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Time is relative:
The moderating effect of national culture on the relationship between time until deal completion and acquisition performance

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Abstract

This paper examines whether the time a firm devotes to M&A due diligence, measured as time to completion (TTC), affects the firm's long-term post-acquisition performance. We propose and test for an inverted U-shaped relationship, suggesting longer durations initially enhance performance, but beyond a certain threshold, extended TTC negatively impacts performance. While many existing studies have examined the direct effects of national culture on M&A performance, none have explored its effects on the relationship between TTC and performance. Specifically, we introduce cultural difference and acquiror national culture as moderating factors. We examine 2,113 domestic and cross-border M&A transactions completed during the sample period 2010-2019 using data from the databases LSEG SDC Platinum and Eikon. We find that, contrary to expectations, the hypothesized inverted U-shaped time-performance relationship is not statistically significant in isolation and cultural differences do not moderate the relationship. However, the relationship becomes statistically significant and takes on an inverted U-shape when moderated by the acquiring firm's national culture along Hofstede's Power Distance Index (PDI) dimension and in the same way becomes significant when moderated by the Indulgence vs. Restraint (IVR) dimension, taking on a U-shape. These findings indicate a conditional nonlinear effect and both cultural dimensions significantly negatively moderate the relationship. The findings highlight the importance of culture in the acquiring company in M&A due diligence and suggest that the impacts are not universal but culturally contingent.

Keywords: M&A - Acquisition performance - Time to completion - Cultural difference - National culture dimensions

Definitions and key concepts

This section defines the central terms and variables used throughout the thesis. Definitions are adapted to the context of mergers and acquisitions (M&A), with particular focus on cultural dynamics, due diligence, and post-acquisition performance. Where applicable, operationalizations of variables used in the empirical analysis are also clarified.

Time to completion (TTC) refers to the number of days between the announcement of an acquisition and the official completion of the deal, marked by the share purchase. In this study, TTC serves as a proxy for the amount of transactional due diligence conducted prior to the acquisition.

Transactional due diligence is the phase of the acquisition process that begins once a non-binding agreement has been signed and announced, and ends with the closing of the deal. During this stage, the acquiring firm gains access to confidential data from the target company to conduct a detailed due diligence.

Mergers and acquisitions (M&A) refer to transactions in which one firm acquires a controlling interest in another. This thesis includes only those acquisitions that lead to a change in majority ownership, indicating a significant shift in control and strategy.

Cross-border acquisitions are defined as transactions where the acquiring and target firms are registered in different countries. This distinction allows the analysis to explore the role of national cultural differences in acquisition performance.

Acquisition performance captures how the acquiring firm performs relative to the market following an acquisition. It is measured using Buy-and-Hold Abnormal Returns (BHAR), which captures the acquiring firm's stock performance relative to a market benchmark over time and is a commonly used method to assess whether acquiring firms outperform or underperform the market.

Cultural difference is based on the national cultures of the acquiring and target firms, as measured using Hofstede's cultural dimensions. The study calculates the cultural difference using differences in scores across these dimensions, and analyzes both the total cultural difference (commonly called cultural distance in literature) and difference in each dimension individually.

Hofstede's cultural dimensions provide a framework for comparing national cultures along six axes: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence. These are used to quantify both cultural difference and the cultural profile of each acquiring firm.

National culture of the acquirer refers specifically to the cultural characteristics of the acquirer's home country, based on Hofstede's dimensions. This variable is included separately to assess how the acquiring firm's cultural context may influence due diligence practices and acquisition outcomes.

Table of contents

1. Introduction **4**
1.1 Purpose 6
2. Research background and hypotheses **6**
2.1 Theoretical background 6
2.1.1 Acquisitions: Background and importance 7
2.1.2 Time to completion and acquisition performance 8
2.1.3 Cultural difference as a moderator 10
2.1.4 Acquirer national culture as a moderator 12
2.2 Conceptual model and hypothesis formulation 14
2.2.1 Time to completion and acquisition performance 15
2.2.2 Moderation by cultural difference 16
2.2.3 Moderation by acquiring firm national culture 17
3. Data and methodology **18**
3.1 Sample selection 18
3.2 Independent variable 19
3.3 Moderating variables 20
3.3.1 Cultural difference 20
3.3.2 National culture of the acquirer 21
3.4 Dependent variable 21
3.5 Control variables 22
3.6 Empirical model 23
3.6.1 Testing H1: Inverted U-shaped relationship between TTC and BHAR 24
3.6.2 Testing H2: Cultural difference moderation 24
3.6.3 Testing H3: Acquirer national culture moderation 24
4. Analysis and results **25**
4.1 Descriptive statistics 25
4.2 Hypothesis testing 28
4.2.1 H1: Inverted U-shaped relationship between TTC and BHAR 28
4.2.2 H2: Moderating effect of cultural difference 28
4.2.3 H3: Moderating effect of acquiring firm national culture 29
4.3 Robustness checks 32
4.4 Summary of results 33
5. Discussion **33**
5.1 Research implications 34
5.2 Managerial implications 36
5.3 Methodological implications 36
5.4 Limitations and directions for future research 37
5.5 Conclusion of discussion 38

1. Introduction

Every year, an estimated 5.8 billion avocados are purchased worldwide, meaning roughly one avocado per person over the age of 15 (Statista, 2023; Our World in Data, 2025; for calculation see Appendix A). This means that most readers of this paper have likely faced the common challenge of picking the right avocado. Too little time spent picking an avocado and you may come home with a too firm or spoiled avocado and too much time and you may not make it home for dinner in time to enjoy it. Fortunately, if you make a poor choice, you can usually try again the next day. In contrast, very few readers will likely have bought an entire company since M&A transactions occur approximately 156,000 times less frequently than avocado purchases (IMAA, 2025). While the stakes of choosing an avocado are low, the consequences of misjudging an acquisition of a company can be significant and long lasting. Rushing the assessment process may conceal problems that only emerge over time, while delays can lead to deal fatigue, uncertainty or missed opportunities. And unlike with avocados, there is no fresh start the next day.

This paper explores a question that, while simple in its form, carries significant weight in practice for mergers and acquisitions: How does time spent assessing an acquisition target prior to acquisition influence post-acquisition success? While overly hasty decisions can lead to overlooked crucial information and protracted due diligence may delay opportunities and waste resources, there is likely a point between the two extremes where the acquiring company can reap the most benefits relative to the costs. In M&A literature, researchers have long studied the factors that influence acquisition outcomes. Traditionally, the focus has been on macro-level drivers such as industry trends and economic cycles. More recently, however, scholars have turned their attention to micro-level determinants of deal success, such as the structure of the deal, management incentives, and due diligence efforts (e.g. Wangerin, 2019). One such emerging variable is the time until deal completion which captures the number of days between a deal's public announcement and its legal closing. This time span is used as a proxy for the transactional due diligence process, with the idea that longer durations may reflect more extensive assessments, negotiation or preparation. However, research findings have been mixed. While some studies suggest that more time allows for better decision-making and integration planning (Wangerin, 2019), others note that excessive delays can increase the risk of renegotiation, market shifts, or even deal abandonment (Christensen et al., 2011).

At the same time, cultural differences between acquiring and target firms and the culture of the acquiring firm have been long-standing topics in cross-border M&A research (Stahl & Voigt, 2008). While some studies highlight the integration challenges it creates such as communication barriers, trust issues, and value misalignment (Reus & Lamont, 2009; Björkman et al., 2007), others suggest it can generate synergies and innovation when properly managed (Chakrabarti et al., 2009; Reus & Lamont, 2009). Despite extensive work on culture and M&A, little is known about how cultural difference and national culture of the acquiring firm interacts with the deal process with respect to time. This study addresses a key gap in the literature: how the time taken to complete an M&A deal affects post-acquisition performance, and how this relationship may depend on the cultural context of the firms involved. While time and culture have each been studied as separate drivers of acquisition outcomes, their interaction remains underexplored, particularly how cultural traits might influence the effectiveness of time invested in due diligence. By integrating these two perspectives, this paper offers a more nuanced view of how acquisition outcomes are shaped by both due diligence and cultural dynamics. The findings have implications for both theory and practice. Theoretically, this study contributes to a more process-oriented understanding of M&A success. Practically, it helps decision-makers understand when taking more time in due diligence is worth the cost, and how cultural context can shift that tradeoff. Accordingly, this paper investigates the following question: To what extent does the time until deal completion affect post-acquisition performance in M&A transactions, and how is this relationship moderated by cultural difference of acquirer and target, or the acquiring firm's culture independently? To answer this question, the study analyzes 2,113 friendly and completed M&A deals announced between 2010 and 2019, using data from the LSEG SDC Platinum database. The sample spans 49 countries and includes both national and cross-border deals. Key variables include time to completion, cultural difference, national culture and acquisition performance. Cultural difference is quantified using Hofstede's six national dimensions. Acquisition performance is measured using Buy-and-Hold Abnormal Returns (BHAR) over a 36-month window post-acquisition.

While the direct effect of time to completion on acquisition performance was not statistically significant, introducing culture as a moderating factor revealed meaningful results. In particular, two cultural dimensions were found to significantly affect the relationship between time and performance, offering new insight into the complexities of time in M&A. The remainder of the paper is structured as follows: Chapter 2 reviews existing literature on M&A performance, due diligence, culture in M&A in addition to the

presentation of conceptual model and hypothesis formulation. Chapter 3 presents the methodology and dataset. Chapter 4 reports the empirical results. Chapter 5 discusses the findings in light of existing research and concludes with implications and suggestions for the future.

1.1 Purpose

This study investigates how the time until deal completion affects long-term acquisition performance and whether this relationship is moderated by cultural factors. Specifically, it examines whether the acquiring firm's national culture and the cultural difference between acquirer and target shape the effectiveness of time invested in due diligence. By drawing on Hofstede's cultural dimensions and analyzing 2,113 M&A transactions from 2010 to 2019, the study contributes to the literature on M&A process dynamics and cross-cultural management. The analysis is conducted using a moderated quadratic regression framework with BHAR as the performance measure.

2. Research background and hypotheses

2.1 Theoretical background

Understanding what drives successful acquisitions remains a central question in M&A research. While financial and strategic considerations have traditionally dominated the field, more recent studies emphasize the importance of process-related and cultural factors, particularly in shaping post-acquisition performance (Cartwright et al., 2012; Larsson & Finkelstein, 1999; Stahl & Voigt, 2008). Among these, two variables stand out for this research paper: the time to completion of a deal and the cultural context in which it occurs.

Existing research has explored TTC and cultural differences independently. On one hand, longer TTC has been associated with more thorough due diligence and better integration preparation, but also with increased uncertainty and cost (e.g. Wangerin, 2019). On the other hand, cultural difference has been found both to hinder and enhance acquisition outcomes, depending on how differences are managed (e.g. Ahern et al., 2015; Chakrabarti et al., 2009). However, there is limited understanding of how these two factors interact, specifically how cultural conditions may shape the effectiveness of time invested in the pre-completion phase.

This study addresses this gap by examining how cultural differences and acquiring company national culture moderate the relationship between time to completion and acquisition performance. By integrating insights from M&A, cross-cultural management and organizational theory, it proposes that the value derived from prolonged due diligence is context-dependent. In some cultural settings additional time may improve outcomes while in others it may exacerbate integration challenges or signal managerial inefficiency.

The theoretical framework unfolds as follows. First, it provides an overview of acquisitions and their strategic relevance. Second, it introduces the concept of time to completion and explains its role as a proxy for transactional due diligence. Third, it discusses how cultural differences between acquirer and target firms may moderate the relationship. Finally, it considers how the national cultural traits of the acquiring firm may shape the effectiveness of due diligence time, highlighting the role of specific cultural dimensions.

