, organizations are assessed based on the alignment maturity of business processes using an organizational process-improvement framework.

Empirical Evidence

There is significant empirical evidence of the impact of alignment maturity on organizational effectiveness. Sledgianowski et al. (2004) conducted a study to empirically test the SAMM framework and validate that alignment maturity correlates strongly with improved IT effectiveness. Chan et al. (2006) demonstrated in multiple industries that alignment had a direct and positive effect on organizational performance. Baker et al. (2011) provided evidence to support the introduction of the concept of dynamic alignment competency with the ability to realign, at a lower cost and with high speed for changes that have disrupted alignment. Lind and Zmud (1991) conducted a study showing that greater convergence in the understanding between IT specialists and users (participants) resulted in more IT innovativeness where rich and frequent communication lead to this convergence. Njanka et al. (2021) showed in their literature review that IT-Business Alignment results in increased collaboration, competitive edge, increased performance, high ROI, and streamlined processes. Fucci et al. (2024) recently used a quick, self-service SAMM survey that provided a reliable maturity snapshot to assess alignment in terms of cybersecurity.

In contrast to the breadth of work on the impact of alignment maturity at the strategic level, little research has directly assessed the project-level impact of alignment maturity. Fuentes-Quijada et al. (2025) examined qualitatively how BizDevOps at the project level extends DevOps by integrating business perspectives into the software development lifecycle through the BizDevOps Business Capability which led to improved IT/business alignment while preserving organizational agility. It is expected that a firm with high alignment maturity will see greater IT project success (Eggleton et al.,2023) as the linkage of project objectives to business goals remains close and therefore supported by executive sponsorship and communication. Conversely, misalignment has been noted frequently to result in project failure either through the business changing priorities without involving IT in the project, or the delivery of a product by IT that is at odds with a business strategy that has shifted during the project.

Smith & Kumar (2023) provided an alignment evolution model where they present the dynamic nature of alignment and interventions (e.g., resource reallocation or application updates) when alignment is disrupted. Takeuchi et al. (2023) demonstrated an enterprise architecture-based metamodel where the benefits of the business–IT

alignment in machine learning projects provided connection to the business goals, system requirements, and system components early in the project lifecycle. These approaches are more fluid and less reliant on maintaining constant alignment. Maintaining this fluid alignment approach is particularly relevant in technologically turbulent environments where frequent shifts in industry norms and expectations can destabilize alignment.

Research Gap

Research studies have separately identified both business-IT alignment and Agile as important factors for project success (Njanka et al., 2021; Ravishankar et al., 2011; Smith & Kumar, 2023). However, these two streams of research have not been considered together in explaining IT project success, especially in the context of dynamic and fast-changing environments (Smith & Kumar, 2023). For example, Njanka et al., (2021) and Ravishankar et al. (2011) identified limited prior research examining the relationships between business and IT alignment and project success at the project (sub-unit) level.

Alignment research has been directed towards firm-level performance metrics, while Agile project management literature considers aspects like team processes and customer involvement but does not explicitly link to higher-level strategic alignments. Furthermore, IS success models (DeLone & McLean, 2003) have not included alignment maturity as an explanatory variable for project performance (Smith & Kumar, 2023).

Njanka et al. (2021) and Coltman et al. (2015) reviewed alignment research and suggested that future work should examine alignment on all organizational levels and in dynamic and fast-changing environments. In addition, this research extends their work by investigating alignment at the project execution level, and its interaction with Agile practices.

Research Objectives

The objective of this research project is to create and empirically test an information technology (IT) project success model that accounts for strategic alignment maturity and agile methods used under technology turbulence (TT). In this research the traditional model that Business-IT Alignment Maturity leads to Project Success was adapted to account for the impact of Agile Project Development and an environment of Technology Turbulence. The findings of this study contribute to both theory and practice for the following:

- Build Strategic Alignment Maturity into Project Success Models by expanding upon existing IS success models to include alignment maturity as an important dimension of success

- Evaluate Agile Methods beyond the iron triangle (scope, time, and cost) for IT project success, particularly in the context of highly dynamic environments
- Examine TT as a moderator to determine if the positive impacts of alignment maturity and Agile IT project success are mitigated or intensified under TT.
- Deepen the definition of project success with qualitative inquiry to gain further insight into what executives perceive as the definition of success for IT projects in terms of alignment and IT project agility.

Business-IT Alignment and Project Success Hypotheses

Business-IT alignment has been connected to successful project performance because of the collaboration that results in shared understanding between business stakeholders and IT teams (Smith & Kumar, 2023). Alignment can also affect different aspects of how projects are executed, such as the involvement of stakeholders, the clarity of requirements, and executive management support (Davis, 2014), which have been identified as IT project success factors in previous research. For these reasons, it is essential to gain a deeper understanding of how using Agile practices interacts with organizational alignment to drive IT project success, particularly in today's fast-changing, technology-driven environment where both adaptability to shifting needs and stability for strategic execution are critical. Business-IT alignment has also been repeatedly demonstrated to be associated with information technology project success. We therefore hypothesize the following:

- $H1_{align}$: Higher business-IT alignment maturity will result in higher IT project success.
- $H2_{agile}$: Agile development will result in higher IT project success.

Agile Methodology and Project Success Hypotheses

Agile methodologies evolved in the 1990s in response to frustrations with the more plan-driven, rigid software development practices of the time, such as Waterfall. Agile was designed to be more iterative, collaborative, and flexible, and has since become a popular set of best practices and frameworks for managing projects. Many Agile frameworks exist such as rapid application development (RAD), but all are united by key principles, including iterative development, direct customer collaboration, flexible product backlog, focus on customer value, and more. The Agile Manifesto (Fowler & Highsmith, 2001) puts it succinctly by stating "responding to change over following a plan" as the priority of Agile. Some of the specific Agile practices include:

- Short development cycles with frequent customer feedback are required.
- Flexible product backlog is created based on customer requirements and is allowed to change.
- Daily stand-ups are conducted for better communication and collaboration.
- Retrospectives are held for continuous improvements.

- Agile development is thus specifically designed to accommodate projects with uncertain or changing requirements, which are common in today's fast-moving tech landscape.

The association between Agile approaches and project success has also been studied where the consensus from past research is that Agile approaches work and have positive effects on various dimensions of project success. For instance, evidence suggests that Agile projects have better customer satisfaction ratings and higher product quality than more traditional practices (Ahmad, 2014; Bianchi et al., 2018). Agile's emphasis on iterative development, customer involvement, and flexibility are logical reasons for these positive results. Continuous customer collaboration keeps all stakeholders engaged and focused on a shared goal of building the best product for end-users, ensuring that the final deliverables meet their needs and is effective. Incremental delivery also allows for early identification of risks, thus making major budget overruns and late deliveries less likely. Agile adoption, of course, does not directly lead to success in traditional terms of on-time and on-budget project delivery, as Agile by nature is a flexible scope approach where success is measured by value, not numbers.