2.1.1 Acquisitions: Background and importance

Mergers and acquisitions (M&A) refer to transactions in which one company acquires or merges with another, typically with the aim of expanding operations, accessing new markets, achieving synergies, or acquiring valuable assets such as technology talent or intellectual property (Gaughan P. A., 2015). While the terms are often used interchangeably, acquisitions, which is the focus of this paper, specifically involve one firm taking control of another through majority shareholding.

Companies pursue acquisitions for a variety of strategic reasons, including accelerated growth, diversification of product offerings, achieving economies of scale or eliminating competition (Gaughan P. A., 2015). Acquisitions can be especially appealing as they offer a faster route to market entry or capability expansion than organic growth strategies.

M&A activity represents a significant portion of global capital flows. Each year, hundreds of thousands of acquisitions are completed across a wide range of industries and regions, with global deal values often exceeding several trillion U.S. dollars annually (IMAA, 2025). Despite the frequency and scale of these transactions, success is far from guaranteed.

The complexity of acquisitions arises from multiple dimensions such as financial, strategic, operational and cultural. While financial modeling and strategic rationale are often emphasized, post-acquisition outcomes are frequently shaped by less tangible factors such as leadership alignment, employee integration and organizational culture (e.g. Cartwright & Schoenberg, 2006; Cartwright et al., 2012). Studies have shown that a significant proportion

of acquisitions fail to deliver the expected value, particularly due to integration challenges or misjudged synergies (Christensen et al., 2011; Bauer & Matzler, 2014).

As a result, academic interest has gradually expanded from purely financial and strategic analyses (e.g. Chatterjee, 1986) toward understanding the oftentimes less tangible, process-based elements of acquisition performance (for reviews, see Cartwright et al., 2012; Larsson & Finkelstein, 1999; Stahl & Voigt, 2008). This study follows that shift by focusing specifically on post-acquisition performance and how it is influenced by time to completion and cultural context during the acquisition process.

2.1.2 Time to completion and acquisition performance

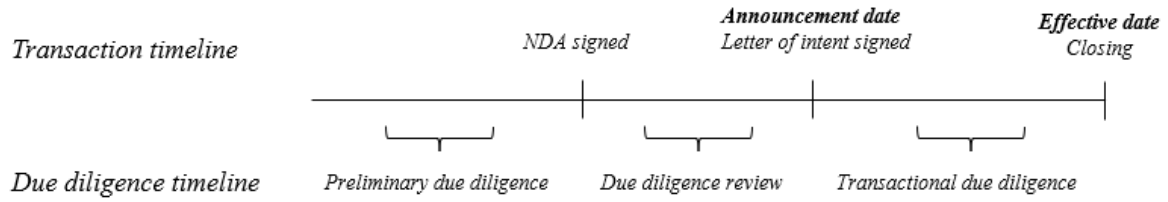
Following the decision to pursue an acquisition, the process unfolds across several stages, including multiple forms of due diligence. It is commonly believed that conducting due diligence helps acquirers make more informed acquisition decisions (Lajoux and Elson 2000). Companies are aware of the importance of due diligence and the question is, rather than how much due diligence is needed, that it needs to be done well (Perry & Herd, 2004). As shown in Figure 1, due diligence is typically segmented into preliminary due diligence, due diligence review and transactional due diligence, each aligned with key milestones in the transaction timeline (Wangerin, 2019). The time of the due diligence process is commonly used as a proxy for depth and intensity of due diligence performed (Wangerin, 2019; Marquard & Zur, 2015; Amel-Zadeh & Zhang, 2015) and while each phase contributes to the overall deal evaluation, this study focuses exclusively on the transactional due diligence phase.

Preliminary due diligence, conducted before negotiations, relies primarily on publicly available information and serves as an initial screening mechanism for potential targets. Cross-border deals in particular may involve extended preliminary due diligence due to greater institutional complexity and cultural unfamiliarity (Chakrabarti et al., 2009). However, since this phase often concludes without formal engagement or public disclosure, it is largely inaccessible to empirical study (Wangerin, 2019).

The due diligence review phase grants limited private access following a confidentiality agreement but still reflects an early and often selective view of the target. While important for shaping negotiation terms, its effects are difficult to isolate and measure, especially since many deals are abandoned during or immediately after this phase.

In contrast, transactional due diligence occurs after the public deal announcement and provides the most complete access to confidential information before the transaction is closed. It is during this phase that acquirers finalize purchase price, assess risks in detail and plan integration strategies which all have been linked to post-acquisition outcomes (Wangerin, 2019). Accordingly, this study focuses on the transactional due diligence phase, using time to completion, measured as the number of days between the announcement and the effective date, as a proxy for its depth and intensity.

Figure 1



This measure captures this window in which acquiring firms conduct in-depth reviews of the target, finalize negotiations and prepare for post-acquisition integration. A longer time may suggest more rigorous due diligence, greater alignment between firms and better preparation for integration, all of which have been associated with stronger post-acquisition performance outcomes (Wangerin, 2019; Davis, 2012). Thorough assessments during this phase can help identify risks, refine deal terms and ensure cultural compatibility (Wangerin, 2019).

However, a prolonged time to completion can also introduce risks. Delays may lead to deal fatigue, higher advisory and legal costs and increased exposure to market or regulatory changes that can undermine the transaction's strategic value (Bhagwat et al., 2016). In some cases it can lead to deal renegotiation or even deal abandonment (Christensen et al., 2011; Butler & Sauska, 2014). Moreover, drawn-out timelines can signal internal disagreement, uncertainty or weak managerial execution which could potentially erode stakeholder confidence and damage firm value (Bhagwat et al., 2016). Delays are not always accidental as agency problems may incentivize managers to either rush or drag out the process to meet personal or political objectives, especially in weakly governed firms and acquirers often also scale back due diligence in response to competitive pressures such as when facing the risk of rival bids during a prolonged process (Wangerin, 2019).

Taken together, these opposing forces suggest that there may be an optimal time window in which the benefits of due diligence and preparation are maximized without incurring excessive costs or risk. This conceptual trade-off provides the theoretical foundation for a non-monotonic, inverted U-shaped relationship between TTC and post-acquisition performance. While some prior research has identified a monotonic relationship between due diligence and outcomes (Wangerin, 2019), other studies suggest the presence of an optimal turning point, beyond which further times become detrimental (Bhagwat et al., 2016; Butler & Sauska, 2014). Initially, additional time may improve outcomes by allowing more thorough preparation, but beyond a certain point, the costs and uncertainty begin to outweigh the benefits.

Despite its presence in M&A research, few studies have examined time to completion and its implications on the deal process and acquisition performance. Previous research has also examined antecedents to time to completion (Luypaert & De Maeseneire, 2015) but leaves a gap of the nuances behind how the time taken to close a deal affects the acquiring firms' post-acquisition performance.

2.1.3 Cultural difference as a moderator

Ethnography and the study of cultures is broadly applied in the M&A field of research (e.g. Stahl & Voigt, 2008). Cultural difference is one of multiple difference measures in research which highlights that cultural, institutional, geographic and economic differences affect acquisition performance (Galdino et al., 2022). Cultural difference refers to the extent of difference between the cultural values and practices of two countries or organizations. An important distinction is the difference between corporate culture and national culture (Weber et al., 1996) and in this study the focus is on national culture. In the M&A context, it is commonly measured using composite indices based on national culture frameworks, with Hofstede's cultural dimensions ([1980] 2001) being one of the most widely applied and among the 25 most cited books in social sciences (Green, 2016). The measure is older than others used in research but has been shown to be stable over time (Beugelsdijk et al., 2015). This framework quantifies cultural differences along six key dimensions which are individualism vs collectivism, uncertainty avoidance, power distance, long- vs short-term orientation, masculinity vs femininity and indulgence vs restraint. These can influence organizational behavior, communication and decision making processes in cross-border deals (Rozen-Bakher, 2018). Cultural difference, as operationalized in this study, reflects

differences between the national cultures of the acquiring and target firms using both the total Hofstede score, summarizing the individual differences into a single continuous variable, and the individual differences separately of the six dimensions.

Research has shown that cultural difference has multifaceted and sometimes contradictory effects on acquisition outcomes. The positive or negative impact of cultural differences on acquisition performance depends on the outcome variable under investigation, the nature and extent of cultural differences, the integration approach taken and the interventions chosen to manage cultural differences (Finkelstein & Cooper, 2019; Slangen, 2006). On the one hand, large cultural differences are associated with increased integration challenges, such as miscommunication, conflicting management styles and reduced absorptive capacity (Reus & Lamont, 2009; Björkman et al., 2007). These barriers can undermine trust and reduce the effectiveness of post-acquisition integration. On the other hand, when managed effectively, cultural differences can foster innovation, learning and resource complementarity as diversity may introduce novel perspectives and capabilities (Chakrabarti et al., 2009; Ahern et al., 2015). However, these benefits are oftentimes only seen in the long-run (Chakrabarti et al., 2009). This duality suggests that the impact of cultural difference is conditional upon other contextual and managerial factors. Within the cultural difference measure by Hofstede the different dimensions proposed affect in different ways presenting yet another nuance to the cultural differences between companies in acquisitions (Rozen-Bakher, 2018).

The due diligence process is one such contextual factor. Acquirers aware of potential cultural challenges in a cross-border acquisition may allocate more time and resources to due diligence to mitigate risks (Chakrabarti et al., 2009; Luypaert & De Maeseneire, 2015). For instance, they may engage in deeper cultural assessments, involve local advisors or plan more comprehensive integration strategies (Lawrence et al., 2021). Specifically, national cultural differences influence the way firms approach the pre acquisition phase and the perception of value of the due diligence phase with more frequent use of advisors (Angwin, 2001; Lawrence et al., 2021). Thus, stricter selection criteria for cross-border deals are applied and may affect the quantity and quality of deals that make it to the transactional due diligence phase (Chakrabarti et al., 2009; Ahern et al., 2015; Lawrence et al., 2021). This suggests that cultural differences could influence how the time to completion translates into acquisition performance.

While TTC is commonly used as a proxy for the intensity of due diligence and preparation, the effectiveness of this time investment is not uniform and may be shaped by

the cultural difference between firms. In deals with low cultural difference, additional time is more likely to yield meaningful benefits, allowing for deeper assessments, smoother coordination and greater post-acquisition alignment as cultural difference hinders efficiency of early due diligence efforts. In these cases, the benefits of extended due diligence accumulate more gradually and the associated costs emerge later resulting in a steeper and more pronounced performance curve. Conversely, when cultural differences are high, the effectiveness of additional time is more limited. Integration difficulties and misalignment may arise earlier in the process and longer TTC may reflect or exacerbate these issues until they are mitigated as differences immediately impact communication, trust and information processing. As a result, the costs of due diligence surface more quickly, compressing the window in which TTC contributes positively to performance. This dynamic flattens the expected inverted U-shaped relationship between TTC and performance as the performance gains from prolonged due diligence diminish faster in culturally distant deals.

This dynamic suggests that cultural difference moderates the inverted U-shaped relationship between TTC and acquisition performance. At low levels of cultural difference, the optimal point in the curve may be found at higher performance levels. At high levels of cultural difference, the costs of prolonged preparation may rise faster, flattening or even reversing the expected performance gains.

From a theoretical standpoint, this moderation aligns with contingency and learning theories in cross-cultural management. These perspectives argue that the effectiveness of managerial practices, such as due diligence, depends on the context in which they are implemented, which in this case is the cultural difference between the firms. As Haans et al. (2016) suggests, moderators can significantly alter the curvature of non-linear relationships. In our context, cultural differences may flatten the inverted U-shape between TTC and acquisition performance, by accelerating the point at which costs outweigh the benefits of extended due diligence.