On the other hand, it is important to note that simply "doing Agile" (observing Agile ceremonies) does not make organizations truly Agile (Fair, 2012). Without the right organizational culture and support to be "being Agile," many companies end up with what could be called a partial agile adoption, with development teams employing Agile practices and the more "cascading" aspects of governance (budgeting, portfolio management) and processes remaining in a traditional mode (Känsälä & Tokumaru, 2023). It is also clear from industry that most organizations have some challenges moving to Agile, with 17th Annual State of Agile Report (2024) showing:

- 97% say that they practice Agile
- 78% say that not all teams follow the principles in the Agile Manifesto
- 83% say that their organization is not a high-Agile competency organization.

This is a clear example of "saying Agile" and "doing Agile" not necessarily being the same thing and can lead to only part of the potential impact of Agile on project success (Fair, 2012). Challenges such as a lack of management buy-in, an unsuitable organizational structure for projects, and a lack of understanding of Agile may cause an Agile initiative to fail. The problem is that Agile, by its nature, is not a one-size-fits-all approach and will not be successful under certain conditions, such as in highly regulated environments where contractually fixed-scope work must be delivered or when team members simply do not embrace the Agile principles.

In this study, we consider the Agile methodology in terms of the categories of project development: waterfall projects, hybrid projects, and Agile projects. With the focus of Agile on flexibility, customer involvement, and value, the use of Agile should be positively associated with the success of IT projects, particularly in terms of stakeholder satisfaction and overall outcomes:

Given the iterative, user-focused, and transparent nature of Agile, we would expect this to improve stakeholders' perception of success for Agile projects, since the regular deliverables would provide visible progress and continuous customer engagement that would keep all stakeholders engaged with the project. Moreover, we do not expect Agile to work all the time or for every project, particularly under conditions of low TT, when organizations already have a clear sense of what they want, and the technological environment is stable. This leads to the next section on moderation.

Technological Turbulence as a Moderating Factor

TT represents the volatility and fast pace of change in a firm's environment for project's technology, characterized by frequent upgrades, evolving standards, and emerging innovations, and unpredictable technological shifts. The hallmarks of a high-technology-turbulence (TT) environment are unexpected technology updates, strategic shifts in competitors' offerings, unforeseen and unscheduled business requirements, and the like (Huo, Wang, & Li, 2024). In extreme situations, business customers may come to a project with one set of features in mind and requirements, but by the middle of the project, some new technology may become available that can create the possibility of doing something else. In some situations, technologies are followed by shorter product lifecycles such as the product lifecycle of mobile phones may be as little as 6–18 months. As a result, a solution that seems next generation today may become "old" within months. And, in a turbulent environment, competitors could introduce a breakthrough solution even in the middle of an on-going project.

Turbulent environments, in theory, should also be able to change the nature of strategic relationships. For example, Jaworski and Kohli (1993) discovered that in markets with higher TT, a firm's market orientation appeared to be less effective leading to higher performance. That is, in turbulent markets, firms could not easily translate their marketing orientation to customer-driven performance as when change was not as frequent or unpredictable. However, if the change in technology characteristics occurs rapidly, IT projects - even well-aligned ones - may have a harder time keeping up with the change in business needs that result. The benefits of Agile projects could be significantly larger in highly changing environments as Agile is better equipped to cope with requirements that are not as well-defined or that keep changing due to the use of iterative and incremental processes. Thus, there are two proposed relationships to be tested, and a third potential outcome (discussed later).

We treat TT as a moderator of the Alignment–Success and Agile–Success relationships.

- H3: The positive relationship between business/IT alignment maturity and project success is moderated by TT.
- H4: The positive relationship between Agile projects and project success is moderated by TT.

In more turbulent environments, Agile-fueled projects should do even better than waterfall projects, and the relationship between Agile and project success should be stronger.

Given these two hypotheses, it is also possible that a combined high-maturity business /IT alignment with Agile methods will be a better “recipe” to combat and do well even in the face of significant levels of TT. That is, a firm that uses Agile projects and is also high on alignment (indicating a shared business /IT vision) will have the process-related capability to pivot as needed when TT occurs. This unique combination should lead to projects being more successful in the face of higher levels of TT.

- H5: Business/IT alignment maturity and Agile projects are moderated by TT in their impact on business success.

Using a multi-strand mixed methods analysis that consisted of interviews (qualitative macro strand) with senior executives and quantitative (micro strand) measures from project managers (not at the firms where the qualitative interview were conducted) were used to explore these hypothesized relationships as explained in the next section.

Methodology

For this exploratory research, a multi-strand mixed-methods design (Creswell & Clark, 2018; Clark & Ivankova, 2016) of quantitative and qualitative methods was used where this study involves hypothesized relationships with surveys and interviews. Unlike traditional mixed methods studies that collect both types of data from the same participant group, this research gathered data from different but related populations—senior level IT leaders in firms in the Southeast for the qualitative strand and then project manager members of the PMI organization for the quantitative strand. This approach reflects a multi-strand mixed methods design, in which each methodological strand independently contributes to understanding different dimensions of the same research problem (Tashakkori & Teddlie, 2010). Each strand was analyzed separately using appropriate quantitative and qualitative techniques, and the findings were subsequently used during the interpretation phase to achieve a multi-strand research design (Plano-Clark & Ivankova, 2016; Teddlie & Tashakkori, 2009). Tashakkori & Teddlie (2010) noted that “in multi-strand mixed methods studies, the quantitative and qualitative components may be implemented with different samples or subpopulations, as each strand targets a specific facet of the overarching research question” (p. 287). In this context there is one strand at the macro strategic level and then a micro view at different firms for the IT project management level.

The quantitative component used a survey administered to IT project managers working on IT projects with knowledge of their organization’s business-IT alignment processes. The main goal was to test the hypothesized relationships between alignment maturity, Agile IT projects, TT, and project success criteria using survey research. The qualitative component used semi-structured interviews with C-level and senior IT and business leaders at different firms than the project managers. The exploratory approach used interviews in one strand aimed at gathering and assessing commonly held experiences, feelings and perceptions of success, alignment and agility among those who have the authority to influence these attributes in the workplace. Using statistical associations in the quantitative strand with IT project managers allowed for hypothesis tests of the constructs while the qualitative senior executive interviews at different firms provided a macro view of the hypothesize relationships. The qualitative research design focused on the survey themes, but, unlike the survey, did not restrict the conversation in

the interviews with senior executives of companies not used in the surveys. The quantitative and qualitative thematic analysis while at different firms was also made easier by the fact that both the surveys and the interviews were on the same topics (alignment, agility, success and TT), the interviews allow for probing concepts and topics that are hard to measure quantitatively and can provide descriptive information that can supplement quantitative measures. The survey questions were based on validated measures: SAMM and TT while the interview questions addressed the dimensions of SAMM and TT and IT project performance at a strategic level.

Population and Sampling

The population of interest for the quantitative study was defined as PMI members located in the Southeastern United States, with the survey distributed by PMI chapters through an online tool. Convenience sampling of IT project practitioners was used, with a requirement that the respondent had worked on an IT project in the past 2 years. A total of 72 valid responses were obtained after data cleaning (removing responses with missing data). Participants were project managers and team leaders for software development teams, all members of a local PMI chapter. The sample included participants from a variety of industries that had been exposed to Agile to varying degrees, including finance, healthcare, and technology companies.

Characteristics of Survey Respondents

The average participant had more than 5 years of project management experience. Of the sample, 68% held the PMP® certification. Slightly more than half of the participants indicated that their organization was currently in the process of Agile transformation from Waterfall to Agile, and the remaining participants were in mature Agile or Hybrid organizations. This created a range of Agile maturity that could be used for comparisons in evaluating the impact of Agile adoption. While this quantitative strand of the study had 72 respondents, a larger sample may have increased the ability to detect smaller effects, but the current sample yielded an estimated statistical power of 92% for the specified model, indicating adequate power for detecting effects of the assumed magnitude for the hypotheses.

Characteristics of Interview Participants

The interview participants for the qualitative study were 16 senior executives (vice presidents, CIOs, CTOs, and CEOs – eight from the IT side an eight from the business side) at five companies located in the Southeastern United States. Each company had an IT department with over 100 employees. The five organizations represented manufacturing, healthcare, insurance, research, and retail companies familiar with Agile adoption. Recruitment for this study was conducted via snowball referrals and personal contacts where the initial contacts at local firms were used to obtain contact with additional executives.

Survey Administration

The survey was comprised of 64 structured questions administered electronically. A pilot test of the survey was conducted with eight IT and business professionals (not included

in this study) to improve wording and content resulting in only minor revisions. The final survey responses were gathered within four weeks.

Interview Protocol

One-on-one interviews were conducted either in person or by video conferencing. The average interview lasted about 60 minutes. The interview protocol was prepared in advance and covered the following questions:

- "What factors most influence IT project success?"
- "How does business-IT alignment affect project outcomes?"
- "How has Agile adoption impacted project success or failure?"
- "How do rapid technological changes affect your projects and how do you adapt?"

Probing in the interviews was used to allow for more specific examples (e.g.,"tell me about a project that you would consider successful versus one that challenged you") and personal reflection from the interviewees. Interviews were audio-recorded and transcribed verbatim after the participants' consent was obtained. Member checking (sharing the summary of the analysis with the participants for confirmation of the results) and audit trails (documentation of the coding decisions) were used to improve credibility. Coding was primarily theory-guided and deductive, drawing on the study's predefined constructs and Creswell & Poth's (2018) guidance, while allowing for inductive refinement as new codes emerged from the interview data. An initial codebook of pre-identified codes was developed and iteratively refined to a final set of 15 codes, each defined with a description, illustrative quotation, and linked provisional theme. Coding was carried out by the researcher, and an information systems expert who was not involved in the study's discussions independently reviewed and checked the coding as a form of external validation. Reliability of the coding was supported through this audit-and-consensus process, in which areas of divergence or ambiguity between the researcher's coding and the reviewer's feedback were discussed and resolved, leading to clarification and refinement of code definitions. Themes were then derived by grouping related codes into four overarching categories aligned with the study's constructs and were retained when they were consistently supported across interviews and no substantively new themes emerged in later stages of analysis. The transcripts were also de-identified to ensure participant confidentiality.

Measures and Instrumentation: *Business-IT Alignment Maturity*

Alignment maturity was measured using a modified version of Luftman's (2000, 2017) Strategic Alignment Maturity Assessment, which covers six key dimensions of alignment:

- Communication: Business and IT executives have a mutual understanding of each other.

- Value Measurement: Existence of formal metrics for measuring IT value to the business.
- Governance: Existence of a formal decision-making process to prioritize IT.
- Partnership: Trust and collaboration between IT and the business.
- Scope and Architecture: The flexibility of IT architecture to meet business needs.
- Skills: Workforce skills to support alignment.

Survey items (all available upon request) include, “IT and Business executives have a strong mutual understanding of each other’s strategies” (communication), and “Business and IT jointly define our IT architecture to fit business needs” (scope and architecture). Respondents were asked to rate each item on a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree resulting in an Alignment Maturity Score. Alignment Maturity had high internal reliability (Cronbach’s $\alpha = 0.92$) in alignment with Luftman’s original instrument.

Agile Methodology

Participants were asked, “Which best describes the methodology of the project you have in mind”. This resulted in these project types - Waterfall (33%), Hybrid (30%), Agile (37%). Their responses to TT, project success, and alignment were then anchored in the predominant project types on which they had worked.

Technological Turbulence

TT was measured using a modified version of Jaworski and Kohli’s (1993) TT scale. The scale was modified to better suit the context of IT projects. The respondents assessed their technological environment with the following items:

- “Technology in our industry is changing rapidly.”
- “It is difficult to predict where technology in our field will be in a few years.”
- “Technological changes frequently present major opportunities or threats to our projects.”

Responses were made on a Likert scale of 1 = strongly disagree to 5 = strongly agree to create a TT Score ($\alpha = 0.79$). High scores represent a rapidly changing and unpredictable technological environment.

Project Success Measures

Project success (measure available upon request) is a multidimensional measure based on three types of perceived project success using the scale (1 = strongly disagree, 5 = strongly agree).

- Project Efficiency Success – This was measured in terms of the degree to which original scope, schedule and budget parameters were met, so items included “The project was completed within the original budget”.
- Stakeholder Perception of Success: The client/user satisfaction dimension was measured by items such as “Project team members consider the project to be successful” and “The project end users consider it to be successful”.

- Overall Perceived Success – Included a global project success assessment: "The overall project was successful" and "How sponsors rated project success" were used to measure overall project success.

These success measures were used in separate analyses as well as combined into indices. Reliability was good for the stakeholder perception construct (α = 0.88) and for the efficiency and success measure (α = 0.80).

Data Analysis Procedures

To ensure statistical rigor, first descriptive analyses were used to assess the assumptions of normality and homoscedasticity, verifying compliance with parametric regression analyses. The Durbin–Watson statistic indicated the absence of multicollinearity among the measures. First hypotheses $H1_{align}$ & $H2_{agile}$ were tested with regression, leading to the following results:

Direct Effects ($H1_{align}$ & $H2_{agile}$)

For $H1_{align}$ (alignment ⇒ project success) and $H2_{agile}$ (agile ⇒ project success) see (Table 1).