2.1.4 Acquirer national culture as a moderator

While cultural difference captures the difference between countries, national culture of the acquiring company refers to the deeply ingrained values, norms and behavioral patterns that shape how individuals and institutions operate within a given country. In the M&A context, national culture informs how acquiring firms approach decision making, risk management, negotiation and organizational integration which are core components of the acquisition

process (Morosini et al., 1998; Frijns et al., 2013). Even in domestic deals, the acquiring firm's national culture profile can influence how it allocates time, processes information and responds to ambiguity during the due diligence process (Olie, 1990).

This study uses Hofstede's six dimensional framework to examine how specific cultural traits of acquiring firms may moderate the relationship between TTC and acquisition performance. These six dimensions shape managerial attitudes toward control, consensus-building, patience, authority and risk, all of which influence how firms interpret and utilize the time between deal announcement and closing.

Research underscores that these cultural traits have direct bearing on post-acquisition outcomes. For example, Breuer et al. (2018) found that acquiring firms from countries with high individualism and high uncertainty avoidance tend to exhibit lower long-term performance post-acquisition, measured through buy-and-hold abnormal returns (BHAR). Importantly, these effects were found not only in cross-border deals, but also in domestic ones, suggesting that national culture independently influences value creation through its effect on internal decision processes, such as due diligence and integration planning.

Given that time to completion is used as a proxy for the rigor of transactional due diligence, national culture may determine how effectively this time is used. For instance, acquirers from cultures high in uncertainty avoidance may be more risk-averse and prone to overanalyzing, planning or delaying decisions to avoid surprises, potentially dragging out the due diligence process without proportionate performance benefits (Frijns et al., 2022). In contrast, firms from more uncertainty-tolerant cultures may pursue leaner, faster processes, optimizing the use of time without unnecessary delay.

Other dimensions also imply distinct moderation pathways. Firms from high power distance cultures may rely on top-down decision making, which could lengthen timelines when hierarchical approval is required or reduce responsiveness to integration risks discovered late in the due diligence process. Cultures with low indulgence scores may exhibit less flexibility and tolerance for uncertainty, reinforcing delays. Conversely, long-term oriented cultures may perceive extended due diligence as an investment, aligning well with a slower, more deliberate approach to strategic integration (Breuer et al., 2018). Thus, each dimension potentially moderates the TTC-performance curve in distinct ways, some steepening the inverted U-shape, others flattening it or shifting the inflection point.

Theoretically, this perspective draws on the institutional and cultural cognition view, which suggests that organizational behavior is shaped by the societal logics in which firms are embedded (Thornton et al., 2012). Time is not merely a neutral input in deal execution but

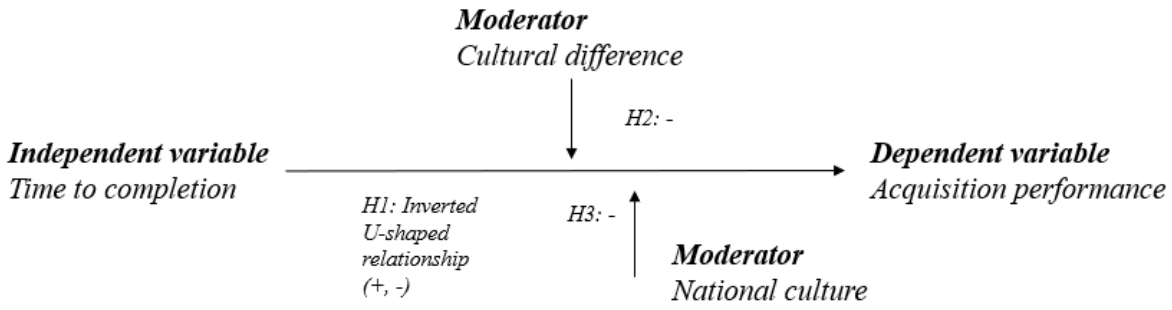
a culturally conditioned resource that is valued, used and interpreted differently depending on the acquirer's national context. Accordingly, the same duration of TTC may have differing effects on acquisition performance depending on the acquirer's cultural predispositions toward planning, patience, authority and risk.

Together, these cultural contingencies complement the theoretical rationale outlined in the previous sections and complete the framework for understanding how time and culture interact to influence acquisition success.

2.2 Conceptual model and hypothesis formulation

The preceding theoretical framework highlights the complex and interdependent roles of time and culture in determining post-acquisition outcomes. This section translates these insights into formal hypotheses, grounded in existing research and theory. The hypotheses builds on the conceptual relationships discussed previously and reflects the expected direction and form of the associations. The accompanying figures visually support these predictions by illustrating the underlying logic and conceptual interactions. Figure 2 presents the overall conceptual model, which shows the hypothesized independent effect of TTC on performance and the two moderators of cultural difference and acquiring firm national culture that shape this relationship.

Figure 2



2.2.1 Time to completion and acquisition performance

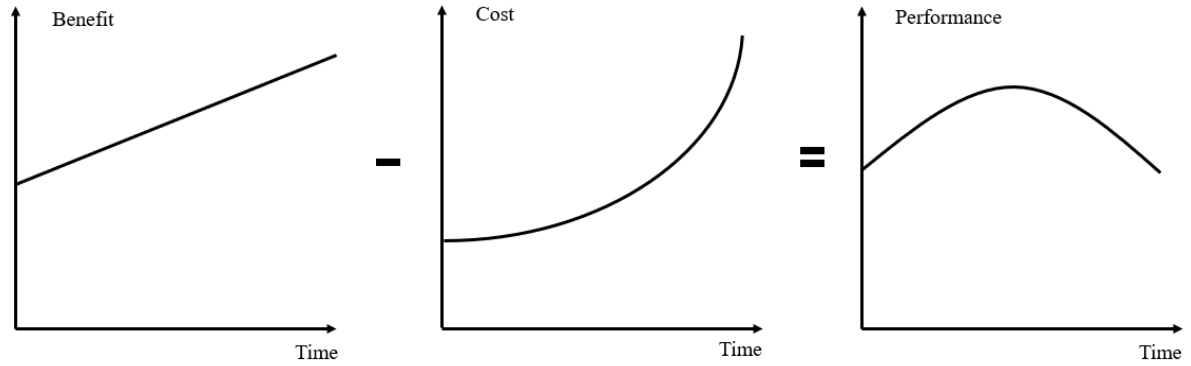
The time to completion of a deal, meaning the period between public announcement and closing, is often used as a proxy for the intensity and quality of transactional due diligence (Wangerin, 2019). A longer TTC can allow acquirers to more thoroughly assess the target, identify risks, develop integration strategies and align internal and external stakeholders.

These efforts typically increase the likelihood of realizing expected synergies and improving post-acquisition performance.

However, additional time also brings costs. As the process drags on, it can introduce uncertainty, delay value creation, increase legal and advisory expenses and lead to deal fatigue (Christensen et al., 2011; Bergh et al., 2014). In some cases, extended TTC may signal managerial inefficiency or internal disagreement, eroding stakeholder confidence and harming firm value.

As shown in Figure 3, these competing dynamics showing the trade-off between increasing benefits and rising costs as more due diligence is conducted suggest a non-linear, inverted U-shaped relationship. Benefits increase with time and at low TTC costs have not yet started to increase drastically. At longer TTC the costs start to increase and at a certain point costs begin to dominate and outweigh the benefits in the time and performance relationship. Thus, post-acquisition performance is maximized at an optimal TTC duration that balances diligence with decisiveness.

Figure 3



Accordingly, we hypothesize the following:

H1: There exists an inverted U-shaped relationship between time until deal completion and acquisition performance, such that an optimal time until deal completion exists, beyond which additional time leads to a decline in acquisition performance.

2.2.2 Moderation by cultural difference

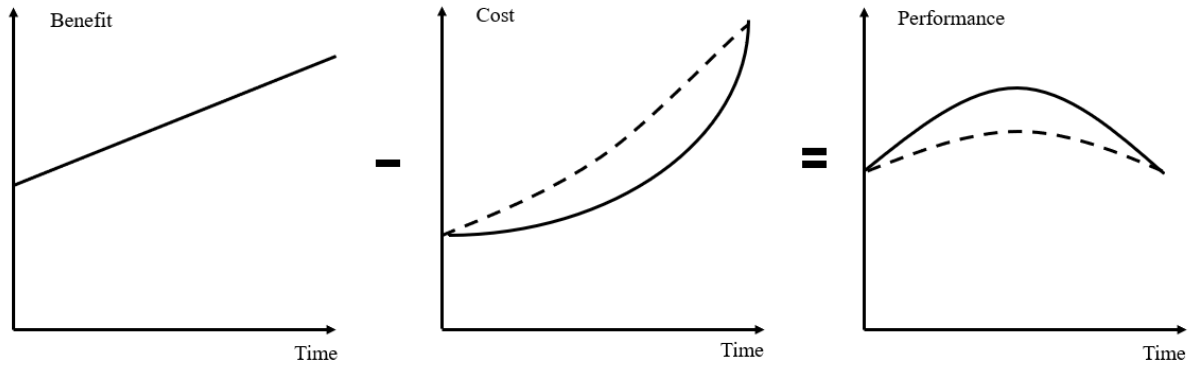
Cultural difference refers to the differences between the national cultural values of the acquiring and target firms (Hofstede, [1980]2001). High cultural difference is associated with greater integration complexity, communication barriers and reduced absorptive capacity but it

can also create opportunities for learning and innovation when well managed (Chakrabarti et al., 2009; Reus & Lamont, 2009).

This duality implies that the value of prolonged TTC depends on the degree of cultural difference. In acquisitions with low cultural difference, additional time is more likely to result in meaningful performance gains, as firms can use extended due diligence to align strategies, build trust and prepare for integration without immediate cultural friction. In contrast, in high cultural differences, cultural friction such as miscommunication, divergent expectations and trust barriers tend to emerge early in the process, limiting the effectiveness of prolonged due diligence. As a result, additional time may fail to overcome these challenges and even amplify perceptions of complexity or strategic misfit, leading to earlier onset of costs and reduced performance benefits.

As visualized in figure 4, cultural difference is therefore expected to flatten or compress the inverted U-shape between TTC and acquisition performance, reducing the performance gains from additional time and increasing the risk of diminishing returns.

Figure 4



Accordingly, we hypothesize the following:

H2: National culture difference negatively moderates the relationship between time until deal completion and acquisition performance. Specifically, the negative impact of prolonged deal completion time on acquisition performance is more pronounced when cultural difference between the acquiring and target firms is high.

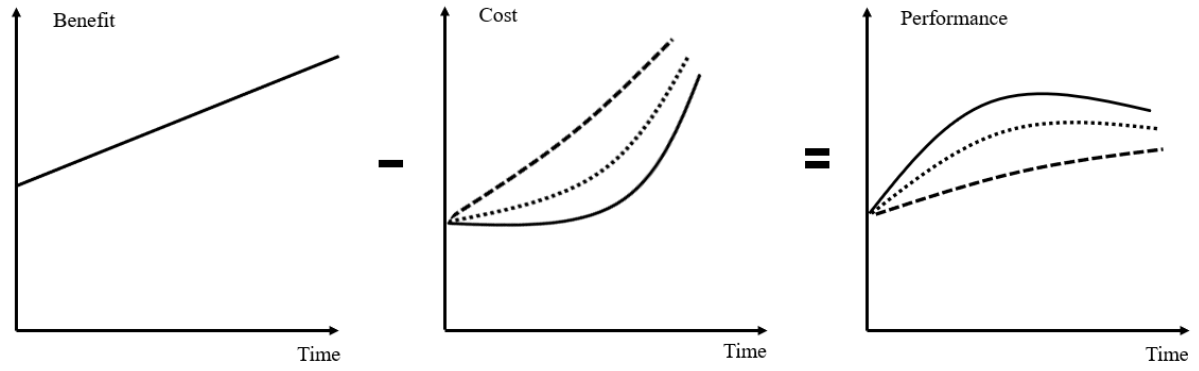
2.2.3 Moderation by acquiring firm national culture

While cultural difference focuses on the gap between acquirer and target, national culture also matters in absolute terms. The acquiring firm's cultural orientation shapes how time is perceived and used during due diligence and integration (Breuer et al., 2018). For instance, uncertainty avoidance may lead to cautious, prolonged due diligence, while long-term orientation might support patient integration planning.

These traits influence how TTC translates into performance. High uncertainty avoidance may cause excessive deliberation, weakening the benefits of extended time. Conversely, cultures with lower power distance or greater indulgence may be more adaptive, using time efficiently. Thus, different dimensions of Hofstede's framework may moderate the TTC-performance curve in unique ways, meaning some will steepen the inverted U-shape while others may flatten it or shift its inflection point.

Figure 5 presents a representation of the countervailing forces of benefits and costs that are affected by the moderation of acquiring firm national culture. The individual curves in the cost and performance graphs are not connected to any specific dimension as we explore how the dimensions differently could moderate and only aim to visualize this.

Figure 5



Accordingly, we hypothesize the following:

H3: The relationship between time to completion and acquisition performance is moderated by the acquiring firm's national cultural dimension levels, such that different cultural dimensions alter the strength and shape of the relationship in terms of: a) IDV b) IVR c) UAI d) PDI e) MAS f) LTO.

3. Data and methodology

This section outlines the empirical design of the study, including the data sources, sample selection criteria, variable definitions, model specification and methods for testing the proposed hypotheses. The objective is to provide a transparent and replicable methodological framework for investigating how time to completion affects acquisition performance and how this relationship is moderated by cultural difference and the acquiring firm's national culture. The structure follows established norms in empirical corporate finance, drawing from prior literature on M&A performance and international business. For a summary of key variables see Table 1.

Table 1

Measures, sources and supporting literature of variables used in the model

Variable	*Measure*	*Source*	*Supporting literature*
Independent variable Time to Completion	Duration (days) between deal announcement and effective date	Thomson Reuters SDC Platinum database	Wangerin (2019); Butler & Sauska (2014); Bhagwat et al. (2016)
Moderator Cultural Difference	Logarithmic euclidean distance across Hofstede's six dimensions	Geert Hofstede website	Hofstede ([1980]2001); Chakrabarti et al. (2009); Ahern et al. (2015)
Moderator National culture	Level of national culture across Hofstede's six dimensions	Geert Hofstede website	Hofstede ([1980]2001); Breuer et al. (2018)
Dependent variable Acquisition Performance	Buy-and-Hold Abnormal Returns (BHAR) over 36 months	LSEG / Eikon Datastream	Barber & Lyon, 1997; Loughran & Ritter, 1995; Kothari & Warner, 2007

3.1 Sample selection

The dataset comprises 2,113 completed, friendly M&A transactions announced between January 2010 and January 2019. Data is sourced from the LSEG SDC Platinum database, a widely used and reputable source for global deal activity (Barnes et al., 2014). To ensure institutional consistency and comparability, only deals from the 49 countries included in the anti-director rights index by Spamann (2010) are retained.

Several filters are applied to improve data quality and relevance. First, only deals that are completed and classified as friendly are included, excluding transactions involving government entities, financial institutions, bankrupt parties, or repurchases. Furthermore, deals where either the acquirer or target country lack data coverage on Hofstede's cultural dimensions are removed, as are transactions with an implausibly short time between announcement and completion (less than seven days). In addition, acquirers must hold less than 50% of the target firm's equity at the time of announcement, ensuring the deal represents a significant ownership change. We also exclude deals involving acquirers listed on stock exchanges lacking available market index data, as these are necessary for calculating post-acquisition abnormal returns.

After data cleaning, the final sample consists of 2,113 unique M&A transactions, representing acquirers from 36 countries and targets from 38 countries across Europe, Asia, North America, South America, and Oceania. This comprehensive and filtered dataset enables robust cross-sectional analysis of M&A performance in both national and cross-border contexts.

3.2 Independent variable

The key independent variable in this study is time to completion, defined as the number of calendar days between the deal's public announcement and its legal completion. It serves as a proxy for the transactional due diligence intensity, as this period provides access to confidential information, final valuations and integration planning (Wangerin, 2019). TTC is log-transformed to mitigate skewness and enable interpretation of elasticity-like effects.

The measure is derived directly from the SDC Platinum database using the announcement date and the effective date of each transaction. Deals with fewer than seven days between these dates are excluded to ensure that the measured time reflects an actual negotiation and due diligence period rather than automatic or trivial closings. A longer time to completion is theorized to allow for more comprehensive due diligence, stronger integration planning, and strategic alignment while excessively prolonged durations may introduce uncertainty, renegotiation, or deal fatigue.

This variable is central to our hypothesis regarding a potential inverted U-shaped relationship with post-acquisition performance, where an optimal time frame exists that maximizes the likelihood of long-term value creation.

3.3 Moderating variables

This study examines two moderators of the relationship between time until deal completion and acquisition performance: first, cultural difference between the acquirer and the target, and second, the absolute national cultural level of the acquiring firm. These moderators are discussed in greater detail below.

3.3.1 Cultural difference

Cultural difference is introduced as a moderating variable that may influence the relationship between time to completion and acquisition performance. It is operationalized using Hofstede's six national cultural dimensions: Power Distance Index (PDI), Individualism vs Collectivism (IDV), Masculinity vs Femininity (MAS), Uncertainty Avoidance Index (UAI), Long-Term Orientation (LTO), and Indulgence vs Restraint (IVR). See Table 2 for descriptions of the dimensions.

The cultural difference between the acquiring and target countries is calculated as the euclidean difference between their scores across these six dimensions:

$$CD_{A,T} = \sqrt{\sum_{d=1}^{6} (S_{A,d} - S_{T,d})^2}$$

(1)

Where $CD_{A,T}$ is cultural difference between acquirer and target, $S_{A,d}$ represents the score of the acquirer countries' cultural dimension d and $S_{T,d}$ represent the scores of the target countries' cultural dimension d. This construct captures institutional, normative and behavioral gaps that may complicate integration and due diligence (Ahern et al., 2015).

Cultural difference is hypothesized to negatively moderate the relationship between time to completion and acquisition performance, amplifying the risks and integration challenges associated with prolonged deal execution.

3.3.2 National culture of the acquirer

The second moderating variable examined is measured as the raw score for each Hofstede dimension (see Table 2) corresponding to the acquiring firm's home country (See Appendix

B for full overview of scores). This reflects ingrained managerial preferences and institutional norms that may shape how time is used during due diligence (Breuer et al., 2018). Unlike the construct of cultural difference, which captures differences between the acquirer and target, this variable reflects only the cultural characteristics of the acquiring company.

Table 2

Overview of Hofstede's six cultural dimensions

Name	*Measure*
Power Distance Index (PDI)	The extent to which less powerful members of institutions and organizations accept and expect that power is distributed unequally.
Individualism vs. Collectivism (IDV)	The degree to which individuals are integrated into groups. High IDV = individualism; Low IDV = collectivism.
Masculinity vs. Femininity (MAS)	Masculinity reflects how strongly a society emphasizes toughness, competition, and distinct gender roles, while femininity is marked by emotional similarity and less rigid gender expectations.
Uncertainty Avoidance Index (UAI)	A society's tolerance for uncertainty and ambiguity. High UAI cultures implement rules and avoid risk; low UAI are more flexible and relaxed.
Long-Term vs. Short-Term Orientation (LTO)	Long-term orientation reflects a society's focus on future preparation and adaptability, while short-term orientation emphasizes tradition, stability, and values rooted in the past.
Indulgence vs. Restraint (IVR)	The degree to which societies allow free gratification of desires and enjoyment versus strict social norms suppressing them.

3.4 Dependent variable

The dependent variable in this study is long-term post-acquisition performance, measured using the Buy-and-Hold Abnormal Return (BHAR) over a 36 month window post-acquisition to capture long term performance. BHAR captures the cumulative abnormal return that would be realized by an investor who purchases the acquiring firm's stock at the time of deal completion and holds it over a specified horizon, net of market returns. BHAR is calculated as:

$$BHAR_{i,t} = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t})$$

(2)

Where $BHAR_{i,t}$ is the buy-and-hold abnormal return of acquirer *i* at time *t,* $R_{i,t}$ is the acquiring firm's return and $R_{m,t}$ is the return on the benchmark domestic market index. It is calculated as the difference between the acquirer's compounded monthly returns and those of a market benchmark index over the post-acquisition window. The benchmark is the broad market index of the country where each firm is listed, ensuring that abnormal returns are assessed relative to each firm's local market environment. Return data is sourced from LSEG Eikon Datastream. BHAR offers a transparent and investor-aligned measure of long-term acquisition success (Barber & Lyon, 1997; Kothari & Warner, 2007). This approach is well established in the finance literature and particularly suited for capturing investor-relevant performance over extended periods (Barber & Lyon, 1997; Loughran & Ritter, 1995). While some have criticized BHAR for potential statistical biases (e.g. skewness and cross-sectional dependence; see Fama, 1998; Mitchell & Stafford, 2000), its simplicity and direct alignment with the investor perspective make it a widely accepted tool especially in studies focused on firm-level heterogeneity. Furthermore, research supports the use of BHAR in cross-sectional analyses where the objective is to examine how deal-specific or firm-level characteristics moderate long-term performance (Kothari & Warner, 2007).

Market-adjusted BHAR is chosen over factor models (e.g., Fama-French or calendar-time regressions) to maintain methodological transparency and interpretability, given the focus on conditional effects across firms rather than average portfolio-level outcomes.

3.5 Control variables

To isolate the effect of TTC and cultural factors, the regression model includes a comprehensive set of control variables. These variables are based on prior M&A literature and account for both deal-level and country-level influences on acquisition outcomes.

Deal size is controlled for by including the natural logarithm of the total deal value in USD. Larger deals may entail more complex integration processes and greater investor scrutiny.

Cross-border status is controlled for using a dummy variable coded as 1 if the deal involves firms from different countries, and 0 otherwise. Cross-border deals typically face greater complexity due to regulatory, cultural, and market differences.

Payment method is included to account for signaling effects and differences in risk-sharing mechanisms between all-cash, all-stock, and mixed acquisition financing. Payment type is obtained from the SDC database and entered as a categorical variable with three levels: full cash payments ("Cash"), full stock payments ("Stock") and all other combinations ("Mixed"). To then account for potential variation in acquisition performance across different types of payment types, the payment method variable was included as a factor in the model where cash served as a reference category against stock and mixed.

Firm size is controlled for by the number of employees both in the acquired company and the acquiring company. Firm size can influence performance outcomes as larger firms can have more resources and negotiation power, may integrate targets differently than smaller firms and experience less volatility in post-acquisition performance. It is calculated as the natural logarithm of the number of employees for both acquirer and target to better capture the effect of firm size in relative terms rather than absolute.

Deal year is included as a categorical variable based on the announcement date of the acquisition to account for potential time-related heterogeneity in acquisition outcomes. The announcement year was extracted from the deal date and converted into a factor variable allowing the model to account for macroeconomic, regulatory or market conditions that may systematically vary across years, thereby isolating the true effect of the independent and moderating variables on post-acquisition performance.

3.6 Empirical model

This study employs Ordinary Least Squares (OLS) regression to test the hypotheses on the relationship between time to completion and acquisition performance, as well as the moderating roles of cultural difference and the acquiring firm's national culture. The dependent variable is Buy and Hold Abnormal Return (BHAR), calculated over a 36 months time window.