Table 1. *Regression Results for $H1_{align}$ and $H2_{agile}$*

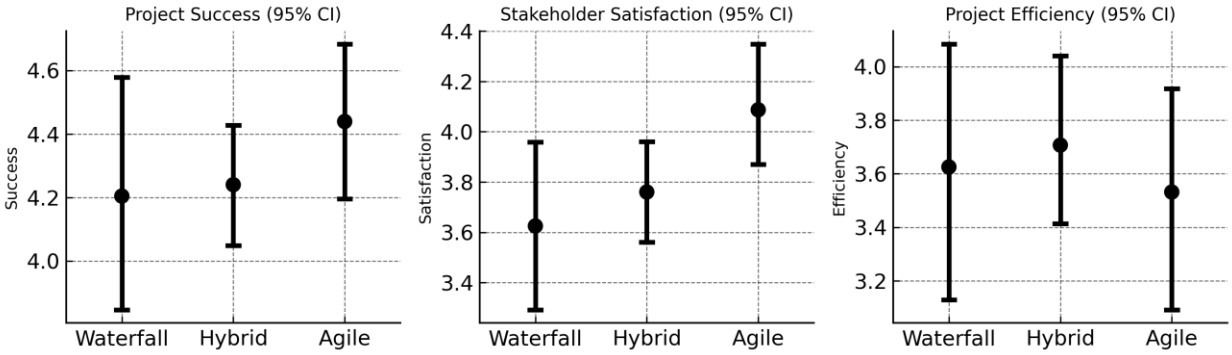
Dependent Variable	R^2	β (Alignment Maturity)	*p* (Align Maturity)	R^2	β (Agile)	*p* (Agile)
Stakeholder Satisfaction	0.19	0.34	0.007**	0.18	0.21	.032*
Perceived Project Success	0.12	0.33	0.012*	0.16	0.18	.043*
Project Efficiency	0.06	0.24	0.163 NS	0.06	0.27	.095 ns

Note. R^2 = coefficient of determination; β = standardized beta coefficient; *p* = probability value. $p < .05$ (*), $p < .01$ (**), ns = not significant.

In Table 1, for $H1_{align}$ alignment maturity was significantly associated with Stakeholder Satisfaction and Perceived Project Success. For $H2_{agile}$ the direct effect of the Agile measure also had a significant impact on Stakeholder Satisfaction and Perceived Project Success. For both hypotheses, perceived Project Efficiency was not significant. The qualitative interviews with executives from different firms than the project managers in the quantitative study, "deemphasized" schedule adherence if the business outcomes of the project were met.

Further to examine $H2_{agile}$ (Agile projects ⇒ project success), Figure 1 shows the mean values and 95% confidence intervals for Project Success, Stakeholder Satisfaction, and Project Efficiency across Waterfall, Hybrid, and Agile projects using Seaborn point plots (Waskom, 2021).

Figure 1. *Project Outcomes by Project Type*



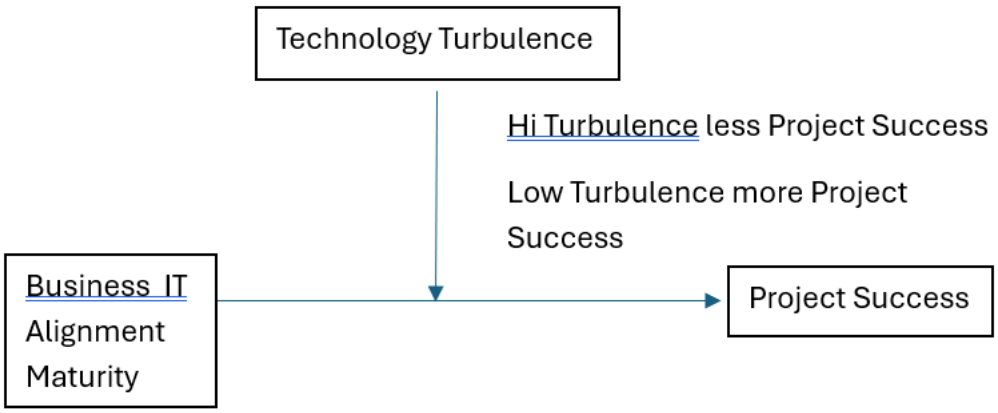
Note. Perceptual measures were used for project success, stakeholder satisfaction, and project efficiency.

The point plots show that project success and stakeholder satisfaction remain relatively consistent across hybrid methodologies; Waterfall was associated with project success and project efficiency, while Agile showed an upward trend for both project success and stakeholder satisfaction, with overlapping confidence intervals. However, project efficiency showed little difference for agile while waterfall, as expected, showed more project efficiency. This suggests that while overall project outcomes are comparable, Agile methods may foster better stakeholder satisfaction and perceptions of success. Agile does not have the impact on project efficiency of waterfall and hybrid. Since perceived project performance and perceived stakeholder satisfaction are highly correlated, the following moderation analysis uses the project performance measure. Agile is now examined in terms of moderation effects on project success considering technology turbulence.

Moderation Analysis (H3, H4 & H5: TT Effects)

H3 is addressed that posits the positive relationship between business-IT alignment maturity and project success is moderated by TT (Figure 2). In moderated regression of the three measures of project performance, only perceived project performance by the project managers showed a significant relationship for H3 as reported below (Tables 2, 3, and 4) while project manager perceptions of Stakeholder Satisfaction and Project Efficiency were not significant.

Figure 2. *TT Moderation on Alignment Maturity ⇒ Project Success*



Note: Model tests the moderating effect of technology turbulence on the relationship between Business/IT Alignment and Project Success

Table 2. *Moderated Regression Model - Perceived IT Project Success for Alignment Maturity Moderated by TT*

Model	Predictors	R^2	*F* change	Sig. *F* Change	Durbin-Watson
1	Alignment Maturity (IV)	0.139	11.269	0.001	
2	Alignment Maturity (IV) & Technological Turbulence (MV)	0.141	.194	0.661	2.053

Note: p < .05 (*), p < .01 (**), p < .001 (***)

Table 3. *ANOVA Model - Perceived IT Project Success for Alignment Maturity Moderated by TT*

Model	Predictors	F	*p* Sig.
1	Alignment Maturity (IV)	11.269	0.001
2	Alignment Maturity (IV) & Technological Turbulence (MV)	5.666	0.005

Note: p < .05 (*), p < .01 (**), p < .001 (***)

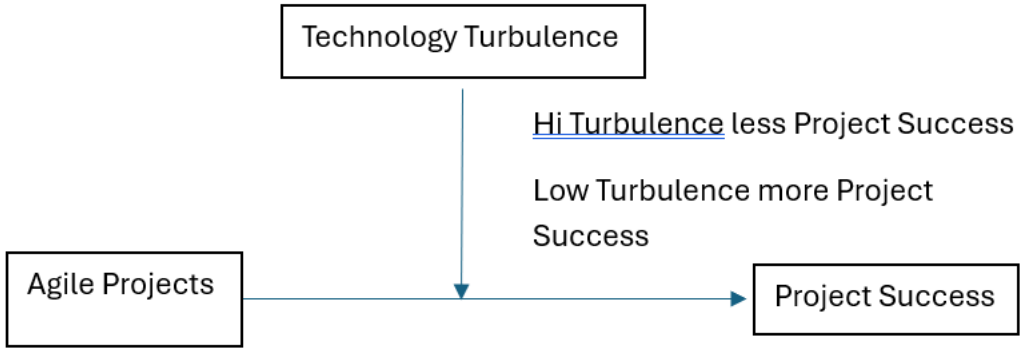
Table 4. *Coefficients - Perceived IT Project Success for Alignment Maturity and TT*