3.6.1 Testing H1: Inverted U-shaped relationship between TTC and BHAR

To test for non-linear effect of deal duration on post-acquisition performance, we estimate the following quadratic model:

$$BHAR_{i,t} = \beta_0 + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \gamma' Control_{i,t} + \epsilon_{i,t}$$

(3)

3.6.2 Testing H2: Cultural difference moderation

To assess whether the effect of TTC on performance depends on the cultural difference between the acquiring and target companies, we extend the model with interaction terms for the difference of each Hofstede dimension separately (4) and the consolidated Hofstede measure (5):

$$BHAR_{i,t} = \beta_0 + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \beta_3 D_{A,T,d} + \beta_4 X_{1,i,t} * D_{A,T,d} + \beta_5 X_{2,i,t} * D_{A,T,d} + \gamma' Control_{i,t} + \epsilon_{i,t}$$

(4)

$$BHAR_{i,t} = \beta_0 + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \beta_3 CD_{A,T} + \beta_4 X_{1,i,t} * CD_{A,T} + \beta_5 X_{2,i,t} * CD_{A,T} + \gamma' Control_{i,t} + \epsilon_{i,t}$$

(5)

3.6.3 Testing H3: Acquirer national culture moderation

To examine whether national cultural traits of the acquiring firm affect how TTC influences acquisition performance, we include interaction terms with each Hofstede dimension separately:

$$BHAR_{i,t} = \beta_0 + \beta_1 X_{1,i,t} + \beta_2 X_{2,i,t} + \beta_3 S_{A,d} + \beta_4 X_{1,i,t} * S_{A,d} + \beta_5 X_{2,i,t} * S_{A,d} + \gamma' Control_{i,t} + \epsilon_{i,t}$$

(6)

Where:

$BHAR_{i,t}$ = Buy-and-hold abnormal return for acquisition *i* as defined in (2)

$X_{1,i,t}$ = Log-transformed time to completion (in days) for acquirer *i* at time *t*

$X_{2,i,t}$ = Quadratic term of $X_{1,i,t}$

$\gamma' Control_{i,t}$ = Control variables for acquirer *i* at time *t*

$\epsilon_{i,t}$ = Error term for acquirer *i* at time *t*

$D_{A,T,d}$ = Difference between the scores between acquirer and target of dimension d

$CD_{A,T}$ = Cultural difference as defined in (1)

$S_{A,d}$ = Score of acquirer A on dimension d

4. Analysis and results

This chapter presents the empirical findings of the study, corresponding to the hypotheses developed in chapter 2. The results aim to test the proposed non-linear relationship between time until deal completion and post-acquisition performance, and to examine the moderating roles of cultural difference and national cultural dimensions.

4.1 Descriptive statistics

Table 3 provides descriptive statistics and pairwise correlations for all key variables included in the regression analysis. The mean BHAR at the 36-month horizon was 0.13% indicating modest outperformance of the acquirers relative to market indices. The mean time to completion was 124.96 days (SD = 186.27) with a minimum of 8 days and a maximum of 2,331 days. Among Hofstede's national cultural dimensions, the mean power distance score for acquiring firms was 50.2 (SD = 16.3), indulgence vs restraint had a mean score of 53.8 (SD = 17.0), the mean acquirer uncertainty avoidance score was 60.04 (SD = 22.21), mean of masculinity vs femininity was 57.94 (SD = 19.41), the mean long term orientation score of the acquirer was 53.69 (SD = 27.52) and acquirer individualism vs restraint had a mean score of 61.67 (SD = 27.27). The average deal value was USD 442 million with 580 of the 2 113 transactions occurring cross-border and 1,533 were domestic deals.

Correlations were weak between TTC and most cultural and firm level variables. However, the cultural dimensions did interestingly correlate, sometimes strongly positive and sometimes strongly negative.

Table 3 *Pooled correlations and summary statistics*

	Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
1	*BHAR 3yrs*	0.13	4.33																					
2	*TTC*	125	186.3	0.03																				
3	*logTTC*	4.28	1.02	0.02	0.76																			
4	*logTTC_sq*	19.33	9.11	0.02	0.84	0.99																		
5	*Acquiror IVR*	53.81	16.97	-0.02	0.03	0.08	0.06																	
6	*Acquiror PDI*	50.2	16.33	0.02	0.01	0.02	0.02	-0.63																
7	*Acquiror UAI*	60.04	22.21	-0.02	0.06	-0.14	-0.12	-0.51	0.23															
8	*Acquiror MAS*	57.94	19.41	0	0.02	-0.07	-0.04	-0.04	-0.06	0.28														
9	*Acquiror LTO*	53.69	27.52	-0.02	0.05	-0.14	-0.12	-0.73	0.33	0.65	0.13													
10	*Acquiror IDV*	61.67	27.27	0	0.06	0.07	0.07	0.77	-0.7	-0.47	0.14	-0.7												
11	*Difference LTO*	6.59	14.13	-0.01	0.02	0	0	0.08	-0.11	-0.07	0.02	-0.01	0.09											
12	*Difference MAS*	5.12	12.18	-0.01	0.01	-0.01	0	0.06	-0.12	0	-0.05	0.04	0.07	0.55										
13	*Difference IDV*	6.16	14.6	0.01	0.02	0.03	0.03	0.05	-0.05	-0.12	0	-0.05	0.04	0.64	0.51									
14	*Difference UAI*	6.02	13.47	0	0.01	0.01	0.01	0.05	-0.07	-0.05	-0.01	0.03	0.04	0.68	0.65	0.67								
15	*Difference PDI*	4.37	10.51	0	0.05	0.05	0.05	0.03	-0.01	-0.07	-0.02	0	0.03	0.55	0.56	0.74	0.74							
16	*Difference IVR*	4.16	9.83	-0.01	0.04	0.01	0.02	0.01	-0.04	-0.09	-0.04	-0.02	0.05	0.67	0.52	0.74	0.66	0.69						
17	*Hofstede dist*	6.44	12.12	0	0.02	0.01	0.02	0.07	-0.09	-0.09	-0.02	-0.01	0.07	0.83	0.76	0.86	0.87	0.82	0.83					
18	*Deal value*	442.4	2253	-0.01	0.06	0.12	0.12	0.1	-0.09	-0.08	0.02	-0.09	0.12	0	-0.03	-0.01	-0.02	-0.02	-0.02	-0.02				
19	*cross_border*	0.27	0.45	0	0.05	0.04	0.04	0.17	-0.17	-0.13	-0.06	-0.1	0.18	0.76	0.68	0.69	0.73	0.68	0.69	0.86	0.01			
20	*Acquiror Employees*	5.22	4.22	-0.03	0.03	-0.04	-0.04	0.01	-0.09	0.13	0.14	0.03	0.08	0.16	0.12	0.1	0.13	0.11	0.13	0.15	0.15	0.14		
21	*Target Employees*	1.61	2.95	0.01	0.01	0.03	0.03	-0.09	0.02	0.16	0.07	0.16	-0.08	-0.02	-0.02	-0.03	-0.04	-0.04	-0.03	-0.03	0.22	-0.02	0.28	

n = 2113 acquisitions

Table 4 displays the countries with the highest number of acquirer and target deals in the sample, indicating that the United States, Japan and South Korea were the most active acquirer and target countries in the sample. The table highlights the six most active countries in terms of merger and acquisition activity (see full list in Appendix C).

Table 4

Deal distribution among the six countries with the most deals

Country	*Acquiror deals*	*Target deals*
United States	421	396
Japan	269	230
South Korea	223	216
Canada	201	172
Australia	153	160
India	102	108

4.2 Hypothesis testing

4.2.1 H1: Inverted U-shaped relationship between TTC and BHAR

To test H1 a quadratic regression model was estimated using log-transformed TTC and its squared term. The results did not support a statistically significant inverted U-shaped relationship at conventional significance levels either at linear or quadratic level. While the quadratic term was negative as expected, it was not significant in isolation ($p > .10$). However, a follow-up model using natural cubic splines regression with three degrees of freedom indicated a significant second ($p < .05$) and third ($p < .05$) spline coefficient suggesting non-linearity in the middle and higher values of TTC, although not robust enough to validate H1 independently (See Appendix D).

4.2.2 H2: Moderating effect of cultural difference

Table 5 reports the regression models testing cultural difference as a moderator both at the total Hofstede score level and across the six dimensions (see Appendix E for full table). Across all models, the interaction terms (logTTC x difference and logTTC_sq x difference)

failed to reach significance. This result holds for both the composite euclidean measure of cultural difference and individual cultural dimensions. Accordingly, H2 is not supported.

Table 5

Table 5 Regression of cultural difference moderation

Variable	*Model 1: Total Cultural difference*	*Model 2: Difference IVR*	*Model 3: Difference PDI*	*Model 4: Difference UAI*	*Model 5: Difference IDV*	*Model 6: Difference MAS*	*Model 7: Difference LTO*
(Intercept)	1.14	1.00	1.02	1.02	0.95	0.94	1.09
	(1.55)	(1.50)	(1.48)	(1.49)	(1.47)	(1.47)	(1.53)
logTTC	-0.53	-0.45	-0.46	-0.46	-0.45	-0.42	-0.49
	(0.71)	(0.68)	(0.67)	(0.68)	(0.67)	(0.67)	(0.70)
logTTC_sq	0.08	0.07	0.07	0.07	0.07	0.06	0.07
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Cultural difference	-0.04	-0.03	-0.03	-0.04	-0.01	-0.03	-0.04
	(0.11)	(0.12)	(0.13)	(0.10)	(0.09)	(0.10)	(0.09)
logTTC × difference	0.03	0.02	0.03	0.03	0.02	0.02	0.02
	(0.05)	(0.06)	(0.06)	(0.05)	(0.04)	(0.05)	(0.04)
logTTC_sq × difference	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Controls							

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Control variables used: log(Deal value), cross_border, payment_method: Mixed, payment_method: Stock, Acquiror Employees, Target Employees, deal_year: 2011, deal_year: 2012, deal_year: 2013, deal_year: 2014, deal_year: 2015, deal_year: 2016, deal_year: 2017, deal_year: 2018

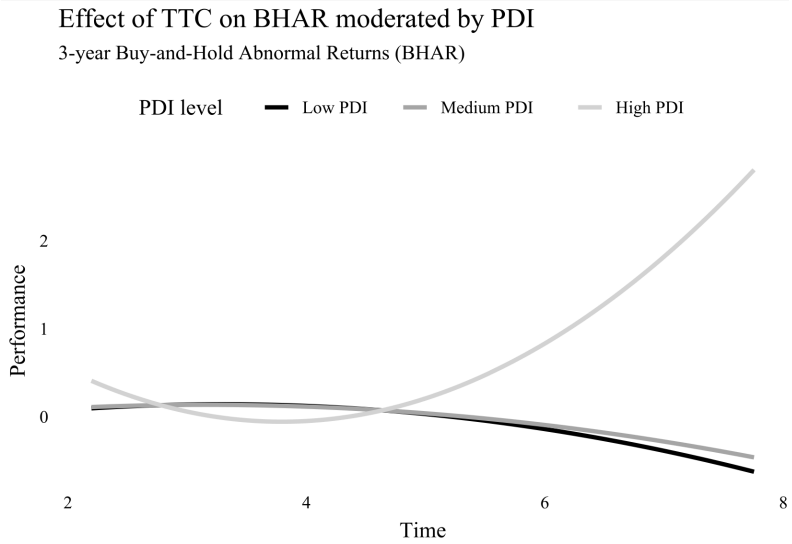
4.2.3 H3: Moderating effect of acquiring firm national culture

The third hypothesis explored whether the acquirer national culture moderates the TTC-performance relationship. Table 6 presents results across models that include interaction terms for each of Hofstede's cultural dimensions (see Appendix F for full table). While significant effects were not found in Model 1, where all dimensions were considered together, due to multicollinearity between the different Hofstede measures (e.g. IDV/LTO: -0.70 & IDV/IVR: 0.77) splitting the dimensions into separate models significant effects were found. Statistically significant moderation effects were found for two dimensions seen in Model 2 and Model 7.

Model 2 includes the main effect of time on performance which was positive and moderately significant ($p < .10$) and the squared effect between time and performance which was negative and significant ($p < .05$). The interaction between time of due diligence and PDI was negative and significant ($p < .05$) while the squared interaction term was positive and highly significant ($p < .01$). These results support an inverted U-shaped relationship that is steepened and flattened depending on the level of PDI. As PDI increases, the curve becomes

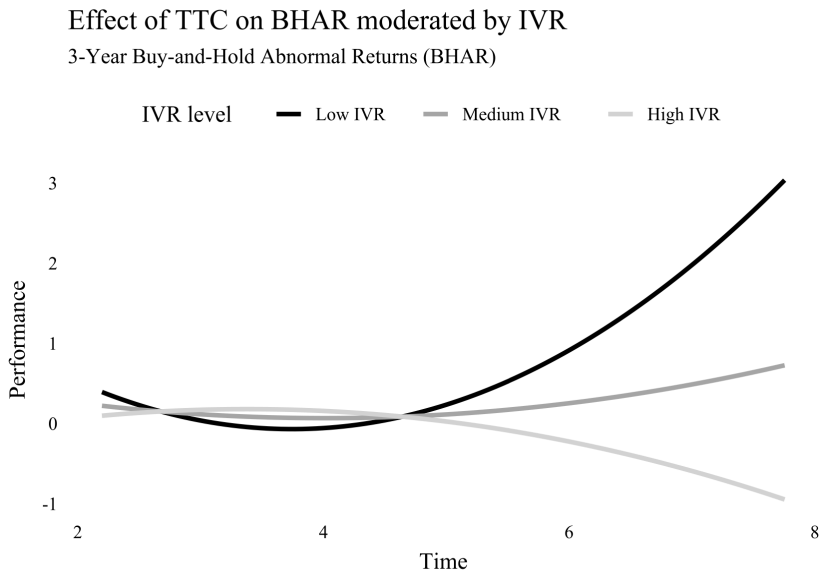
less pronounced. The relationship with PDI and how it moderates the inverted U-shaped relationship between time and performance can be seen in Figure 6.

Figure 6



The IVR interaction shows the opposite pattern. Model 7 includes the main effect of time on performance which was negative and significant ($p < .05$) and the squared effect between time of due diligence and performance which was positive and highly significant ($p < .01$). The interaction between time and IVR was positive and significant ($p < .05$) while the squared interaction was negative and significant ($p < .05$), indicating a U-shaped relationship that weakens as IVR increases. This implies that in low indulgence cultures, prolonged TTC is more tolerated or even beneficial. The relationship with IVR and how it moderates the U-shaped relationship between time and performance can be seen in Figure 7.

Figure 7



These results suggest that H3 is partially supported since cultural traits of the acquiring firm were shown to significantly shape the effect of TTC on acquisition performance but not uniformly across all six dimensions. Both of the significant dimensions indicated that at higher values the curve becomes less pronounced and flattens.

Table 6

Table 6 Regression of acquiror national culture moderation

Variable	*Model 1: Total National cultural level*	*Model 2: National PDI level*	*Model 3: National IDV level*	*Model 4: National LTO level*	*Model 5: National MAS level*	*Model 6: National UAI level*	*Model 7: National IVR level*
(Intercept)	0.64	-6.41	4.72	1.11	2.30	4.11	7.30 .
	(19.53)	(4.65)	(3.57)	(3.11)	(4.46)	(3.94)	(4.27)
logTTC	0.23	3.83 .	-2.58	-0.27	-1.13	-2.06	-4.19 *
	(8.57)	(2.07)	(1.68)	(1.42)	(2.10)	(1.79)	(1.97)
logTTC_sq	-0.05	-0.51 *	0.34 .	0.03	0.15	0.28	0.57 **
	(0.92)	(0.23)	(0.19)	(0.16)	(0.24)	(0.20)	(0.22)
PDI	0.12	0.15 .					
	(0.15)	(0.09)					
interaction_PDI	-0.07	-0.08 *					
	(0.07)	(0.04)					
interaction_PDI_sq	0.01	0.01 **					
	(0.01)	(0.00)					
IDV	0.04		-0.06				
	(0.12)		(0.05)				
interaction_IDV	-0.02		0.03				
	(0.05)		(0.02)				
interaction_IDV_sq	0.00		0.00				
	(0.01)		(0.00)				
LTO	0.00			0.00			
	(0.10)			(0.05)			
interaction_LTO	0.00			0.00			
	(0.04)			(0.02)			
interaction_LTO_sq	0.00			0.00			
	(0.00)			(0.00)			
MAS	0.01				-0.03		
	(0.08)				(0.07)		
interaction_MAS	0.00				0.01		
	(0.04)				(0.03)		
interaction_MAS_sq	0.00				0.00		
	(0.00)				(0.00)		
UAI	-0.07					-0.06	
	(0.09)					(0.06)	
interaction_UAI	0.04					0.03	
	(0.04)					(0.03)	
interaction_UAI_sq	-0.01					0.00	
	(0.00)					(0.00)	
IVR	-0.08						-0.12
	(0.17)						(0.08)
interaction_IVR	0.05						0.07 *
	(0.08)						(0.04)
interaction_IVR_sq	-0.01						-0.01 *
	(0.01)						(0.00)
Controls							

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Control variables used: log(Deal value), cross_border, payment_method: Mixed, payment_method: Stock, Acquiror Employees, Target Employees, deal_year: 2011, deal_year: 2012, deal_year: 2013, deal_year: 2014, deal_year: 2015, deal_year: 2016, deal_year: 2017, deal_year: 2018

Further, the results in Model 2 and Model 7 indicated that logTTC and logTTC squared were both significant under moderation by PDI and IVR suggesting that the non-linear relationship between TTC and performance was conditional under specific cultural conditions.

Following Haans et al. (2016), we tested for potential "shape-flip" thresholds in PDI and IVR moderation. A shape-flip occurs when the direction of a nonlinear curve changes (e.g. from inverted-U to U-shaped) depending on the level of the moderator. When the curvature is positive it takes on a U-shape, when it is negative it takes on an inverted U-shape but when it is zero it means it is linear so the point of shape flip is found when the curvature is zero. For PDI, the turning point occured at a score of 42.67, well within the data range. Below this value, the relationship was more strongly inverted U-shaped. Above it, the curve flattened or reversed. For IVR, the turning point was at 62.10, also within the data range (for calculation see Appendix G). Below this threshold, the relationship was U-shaped, while higher IVR values indicate a flattening or inversion of the curve. These inflection points fall within one standard deviation (PDI = 16.33, IVR = 16.97) from the mean (PDI = 50.20, IVR = 53.81), supporting the interpretation that culture conditionally governs the shape and strength of the TTC-performance relationship.

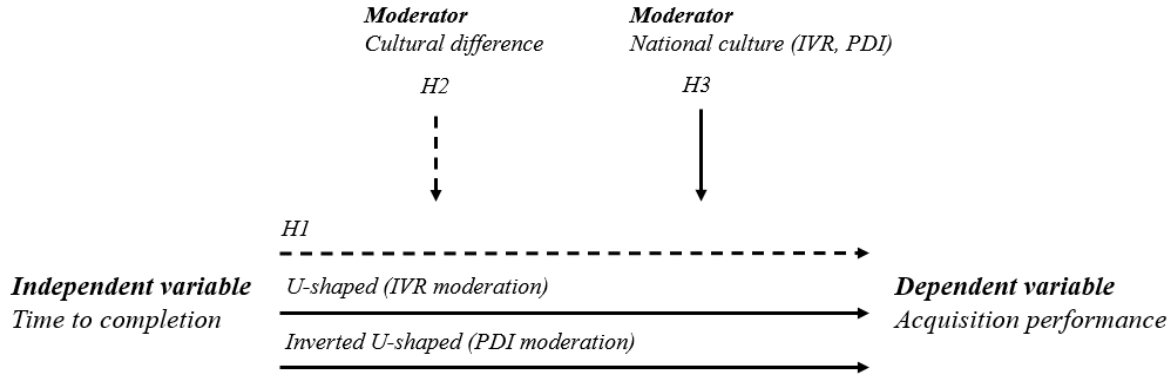
4.3 Robustness checks

Several checks were conducted to validate the robustness of the main findings. Higher order polynomial terms were tested where a cubic TTC term was added to test for a cubic relationship instead of a quadratic. The results did not show significance and did not improve model fit, confirming a quadratic specification is sufficient. The models were re-estimated using BHAR over 3, 6, 12 and 24 month windows to check for time horizon sensitivity. The significance of PDI and IVR moderation effects were most pronounced at the 36-month horizon, indicating that the effects of TTC are most pronounced in the long-run. All models were also winsorized with TTC winsorized at the 1st and 99th percentile where results remained consistent in both direction and significance.

4.4 Summary of results

Figure 8 displays the model illustrating the direction and significance of relations between TTC and performance. Building on figure 2 in the conceptual model and hypothesis formulation the results are presented in the updated figure. The regular arrows present statistically significant relationships, indicating that the variables have been found to influence each other, while the dashed arrows show non-significant relationships, indicating there is not sufficient evidence of a significant relationship. Two arrows have been added to represent the significant conditional main relationship under moderation of IVR and PDI levels.

Figure 8



5. Discussion

This study set out to explore how the time until deal completion influences long-term acquisition performance, and whether this relationship is contingent on cultural factors, specifically cultural differences between acquiring and target firms and the national culture of the acquiring firm independently. While initial expectations centered on an inverted U-shaped relationship between TTC and performance our findings reveal a more nuanced picture. The inverted U-shape is not statistically supported in isolation but becomes significant under specific cultural conditions, particularly when moderated by the acquiring firm's national culture along Hofstede's Power Distance Index (PDI) dimension. Conversely, along the Indulgence vs Restraint (IVR) dimension levels of the acquiring firm's national culture a significant U-shape emerges. Interestingly, the hypothesized moderating effect of cultural difference between the parties was not supported, suggesting that absolute cultural traits of

the acquirer exert more influence on the time-performance relationship then relative cultural gaps.

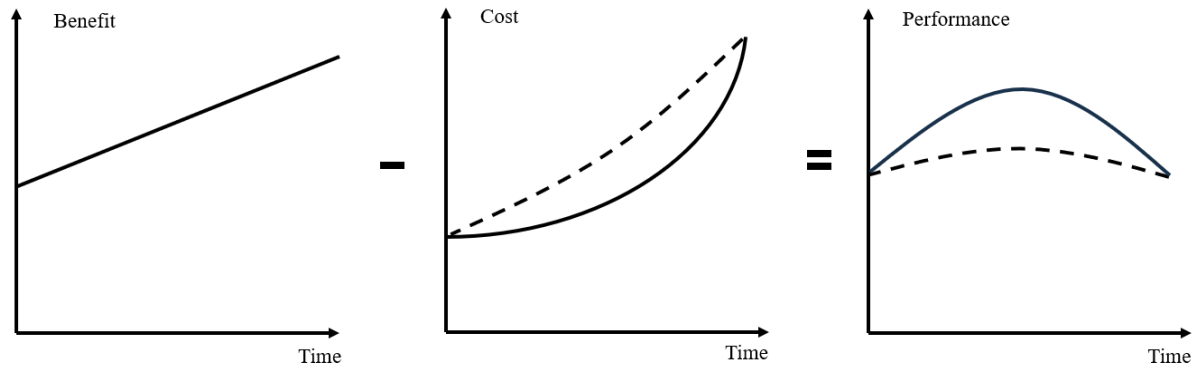
5.1 Research implications

This study advances our understanding of M&A dynamics by shifting the focus from static cultural difference to the culturally embedded behavioral logic of the acquiring firm. The findings suggest that time to completion is not universally good or bad for acquisition outcomes but instead is contextually dependent. Specifically, cultural traits rooted in national values alter the effectiveness of time invested in the due diligence process.