Model	Variable	β	*p* Sig.
1	(Constant)	2.798	
	Alignment Maturity (IV)	0.368	.001***
2	(Constant)	2.601	
	Alignment Maturity (IV)	0.361	.002**
	Technological Turbulence (MV)	-0.054	.031*

Note: p < .05 (*), p < .01 (**), p < .001 (***)

From the perspective of IT project management, how does business-IT alignment maturity affect the success of IT projects while under the influence of technological turbulence? Hypothesis 3 predicted that higher levels of technological turbulence will weaken the relationship between business-IT alignment maturity and perceived IT project success. For the effect of the combination of business-IT alignment maturity and the technological turbulence moderator on perceived IT project success, process results shown in Table 4 indicated that the moderator (TT) was significant $p = .031$ ($p < .05$). The results were similar for perceived Project Satisfaction while perceive Project Efficiency continued to have a non-significant relationship. Thus, Hypothesis 3 was supported.

Figure 3. *TT Moderation on Agile ⇒ Project Success Relationship*



Note: Model tests the moderating effect of technology turbulence on the relationship between Agile Projects and Project Success

To address H4 (Figure 3), multiple regression analysis with moderation analysis addressed the impact of Agile Projects and the moderating impact of technological turbulence on Project Success. In Table 5, Model 2 showed that Agile use and

technological turbulence had a slight (2%) influence on perceived IT project success which was a slight increase from Agile use Model 1 (1%). Table 6 shows that the combination of Agile and technological turbulence was not significant (p = .510). The β coefficient in Table 7 was neutral, so use of Agile and technological turbulence was not related to increased levels of perceived IT success. While Agile had a significant impact on Project Succes when considered alone, TT does not moderate the impact of Agile use. As result, Hypothesis 4 was rejected.

Table 5. *Moderated Regression Model - IT Project Success for Agile Moderated by TT*

Model	Predictors	R^2	Sig. *F* Change	Durbin-Watson
1	Agile (IV)	0.010	0.393	
2	Agile (IV) & Technological Turbulence (Mod)	0.019	0.431	2.146

Note: p < .05 (*), p < .01 (**), p < .001 (***)

Table 6. *Anova Model - Perceived IT Project Success for Agile Moderated by TT*

Model	Predictors	F	Sig.
1	Agile (IV)	0.738	0.393
2	Agile (IV) & Technological Turbulence (Mod)	0.681	0.510

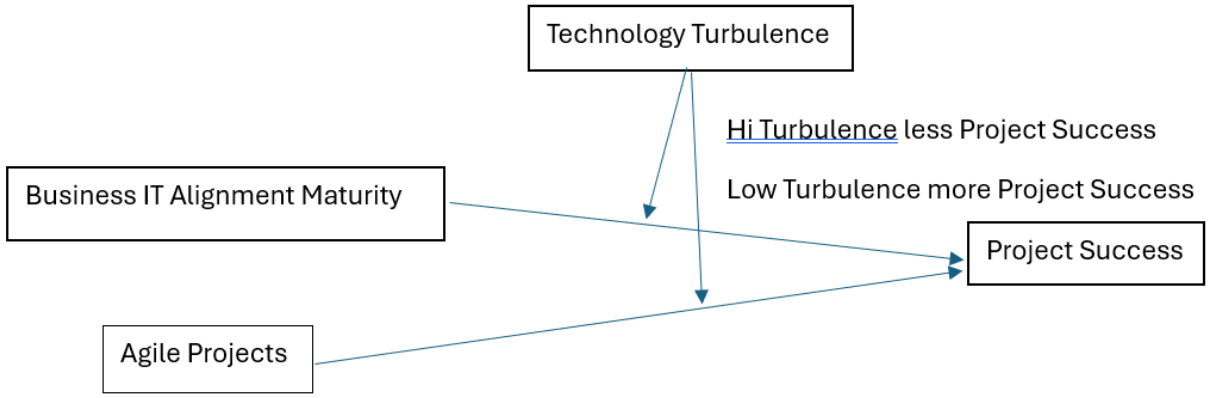
Note: p < .05 (*), p < .01 (**), p < .001 (***)

Table 7. *Coefficients for Perceived IT Project Success for Agile Moderated by TT*

		Coefficients	
Model	Variable	β	Sig.
1	(Constant)	3.693	0
	Agile (IV)	0.04	0.393
2	(Constant)	3.29	0
	Agile (IV)	0.038	0.42
	Technological Turbulence (MV)	0.104	0.431

Note: p < .05 (*), p < .01 (**), p < .001 (***)

Figure 4. *TT Moderation on Alignment Maturity and Agile ⇒ Project Success Factors*



Note: Model tests the moderating effect of TT on the relationship between Agile Projects and Project Success and IT Alignment Maturity and Project Success

For the analysis of H5 (Figure 4), multiple regression analysis of the moderation effect of TT on business-IT alignment maturity and Agile Projects impact on Project Success was examined. Business-IT alignment maturity and Agile use had a combined influence of 17.7% on perceived IT project success as shown in Table 8. This relationship improved under Model 2 to 18.4% due to the addition of technological turbulence. Table 9 shows that business-IT alignment maturity and Agile are significant at p = .005 (< .01), and when technological turbulence was added, was still significant at p = .014 (< .05). The β coefficient for business-IT alignment maturity in Table 10 was positive (.388) and Agile was positive (.221), while technological turbulence (-.055) was essentially neutral. These values indicate that business-IT alignment maturity and Agile use under conditions of technological turbulence were related to increased levels of perceived IT project success thus H5 was accepted. In the presence of TT. Agile projects in firms with Alignment Maturity resulted in more IT Project Success.