The rejection of H2 contrasts with prior literature that often treats cultural difference as a primary barrier to integration (e.g. Reus & Lamont, 2009; Ahern et al., 2015). Our results indicate that it may not be the difference in culture that matters most, but rather the way acquiring firms culturally process uncertainty, hierarchy and risk, traits encoded in national cultural dimensions like PDI and IVR. This aligns with organizational behavior literature that views integration challenges as more dependent on internal cultural schemas than external gaps (e.g. Weber et al., 1996). This extends research on firm-level behavioral drivers of M&A success (Breuer et al., 2018) and offers a new theoretical ground for understanding the time-performance relationship through a cultural lens.

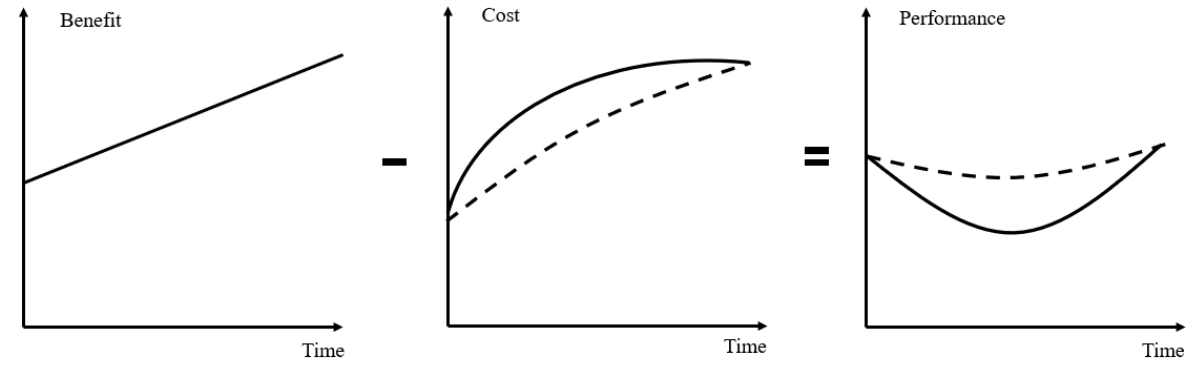
Moreover, the evidence of significant moderating effects by both PDI and IVR and their opposing curvature (inverted U- vs U-shape) provides a strong case for the shape-flip phenomenon (Haans et al., 2016). The possibility that the relationship between TTC and performance flips direction depending on cultural context implies that the main effect hypotheses are insufficient (e.g. a uniform inverted U-shape). To further conceptualize why certain cultural dimensions result in U-shaped vs inverted U-shaped relationships, we draw on the idea of countervailing benefit and cost functions over time presented in the hypotheses formulation. When formulating the hypotheses a linear benefit curve and a curved cost curve were theorized to explain the possible inverted U-shaped relationship. As illustrated in Figure 9 and 10, the benefit of prolonged due diligence is theorized to be the same while the cost curve may follow different trajectories depending on cultural traits, resulting in different shapes of the performance curve. In PDI dominant contexts costs rise early due to bureaucratic friction suggesting it would flatten the cost curve or even invert it leading to a negative moderation and a possible shape-flip of the performance curve (see Figure 9).

Figure 9



Conversely, low IVR levels share similarities with high PDI levels (correlation -0.63) and thus partially explains why the relationship takes on a U-shape under low IVR conditions. However, as IVR levels rise, culture is less restrained and more indulgent, decreasing the costs at lower TTC and flattening the performance curve (see Figure 10). These visualizations help ground the abstract moderating effect in behavioral economics logic.

Figure 10



This insight offers a compelling explanation for why H1 (inverted U-shape) lacked statistical significance when assessed across the full sample. If both U- and inverted U-shaped relationships coexist depending on culture, the aggregate average dilutes both effects making them statistically undetectable in isolation. The significant findings under

cultural moderation thus push the field toward conditional and context sensitive modeling of time effect in M&A.

These findings may also be viewed through the lens of signaling theory. In culturally restrained (low IVR) or high PDI contexts, extended due diligence might be interpreted negatively by markets, suggesting managerial indecisiveness or hidden complications. In contrast, indulgent cultures may frame extended due diligence as strategic thoroughness. This aligns with Bergh et al. (2014) who emphasize how stakeholder perceptions of deal progress are culturally conditioned, suggesting a potential cognitive framing effect in how TTC is interpreted.

5.2 Managerial implications

For practitioners, our findings emphasize the importance of cultural awareness not just in integration, but during the deal-making process itself. Specifically, decision makers should not universally pursue either longer or shorter deal durations. Instead, optimal timing is contingent on the cultural profile of the acquiring firm.

In high PDI environments, where authority structures are rigid and top-down control dominates, prolonging the deal process may exacerbate inefficiencies. Here, managers should aim to streamline decision making and avoid excessive due diligence that risks delay and internal bottlenecks. In contrast, in high IVR cultures typically characterised by openness, flexibility and higher tolerance for ambiguity extended TTC may be more acceptable or even beneficial. Managers in these contexts may afford more time without incurring the same reputational or strategic costs.

The results suggest that “best practice” in deal duration is culturally dependent, without a universal rule. Executives involved in M&A should recognize that the acquirer’s national cultural context shapes how time is perceived, utilized and rewarded during acquisitions.

5.3 Methodological implications

While not introducing novel techniques, this study has several methodological implications. First, the use of Buy-and-Hold Abnormal Returns (BHAR) as a measure of acquisition performance, while standard in M&A literature, is inherently noisy and affected by many exogenous factors. The low R-squared values (see Appendix) are consistent with prior M&A and empirical finance literature, where outcome variance is often driven by numerous

unobserved firm- and market-level factors (Barber & Lyon, 1997) but highlight the limitations of market-based proxies in capturing deal-level strategic value creation.

Second, using the time between announcement and completion as a proxy for transactional due diligence is theoretically grounded but empirically imperfect. It excludes pre-announcement screening activities and may conflate voluntary strategic planning with exogenous delays (e.g. regulatory review). These measurement constraints may have obscured potential effects of other cultural dimensions, limiting our ability to detect significant moderating relationships beyond PDI and IVR.

Third, our study illustrates the utility of continuous moderation models over categorical splits. Dichotomizing culture scores (e.g. high vs low PDI) reduces statistical power and obscures nuance. Continuous interaction terms allowed us to detect and interpret non-linear moderation effects more precisely, including shape-flips, which could be invisible in median splits.

5.4 Limitations and directions for future research

Several limitations should be noted. First, TTC is an imperfect proxy for due diligence intensity. It captures only the transactional phase and is affected by external constraints such as antitrust reviews, particularly in large or politically sensitive deals. The assumption of a positive correlation between duration and the intensity or quality of evaluation overlooks important nuances. In addition to regulatory delays, factors such as internal inefficiencies, strategic deal streamlining or prior acquisition experience may influence TTC without necessarily reflecting due diligence effort. While time is a practical and observable measure, it does not perfectly capture the rigor of the evaluation process. Future research would benefit from incorporating more direct deal process metrics indicators of due diligence intensity such as active due diligence hours or number of advisory consultations.

Second, BHAR reflects investor perception rather than realized synergies. While relevant for assessing shareholder value, it may not fully capture operational success. Future studies should consider triangulating stock-based performance with internal integration outcomes (e.g. cost savings, employee retention or customer churn).

Third, while Hofstede's framework is well-established and widely used, it captures national averages that may not reflect the realities of globally integrated firms. The assumption that the national culture of the country in which the firm is registered correlates directly with its corporate culture overlooks key complexities. Many organizations are

culturally heterogeneous, and their subsidiaries or departments may be more strongly influenced by the local cultures of their geographic locations than by the parent company's national context. As such, the impact of national culture on deal processes in M&A may be obscured when relying solely on the acquirer's country of registration. This limitation reduces the granularity of cultural analysis and may weaken the observed effects of cultural variables. The non-significant effect of cultural difference as a moderating factor further raises questions about whether cross-border dynamics can be fully captured by national level proxies alone. Future research should explore complementary measures such as corporate integration styles or leadership culture to better capture relational dynamics. Additionally, incorporating qualitative or process-tracing data on due diligence activities could help disentangle behavioral mechanisms from institutional effects in shaping acquisition outcomes.

Finally, while our findings suggest some support for possible shape-flips in the TTC-performance relationship moderated by culture, more research is needed on the shape-flipping nature of the relationship. Research should test the shape-flip further to fully confirm such a phenomenon and also test it across industries or firm types to strengthen generalizability.

5.5 Conclusion of discussion

Overall, this study contributes to a more nuanced understanding of acquisition performance by showing that the timing of M&A processes does not exert a universal effect. Instead, TTC's impact is conditional on the acquirer's cultural context, especially with regard to power distance (PDI) and indulgence (IVR). This has both theoretical and practical significance. Theoretically, it challenges simple linear or even quadratic models of time-performance relationships and supports a more contingent view. Practically, it guides M&A practitioners to tailor deal timelines not only to the complexity of the transaction but also to the cultural context of their organizations.

These findings suggest that cultural characteristics of the acquiring firm are not merely background variables, but active conditions that shape strategic processes such as due diligence. Understanding how these forces interact, and at times override, generalized assumptions about optimal timing represents a significant step forward in M&A research.

Just as picking the perfect avocado depends on when and how you pick it, so too does acquisition success depend not on time alone, but on how time is perceived and used, at the right time, in the right hands, for the right context. It reminds us that in M&A, as in life, time is relative.

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Appendix

Appendix A

Worldwide avocado volumes: 5.8 billion avocados is based on estimated market value of 11.89 bn USD from Statista (2023) and average avocado price of approx. 2 dollars from Selina Wamucii, (2025).

Appendix B

Cultural dimension scores per country

Country	*PDI; Power Distance Index*	*IDV; Individualism vs Collectivism*	*MAS; Masculinity vs Femininity*	*UAI; Uncertainty Avoidance Index*	*LTO; Long vs Short term Orientation*	*IVR; Indulgence vs Restraint*
Argentina	49	46	56	86	20	62
Australia	38	90	61	51	21	71
Austria	11	55	79	70	60	63
Belgium	65	75	54	94	82	57
Canada	39	80	52	48	36	68
Colombia	67	13	64	80	13	83
Denmark	18	74	16	23	35	70
Finland	33	63	26	59	38	57
France	68	71	43	86	63	48
Germany	35	67	66	65	83	40
Greece	60	35	57	112	45	50
Hong Kong	68	25	57	29	61	17
India	77	48	56	40	51	26
Indonesia	78	14	46	48	62	38
Ireland	28	70	68	35	24	65
Italy	50	76	70	75	61	30
Japan	54	46	95	92	88	42
Malaysia	104	26	50	36	41	57
Mexico	81	30	69	82	24	97
Netherlands	38	80	14	53	67	68
New Zealand	22	79	58	49	33	75
Norway	31	69	8	50	35	55
Pakistan	55	14	50	70	50	0
Peru	64	16	42	87	25	46
Philippines	94	32	64	44	27	42
Portugal	63	27	31	104	28	33
Singapore	74	20	48	8	72	46
South Korea	60	18	39	85	100	29
Spain	57	51	42	86	48	44
Sweden	31	71	5	29	53	78
Switzerland	34	68	70	58	74	66
Taiwan	58	17	45	69	93	49
Thailand	64	20	34	64	32	45
Turkey	66	37	45	85	46	49
United Kingdom	35	89	66	35	51	69
United States	40	91	62	46	26	68

Appendix C

Deal distribution

Country	*Acquiror*	*Target*
Argentina	5	9
Australia	153	162
Austria	16	12
Belgium	17	18
Brazil	0	16
Canada	201	172
Chile	0	13
Colombia	7	13
Denmark	12	13
Finland	14	11
France	79	60
Germany	48	77
Greece	11	11
Hong Kong	25	21
India	102	108
Indonesia	12	19
Ireland	17	12
Italy	34	45
Japan	269	230
Malaysia	43	51
Mexico	9	11
Netherlands	10	19
New Zealand	5	6
Norway	16	23
Pakistan	3	3
Peru	5	10
Philippines	17	21
Portugal	8	10
Singapore	35	29
South Korea	223	216
Spain	27	32
Sweden	48	32
Switzerland	33	24
Taiwan	34	35
Thailand	39	38
Turkey	20	36
United Kingdom	95	99
United States	421	396

Appendix D

Splines regression		
Variable	*Model*	
(Intercept)		-0.07
		(0.52)
ns(logTTC, df = 3)1		-0.37
		(0.46)
ns(logTTC, df = 3)2		1.76 .
		(1.06)
ns(logTTC, df = 3)3		1.74 .
		(0.89)
Controls		
log(`Deal value)		-0.07
		(0.04)
cross_border		-0.03
		(0.22)
factor(payment_method)Mixed		0.02
		(0.23)
factor(payment_method)Stock		-0.28
		(0.32)
Acquiror Number of Employee:		-0.03
		(0.02)
Target Number of Employees		0.04
		(0.03)
factor(deal_year)2011		-0.10
		(0.36)
factor(deal_year)2012		0.07
		(0.37)
factor(deal_year)2013		0.36
		(0.39)
factor(deal_year)2014		-0.04
		(0.38)
factor(deal_year)2015		-0.03
		(0.38)
factor(deal_year)2016		0.62
		(0.38)
factor(deal_year)2017		0.19
		(0.39)
factor(deal_year)2018		-0.10
		(0.40)
R^2		0.01
Adjusted R^2		0.00

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Appendix E

Table 5 Regression of cultural difference moderation

Variable	*Model 1: Total Cultural difference*	*Model 2: Difference IVR*	*Model 3: Difference PDI*	*Model 4: Difference UAI*	*Model 5: Difference IDV*	*Model 6: Difference MAS*	*Model 7: Difference LTO*
(Intercept)	1.14	1.00	1.02	1.02	0.95	0.94	1.09
	(1.55)	(1.50)	(1.48)	(1.49)	(1.47)	(1.47)	(1.53)
logTTC	-0.53	-0.45	-0.46	-0.46	-0.45	-0.42	-0.49
	(0.71)	(0.68)	(0.67)	(0.68)	(0.67)	(0.67)	(0.70)
logTTC_sq	0.08	0.07	0.07	0.07	0.07	0.06	0.07
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Cultural difference	-0.04	-0.03	-0.03	-0.04	-0.01	-0.03	-0.04
	(0.11)	(0.12)	(0.13)	(0.10)	(0.09)	(0.10)	(0.09)
logTTC × difference	0.03	0.02	0.03	0.03	0.02	0.02	0.02
	(0.05)	(0.06)	(0.06)	(0.05)	(0.04)	(0.05)	(0.04)
logTTC_sq × difference	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Controls							
log(Deal value)	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07	-0.07
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	-0.04
cross_border	-0.01	0.06	-0.09	-0.06	-0.16	0.03	0.10
	(0.42)	(0.29)	(0.29)	(0.31)	(0.29)	(0.29)	-0.33
factor(payment_method)Mixed	0.01	0.02	0.01	0.01	0.01	0.02	0.03
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	-0.23
factor(payment_method)Stock	-0.31	-0.30	-0.31	-0.31	-0.31	-0.31	-0.30
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	-0.32
Acquiror Number of Employees	-0.03	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	-0.02
Target Number of Employees	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	-0.03
factor(deal_year)2011	-0.08	-0.08	-0.09	-0.08	-0.09	-0.08	-0.08
	(0.36)	(0.37)	(0.36)	(0.36)	(0.36)	(0.36)	-0.36
factor(deal_year)2012	0.07	0.08	0.08	0.08	0.08	0.09	0.07
	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	-0.37
factor(deal_year)2013	0.39	0.39	0.40	0.39	0.39	0.39	0.38
	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	-0.39
factor(deal_year)2014	-0.03	-0.04	-0.03	-0.03	-0.04	-0.03	-0.03
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	-0.38
factor(deal_year)2015	-0.02	-0.02	-0.03	-0.03	-0.03	-0.02	-0.03
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	-0.38
factor(deal_year)2016	0.61	0.62	0.61	0.61	0.62	0.62	0.61
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	-0.38
factor(deal_year)2017	0.19	0.19	0.19	0.20	0.19	0.20	0.20
	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	-0.39
factor(deal_year)2018	-0.09	-0.09	-0.09	-0.09	-0.08	-0.09	-0.09
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	-0.40
R^2	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Adjusted R^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Appendix F

Table 6 Regression of acquiror national culture moderation

Variable	*Model 1: Total National cultural level*	*Model 2: National PDI level*	*Model 3: National IDV level*	*Model 4: National LTO level*	*Model 5: National MAS level*	*Model 6: National UAI level*	*Model 7: National IVR level*
(Intercept)	0.64	-6.41	4.72	1.11	2.30	4.11	7.30 .
	(19.53)	(4.65)	(3.57)	(3.11)	(4.46)	(3.94)	(4.27)
logTTC	0.23	3.83 .	-2.58	-0.27	-1.13	-2.06	-4.19 *
	(8.57)	(2.07)	(1.68)	(1.42)	(2.10)	(1.79)	(1.97)
logTTC_sq	-0.05	-0.51 *	0.34 .	0.03	0.15	0.28	0.57 **
	(0.92)	(0.23)	(0.19)	(0.16)	(0.24)	(0.20)	(0.22)
PDI	0.12	0.15 .					
	(0.15)	(0.09)					
interaction_PDI	-0.07	-0.08 *					
	(0.07)	(0.04)					
interaction_PDI_sq	0.01	0.01 **					
	(0.01)	(0.00)					
IDV	0.04		-0.06				
	(0.12)		(0.05)				
interaction_IDV	-0.02		0.03				
	(0.05)		(0.02)				
interaction_IDV_sq	0.00		0.00				
	(0.01)		(0.00)				
LTO	0.00			0.00			
	(0.10)			(0.05)			
interaction_LTO	0.00			0.00			
	(0.04)			(0.02)			
interaction_LTO_sq	0.00			0.00			
	(0.00)			(0.00)			
MAS	0.01				-0.03		
	(0.08)				(0.07)		
interaction_MAS	0.00				0.01		
	(0.04)				(0.03)		
interaction_MAS_sq	0.00				0.00		
	(0.00)				(0.00)		
UAI	-0.07					-0.06	
	(0.09)					(0.06)	
interaction_UAI	0.04					0.03	
	(0.04)					(0.03)	
interaction_UAI_sq	-0.01					0.00	
	(0.00)					(0.00)	
IVR	-0.08						-0.12
	(0.17)						(0.08)
interaction_IVR	0.05						0.07 *
	(0.08)						(0.04)
interaction_IVR_sq	-0.01						-0.01 *
	(0.01)						(0.00)
Controls							
log(Deal value)	-0.07	-0.06	-0.07	-0.08	-0.07	-0.08	-0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
cross_border	0.02	0.01	-0.03	-0.05	-0.03	-0.05	0.01
	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)
factor(payment_method)Mixed	-0.02	0.02	0.03	0.01	0.02	-0.01	0.04
	(0.24)	(0.23)	(0.23)	(0.23)	(0.24)	(0.24)	(0.23)
factor(payment_method)Stock	-0.34	-0.34	-0.28	-0.26	-0.29	-0.29	-0.31
	(0.33)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Acquiror Number of Employees	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Target Number of Employees	0.05	0.04	0.04	0.05	0.04	0.05	0.04
	(0.04)	(0.03)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)
factor(deal_year)2011	-0.02	-0.05	-0.05	-0.07	-0.09	-0.09	-0.02
	(0.37)	(0.36)	(0.36)	(0.36)	(0.36)	(0.36)	(0.36)
factor(deal_year)2012	-0.01	0.04	0.08	0.09	0.08	0.06	0.06
	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)
factor(deal_year)2013	0.36	0.37	0.38	0.40	0.38	0.39	0.36
	(0.39)	(0.38)	(0.39)	(0.39)	(0.39)	(0.39)	(0.38)
factor(deal_year)2014	-0.02	-0.06	-0.03	-0.02	-0.04	-0.03	-0.02
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
factor(deal_year)2015	-0.03	-0.03	-0.01	0.00	-0.03	-0.03	-0.04
	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
factor(deal_year)2016	0.67	0.63	0.65	0.67	0.62	0.65	0.64
	(0.39)	(0.38)	(0.38)	(0.39)	(0.38)	(0.38)	(0.38)
factor(deal_year)2017	0.20	0.22	0.23	0.24	0.22	0.21	0.21
	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)
factor(deal_year)2018	-0.07	-0.09	-0.07	-0.06	-0.10	-0.09	-0.09
	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)	(0.40)
R^2	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Adjusted R^2	0.00	0.01	0.00	0.00	0.00	0.00	0.00

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Appendix G

$$Z^{*} = \frac{-\beta_2}{\beta_4}$$

- (-0.45) (logTTC_sq) / (0.01) (Interaction_PDI_sq) = 42.67

- (0.59) (logTTC_sq) / (-0.01) (interaction_IVR_sq) = 62.10

Use of generative AI

Data collection

Generative AI was not used at any stage of the data collection process. All steps involved in data collection, data cleaning, and dataset construction were conducted manually by the authors, primarily using Excel. The raw data were extracted from the SDC Platinum and Eikon databases. Variables for moderation and other control variables were manually collected by the authors from relevant websites and academic research papers.

Tools used

ChatGPT by OpenAI (2025) was used to assist with coding tasks in R, including script generation and troubleshooting.

Chat GPT was, for example, asked *"I want to plot a prediction line using ggplot2 in R based on a model called mod_curve_IVR_3yr. The x-axis should be logTTC, and the predicted y-values should be BHAR_pred. I'm using three levels of a moderator variable IVR (25th, 50th, 75th percentiles), and I'd like the lines to be labeled as "Low", "Medium", and "High". Please give me a clean, professional R code that: Uses Times New Roman font, Removes all grid lines, Uses shades of black and grey for the three lines, Includes a title, subtitle, and axis labels, Places the legend at the top. Also, use showtext to ensure Times New Roman works across devices. Provide a complete, working R script with these settings."*

ChatGPT then generated the answer *"Here's a complete and professional R script that does exactly what you asked:*
Predicts from mod_curve_IVR_3yr using logTTC and IVR levels
Plots the lines in shades of grey
Uses Times New Roman across platforms (via showtext)
Removes all grid lines
Adds a title, subtitle, and axis labels
Positions the legend at the top
R Script …"
Due to large amounts of prompts and code during the data analysis process, it is found unreasonable to include the entirety of prompts and outputs.

OpenAI. (2025). Chat GPT - 4.o (April 30 version) [Large language model]. https://chat.openai.com/chat

How AI tools contributed to increasing the quality of the thesis

The use of ChatGPT for coding purposes did not necessarily enhance the quality of the thesis but served primarily as a tool to facilitate the data analysis process by assisting in identifying and correcting coding errors. All theoretical reasoning, critical interpretation and decisions remain ours.

Potential risks of AI use and measures taken

Since ChatGPT was not involved in any processes directly affecting the data or the analysis, but solely assisted in identifying and correcting coding errors, the risks associated with the use of AI are considered minimal. No data was ever uploaded to or processed by ChatGPT.

Insights gained from using AI tools in the process

The use of AI tools has substantially reduced the cognitive load associated with coding in R, making the data analysis process more efficient and less time-consuming.