Table 8. *Moderated Regression - Perceived IT Project Success for Alignment Maturity and Agile under TT*

Model	Predictors	R^2	Sig. *F* Change	Durbin-Watson
1	Alignment Maturity (IV) & Agile (IV)	0.177	0.001***	
2	Alignment Maturity (IV) & Agile (IV) & Technological Turbulence (MV)	0.184	0.463	1.95

Note: p < .05 (*), p < .01 (**), p < .001 (***)

Table 9. *ANOVA Model - IT Project Success for Alignment Maturity and Agile under TT*

Model	Predictors	*df*	*F*	Sig.
1	Alignment Maturity (IV) & Agile (IV)		5.661	0.005**
2	Alignment Maturity (IV) & Agile (IV) & Technological Turbulence (Mod)	3	3.794	0.014*
2	Residual	68		

Note: p < .05 (*), p < .01 (**), p < .001 (***)

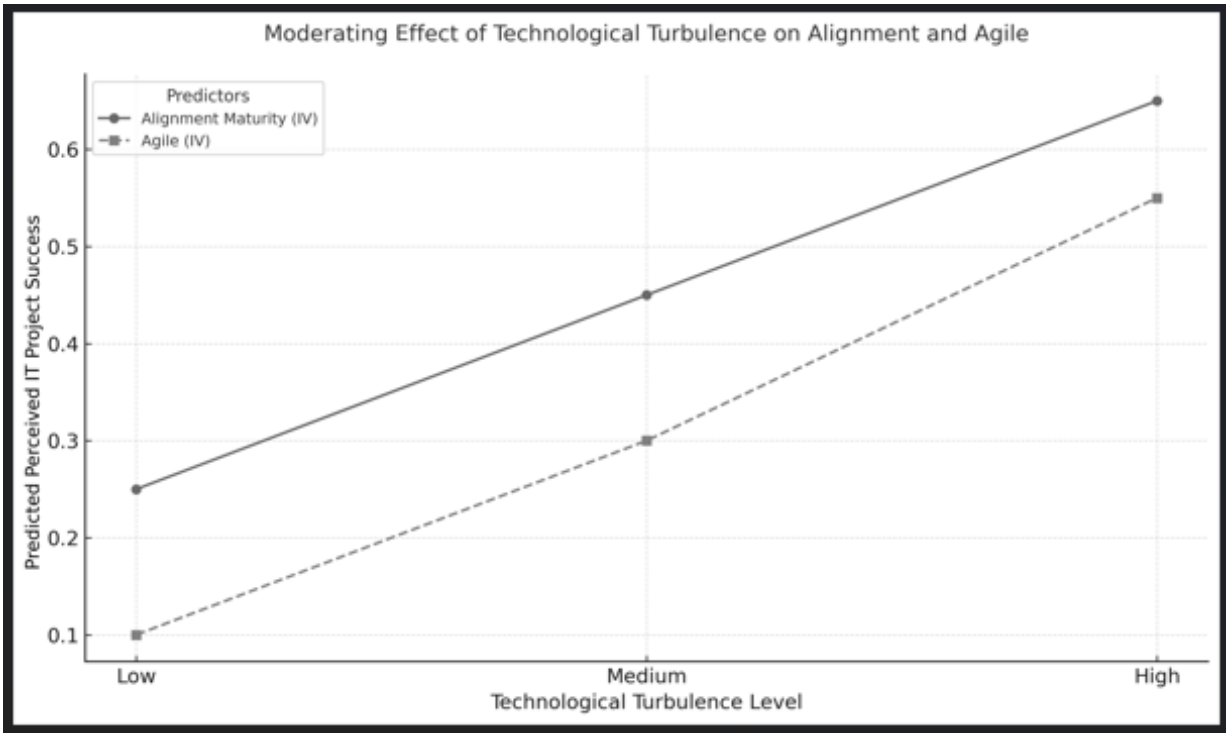
Table 10. *Coefficients - IT Project Success for Alignment Maturity and Agile under TT*

Model	Predictors	β	Sig.
1	(Constant)	2.812	0
	Maturity (IV)	0.388	0.002**
	Agile (IV)	0.221	0.013*
2	(Constant)	2.615	0
	Maturity (IV)	0.381	0.003**
	Agile (IV)	0.121	0.011*
	Tech Turbulence (Mod)	-0.055	0.662

Note: p < .05 (*), p < .01 (**), p < .001 (***)

Figure 5 shows that Agile projects achieve higher perceived project success even with increasing Technology Turbulence as compared to waterfall and hybrid projects indicating Agile's resilience and flexibility. Hybrid projects demonstrate intermediate adaptability, benefiting partially from Agile principles but still constrained by traditional elements. Waterfall (1) projects remain the least adaptable under turbulence. These findings reinforce those Agile methodologies best support projects in TT in conditions of IT/ business alignment. The regression results (Tables 8, 9, and 10) show that alignment maturity and Agile have a significant impact on IT project success under conditions of TT.

Figure 5. *Moderating Effect of Technological Turbulence on Alignment Maturity and Agile ⇒ Project Success*



Note: Agile show positive impact in TT on Project Success

The results of the quantitative analyses tell a straightforward story when considered together: alignment maturity is a key predictor of IT Project Success and use of Agile methods, by itself, also has a significant effect. Also, the predicted moderation effect of TT on Project Success was muted by both IT Business Alignment and Agile projects. Projects in environments of high alignment were significantly more successful than projects low in alignment in both low-TT and high-TT projects. Agile muted the impact of TT to a lesser degree than IT Business Alignment on IT Project Success but still contributed to the significant model that considered IT Business Alignment, Agile projects, and TT all simultaneously and their interaction effect. From these results both high alignment and agility in a challenging turbulent environment will help to dampen the impact of TT (which is consistent with the qualitative interviews with senior executives at other firms). So “the combination of business-IT alignment maturity and Agile methodology use mitigated the effects of technological TT, allowing firms to achieve maximum success during periods of high change. These results are summarized in Table 10.

Table 10. *Summary of Hypothesis Testing Results*

Hypothesis	Result	Interpretation
H1	Supported	Higher business-IT alignment maturity will result in higher IT project success: Alignment predicted stakeholder satisfaction and perceived project success, but not project efficiency
H2	Supported	An Agile development context will result in higher IT project success: Agile predicted stakeholder satisfaction and perceived project success; but not project efficiency.
H3	Supported	The positive relationship between business/IT alignment maturity and project success is moderated by TT
H4	Not supported	The positive relationship between Agile projects and project success is moderated by TT.
H5	Supported	High maturity business/ IT alignment in the context of Agile methods will dampen the moderation by TT

Interviews with senior IT and business leaders in organizations other than the firms where the quantitative study was conducted yielded several overarching themes that deepened understanding of the quantitative findings. The qualitative results were organized around key themes, providing representative quotes and linking them to the quantitative results. Table 11 has the key themes for the executive interviews. Table 12 has key quotes from some of the interviews.

Table 11. *Key Qualitative Themes from Interviews*

Theme	Description
Redefining Project Success	How executives define project success beyond time and budget
Alignment as an Ongoing Process	Descriptions of practices to maintain alignment (communication, governance)
Agile in Practice	Experiences with implementing Agile, including obstacles and benefits
Technological Change and Flexibility	Stories of projects that had to pivot due to technology shifts
Alignment and Agile Synergy	Instances where alignment and Agile together helped or where misalignment undermined an Agile project
Cultural and Leadership Factors	The importance of company culture and top management in aligning IT and business with projects

Table 12. *Selected Interview Quotations*

Category	Speaker	Quotation
Project Success	VP of Marketing	If the project delivered a solution that the customers love and it helps our bottom line, I call it a success – even if it took a bit longer or cost more than we thought.
Project Success	CIO	On time and on budget is important, but delivering value is paramount.
Business-IT Alignment	CEO	Alignment is not a one-and-done thing. Throughout the project, our priorities may evolve. If IT isn't plugged in with us, the project can go off track.
Business-IT Alignment	CIO	In times of fast change, you cannot afford miscommunication. We need business and IT completely in sync, or we'll be building the wrong thing while the market moves.
Agile Methodology	IT VP	A lot of teams here claim they're Agile – they do stand-ups, they have sprints – but when push comes to shove, they do not embody the real spirit. They are still afraid to change scope, or they still isolate themselves from the business.
Agile Methodology	Business Product Director	Mid-project, our competitor introduced a new feature. Because we were Agile, we were able to shuffle our backlog and include a similar feature last minute. We ended up delivering something competitive. If we were waterfall, we would've stuck to the original plan and missed that boat.
Agile Methodology	CEO	To reap Agile's benefits, our whole culture had to shift. We had to empower teams to make decisions and embrace failure as a learning experience.
TT and Adaptation	VP	The threat of disruption keeps us on our toes – it forces IT and business to talk more and be more Agile. The projects that embrace that do fine.
TT and Adaptation	IT Director	Projects that tried to "ignore the outside noise" often delivered something irrelevant.

Projecting into the Future: Discussion, Conclusions, and Lessons Learned

This research clearly shows that strategic IT alignment, not Agile alone, is the primary driver of IT project success, especially under conditions of persistent technological turbulence (TT). Agile only delivers its promised benefits when it is built on a foundation of strong alignment maturity, shared goals, and a culture that reinforces business value over speed. In turbulent environments, alignment becomes even more critical, acting as the stabilizing force that allows Agile teams to adapt without losing strategic direction.

This study offers novel, empirically grounded insights into two critical success factors influencing IT project outcomes within the context of persistent and intense technological turbulence characterizing today's rapidly evolving business environment. The important success factors are business IT alignment maturity ("alignment") and Agile project practices. Recommendations from this research were substantiated by both quantitative and qualitative analyses:

Recommendation 1: "Focus on strategic IT alignment as a foundation for performance improvement"

Alignment maturity was found to be a strong predictor of perceived project performance. Alignment maturity was also strongly correlated with project success. Alignment was also found to be more important in turbulent times, as described by Interviewee 3 below:

> "We had our first taste of this [TT] with the pandemic. Now, with 5G and all these advances, it's just like, chaos in my opinion" (Interviewee #3).

Our results further indicate that even during continuous TT, as Interviewee 2 describes below, alignment has allowed projects to survive and thrive:

> "We were transitioning and had to quickly learn new technology. But when the dust settled, all our other plans worked out as intended. Because there were real alignment and trust in the first place, we were able to make the adjustments, and it didn't derail the project" (Interviewee #2).

Recommendation 2: "Operationalize alignment via Agile practices".

For recommendation 2, while Agile practices had a strong positive impact on project performance, their effect on traditional "efficiency" measures such as schedule and cost performance was less pronounced. Additionally, as shown in Figure 1, perceptions of project success and stakeholder project satisfaction were higher for Agile projects versus waterfall and hybrid projects. In Figure 3, the analysis suggests that Agile consistently adds value only in organizations with a strong existing culture of strategic IT alignment, i.e., those that (1) have a clear business focus and (2) truly adhere to the Agile mindset. This indicates that Agile should be based on a firm's value proposition and underpinned by a collective commitment to Agile principles. Agile by itself will not rescue failing projects; unless leaders work with a great sense of urgency to bring about strategic IT alignment, its benefits will be out of reach. Interviewee #3 also explained how the right application of Agile in combination with the business and IT alignment contributed to IT project success in the face of rapid changes and unexpected events.

> "Agile helped us, but mainly because of a lot of alignment that was in place. And when I say a lot of alignment, there were common business and IT goals, metrics and incentives. So that's what helped us perform Agile in the right way" (Interviewee #3).

Recommendation 3: Long term IT value and performance is driven by a robust set of IT success metrics that account for alignment maturity, type of project development, and technology turbulence.

These results show that an integrated project success model with a set of robust IT success metrics can effectively steer long-term value and performance. As illustrated in Figure 1, the success factors of perceived project success and stakeholder satisfaction were related to Agile projects whereas perceived project efficiency was more aligned with waterfall and hybrid projects. The analysis of the model in Figure 3 did not significantly support that Agile project had higher project performance under condition of higher TT. However, interview results indicated that the positive effect of alignment on performance was higher in times of turbulence (Interviewee #3). As shown in Figure 3 and by the qualitative analysis, TT was a negative factor, just not to the extent that was

expected. This was, in fact, likely due to a similar effect of both alignment and agility in dampening the volatility that interviewees' organizations experienced (as was shown in the model in Figure 4). In this situation, however, alignment was more important: better-aligned projects have remained high-performing despite uncertainty, whereas agility by itself was not enough to deliver successful outcomes. In other words, the adoption of Agile in isolation without an established firm culture of strategic alignment is not a sufficient condition for IT project success. As exemplified by Interviewee #5's quote below, the joint application of alignment and Agile can substantially improve the odds of success.

> "The pressure is a lot less when everyone is on the same page. And with Agile, we can move a lot faster, all in the same direction, to keep delivering value. If we can keep that up, our projects will be more successful" (Interviewee #5).

The advice to practitioners (Recommendation 4) on how to help ensure that IT project success is jointly driven by speed (Agility) as well as strategic focus (alignment) was also strongly corroborated by our analysis. Statements, such as that of Interviewee #4 quoted below, further support this conclusion.

> "In our organization, speed is not an issue. We don't need Agile to do that. We need to be aligned with the business and always know where the end goal is in terms of value. That's really the key" (Interviewee #4).

In exploring how business and IT alignment maturity affects IT project success in turbulent business conditions, our study lays the ground for an integrative theory of IS success that connects strategic alignment and agile development with executional excellence and digital maturity.

Limitations of the Research

While this research was a cross-sectional study, it did not provide a micro view of project development over the project life cycle. This micro view would result in project development and project management insight not in this research which was based on a post hoc view of projects from project managers perspectives. Also interviews with project managers during project life cycle stages would provide insight into issues that arise in agile, hybrid, and waterfall development projects. Using this project life cycle approach would provide insight into differences across projects that vary in size and complexity.

Since this research was conducted in the Southeastern region of the United States generalizability is limited. But given the widespread understanding of the importance of IT Business alignment since its acceptance in the 90's (Henderson & Venkatraman's,1993) and the use of Agile in the past 30 years, alignment and agility have become established and broadly accepted as important factors in project success.

Contributions to an Integrative Theory of IS Success

The first contribution of this research is to a stream of research on extending and refining the IS success model. Specifically, this study demonstrates the need for IT and non-IT leaders to consider the explicit inclusion of strategic alignment in the IT project

success model. Given the centrality of strategic alignment to IT project success and digital maturity, adding these constructs to the DeLone & McLean (2003) model of IT success would enable a broader model of IT success.

A second contribution of this research lies in its integration of a comprehensive theory of information systems (IS) success, which underscores the pivotal influence of organizational context, particularly in shaping the effectiveness of Agile methodologies and other IS implementation practices (Bahi et al., 2024). These and other contextual factors, many of which are ultimately likely to be related to the level of strategic alignment, are likely to have a major impact on IS success in achieving digital maturity. Building on this discussion, there is a need for more robust empirical inquiry to better illuminate the complex interrelationships among these critical IS success factors, including the way in which these and others may interact to enable the identification of the most promising levers of action.

Finally, the preceding analysis contributes to the advancement of an integrative theory of information systems (IS) success by reaffirming and extending the foundational IS success model. It emphasizes that real IT project success should not be confined to efficiency-oriented metrics such as schedule adherence and budget compliance but must also encompass the creation of meaningful stakeholder value. This implies the need for research to consider, for example, using and, if necessary, updating the Balanced Scorecard approach to managing for success in IT projects particularly with the impact of artificial intelligence and other emerging technologies (Dong et al., 2024; Diebold, 2025). In conclusion, this research contributes to our knowledge of what needs to be done to be able to successfully deliver information systems. Specifically, for business and IT leaders, the results offer guidance in identifying strategic actions and investment priorities that are most conducive to leveraging digital transformation and adapting effectively to evolving business environments in building a strategic roadmap for **DigITal** alignment

Building a Strategic Roadmap: The Future—From Business–IT Alignment to DigITal Alignment

DigITal alignment is the next-generation capability that organizations must build to thrive in environments defined by (Vial, 2019):

- Continuous technological turbulence
- Rapid shifts in digital platforms
- AI-driven decision cycles
- Product-based operating models
- Cloud-native architectures
- Data-driven value creation

Why **DigITal** Alignment Matters:

Alignment becomes the stabilizing force that allows organizations to adopt emerging technologies without losing strategic coherence.

Agile becomes the execution engine, translating aligned strategy into rapid, iterative delivery.

Digital operating models provide the structure, enabling cross-functional teams, product ownership, and continuous value realization.

Our research shows that alignment maturity amplifies the benefits of Agile and mitigates the negative effects of turbulence. Table 13 has strategic roadmap for achieving **DigITal** alignment based on these pillars:

- Strategic IT alignment as the foundation of project success
- Agile practices as the mechanism for delivering aligned value
- DigITal alignment as the future state of organizational maturity
- Integrated success metrics as the steering system for long-term performance

Table 13
Strategic Roadmap for IT-Business Success

Phase	Strategic Priority	Core Action	Desired Result	Research Link
1	Build the alignment foundation	Assess alignment maturity and establish shared IT-business goals, metrics, and incentives.	Greater trust, strategic clarity, and resilience during turbulence.	Alignment maturity was the strongest predictor of perceived project performance and became more important under technological turbulence.
2	Align and rationalize the project portfolio	Prioritize projects by business value, alignment maturity, and development approach fit.	Better governance, stronger project selection, and reduced volatility.	Waterfall and hybrid supported efficiency, while Agile supported stakeholder satisfaction and perceived success.
3	Operationalize alignment through Agile	Use Agile practices to reinforce shared goals, feedback, and cross-functional collaboration.	Faster value delivery with strategic focus.	Agile added consistent value only when alignment maturity was strong; Agile alone did not offset turbulence.

Phase	Strategic Priority	Core Action	Desired Result	Research Link
4	Modernize success metrics	Create a balanced scorecard covering efficiency, satisfaction, strategic contribution, adaptability, and long-term value.	A broader, more accurate view of IT project performance.	Agile scored higher on perceived success and satisfaction, while waterfall/hybrid favored efficiency.
5	Respond to turbulence with adaptive governance	Establish decision structures for emerging technologies, rapid shifts, and uncertainty.	Greater resilience and adaptability without derailing projects.	Technological turbulence had a negative effect, but alignment and Agile together reduced volatility.
6	Institutionalize alignment, agility, and digital operating models	Build communities of practice, cross-functional training, shared incentives, and leadership development.	Sustainable digital maturity and long-term project success.	Interviewees emphasized that strategic focus and alignment, not speed alone, drive long-term performance.

The priority should be to strengthen strategic IT alignment before expanding Agile adoption. The findings indicate that Agile alone will not rescue failing projects if business and IT leaders are not aligned around goals, metrics, incentives, and value expectations. The second priority should be using Agile practices to make alignment visible and actionable through frequent feedback, shared decision-making, and continuous delivery of stakeholder value. The third priority should be redefining IT project success so that organizations measure not only speed, cost, and scope, but also satisfaction, strategic contribution, adaptability, and long-term business value.

In an era of continuous technological turbulence, organizations should not pursue agility for speed alone: (1) Speed without strategic focus leads to chaos and (2) Alignment without agility leads to stagnation. The path forward is the fusion of both speed and alignment—elevated into a digital operating model that enables organizations to adapt quickly, stay strategically grounded, and deliver meaningful business value over time The strategic roadmap, described in Table 13, incorporates findings from this study and extends the concept of alignment into the next stage of organizational evolution: **digITal** alignment. The future demands the integration of strategic alignment, Agile execution, and digital-era operating models into a unified capability.

This roadmap positions business–IT alignment as the foundation of IT project success, Agile as the operating mechanism for delivering aligned value, and integrated success metrics as the steering system for long-term performance. In technologically turbulent environments, organizations should not pursue agility for speed alone; instead, they should combine agility with strategic focus so that IT projects can adapt quickly while continuing to deliver meaningful business value.

Further Research

While IT/Business alignment has been researched starting with the groundbreaking work of Henderson & Venkatraman's (1993) and Luftman (2000), further research is needed to assess if the alignment model is still relevant in this time of Digital Transformation. Needed are stress tests of the stability of the alignment model to handle the rapid and often radical change from technology turbulence. Agile appears to be adaptable to technology turbulence and in the perceptions of senior executives in this study delivers quality value-added results so much so that they disregard the iron triangle of time, cost, and scope for project success.

This research shows that deeper analysis is needed to address each stage of the project development lifecycle in various degrees of turbulence in technology. Needed is a micro view of projects of different sizes and complexities studied while tracking the outcomes of these projects and their impact on both value chain activities and the support activities in firms. For this research senior executives at the same firm as the projects studied could be assessed quantitatively and qualitatively to see if the results of the IT projects had short- and long-term value for the firm. For this research assessing the costs associated with IT projects both in terms of development / implementation could be approached as in the mantra of "move fast and break things" while focused also on the long-term strategic interest of the firm. Or on the other hand can this mantra of moving fast lead to innovation that gives firms competitive advantage overcoming the costs of project development and lead to innovation. In any case, more research using mixed methods with the same population for both project management and senior executives across different types of industry sectors is needed to answer these questions.

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