

THE IMPACT OF CHIEF EXECUTIVE OFFICER (CEO) AND DEAL CHARACTERISTICS ON MERGERS AND ACQUISITIONS (M&A) DURATION: A QUANTILE REGRESSION EVIDENCE FROM AN EMERGING MARKET

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ABSTRACT

This paper examines the impact of chief executive officer (CEO) and deal characteristics on mergers and acquisitions (M&A) duration in Malaysia. Univariate analysis and quantile regression (QR) are performed on 556 completed M&As transactions undertaken by Malaysian public firms from 2001 to 2019. In line with the upper echelons theory, which states that organisational outcomes can be predicted by looking at the characteristics of top-level executives, the findings from QR show that CEO characteristics significantly affect acquisition duration. This effect is conditional on the duration quantiles for CEO tenure and CEO duality but non-conditional for foreign CEO. Specifically, the findings reveal that the degree of influence by CEO characteristics gets stronger when the transactions are longer and complicated. CEO tenure can decrease M&A duration when a transaction falls in longer duration quantile. M&A transactions tend to take a longer duration when there is CEO duality. Foreign CEOs show more ability to execute transactions in a short duration compared to local CEOs. Deal characteristics such

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as deal size, merger transaction, hiring a financial advisor and conducting multiple acquisitions are main factors that prolong duration. The findings of this study may benefit policymakers, managers, and investors who involve directly and indirectly in an M&A process.

Keywords: CEO characteristics, deal characteristics, M&As duration, Malaysia, quantile regression

INTRODUCTION

This paper examines the effect of CEO and deal characteristics on acquisition duration. This is important because prolonged acquisition duration can result in additional cost. Extant literature on mergers and acquisitions (M&A) focus more on M&A motives, synergy realisation, stock performance and post-acquisition integration. Not many look at the determinants that affect deal duration or speed in completing the transactions. Moreover, the majority of the studies have been conducted in the developed markets. Two main phases or stages involved in a normal M&A process are: (1) pre-acquisition stage and (2) post-acquisition stage (see Figure 1). The pre-acquisition stage is the first stage which refers to the time between the formal announcement and the completion of the deal. At this stage, the seller and buyer do serious negotiations on many issues such as price and payment method. Many factors prolong this stage and make it more complex. Factors which have been identified include deal size, type of deal and stock payment. Meglio et al. (2017) argue that the speed of executing an acquisition is an important factor that should be examined further. Top managers are responsible to ensure the smooth process. Therefore, their characteristics can be important factors that influence the length of this stage. This study investigates a wide range of potential determinants of acquisition duration by Malaysian firms. These determinants include CEO characteristics (tenure, duality and citizenship) and deal characteristics (merger, deal size, payment method, relatedness, cross-border deal, public target, financial advisor, multiple acquisitions and acquisition experience).

Long acquisition duration is usually seen as a negative sign because of the associated costs of keeping the offer open, delay in realising synergy gains, and giving more space for competitors to initiate a bidding contest (Luypaert & De Maeseneire, 2015). Acquiring a firm with a long duration is linked to high costs such as loss of time and distraction from other lucrative purchases (Dikova et al., 2010). For these reasons, acquirers try to avoid lengthy periods of acquisition to save time and costs. A better understanding of this issue is important not only for the firms involved, but also for investors and competitors.

Competitors, for example, may gain competitive advantage from the prolonged deals as a result of increased uncertainties in the firms' operations and management.

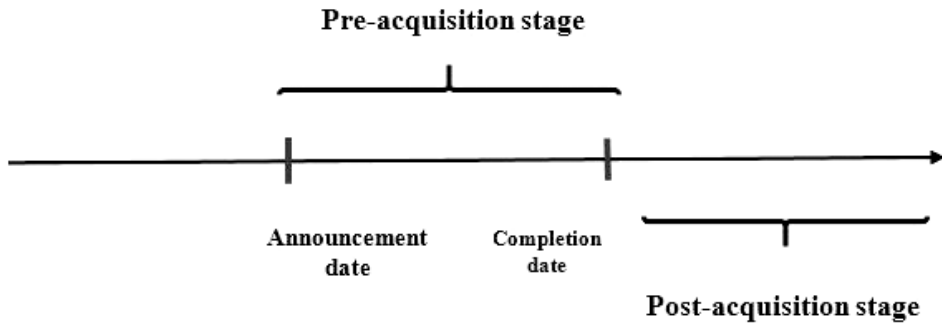


Figure 1. M&A process

This study contributes to the extant literature by utilising quantile regression (QR) to investigate the impact of CEO and deal characteristics on acquisition duration. To the best of the authors' knowledge, no empirical study has used QR to examine the acquisition duration. Dikova et al. (2010), Luypaert and De Maeseneire (2015), and Li et al. (2017); for example, use ordinary least squares (OLS) method. There are two main benefits of using QR method. First, QR outperforms OLS when the dependent variable exhibits unnormal distribution. Second, QR allows the investigation of independent variables' impact on different levels of duration.

LITERATURE REVIEW AND HYPOTHESES

There are very few studies related to the duration of M&A compared to other M&As issues. These studies have identified several factors that influence the completion duration of an M&A. The factors include deal characteristics (Ekelund et al., 2001; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015), financial advisor (Agrawal et al., 2013; Chang et al., 2016), and acquirer experience (Dikova et al., 2010; Muehlfeld et al., 2012). Although quite a number of factors have been investigated, but none of the studies examine the impact of CEO characteristics on the duration of M&A transactions. Meglio et al. (2017) argue that top management is a major influence on the speed of the acquisition process. Therefore, this study focuses on CEO characteristics and deal characteristics as potential determinants which influence acquisition duration of Malaysian M&As.

CEO Characteristics

Hambrick and Mason (1984) argue that the CEO's characteristics and managerial background can affect strategic choices and firm behaviour. Their upper echelons theory opens the door for many studies to test the relationship between CEO's characteristics and a firm's decision and behaviour. Past studies have suggested a significant influence of CEO's characteristics on the firm's decision and behaviour (Cannella et al., 2008; Daily & Johnson, 1997; Kim et al., 2016). This influence is more evident when the firm is facing significant challenges (Dalton et al., 1998). Therefore, it is important to investigate the impact of CEO characteristics on different levels of acquisition duration. This impact of CEO characteristics on duration can be more notable when M&A transactions get longer and more complicated. This is because short-duration acquisition generally implies a less complex deal than in longer duration acquisition. The evidence shows that a long duration is likely to signal that the acquisition transaction involves higher risk and complexity (Luypaert & De Maeseeneire, 2015; Meyer & Altenborg, 2008). Song et al. (2013) find that deal complexity affects acquisition duration positively.

Past studies have focused on the impact of CEO characteristics on different aspects of acquisition outcomes, such as acquisition performance (Amar et al., 2011; Desai et al., 2003; Ozkan, 2012; Pham et al., 2015) and acquisition decision (Yim, 2013; Zhang et al., 2016). Zhang et al. (2016) stress that the impact of CEOs' characteristics on firm policy is not just a U.S. phenomenon but can be seen in many other countries. However, the question of "do CEO characteristics affect acquisition duration?" remains unanswered. This study tries to answer this question by investigating the impact of CEO characteristics, namely CEO tenure, CEO duality, and foreign CEO in acquisition duration.

CEO tenure

CEO tenure has a significant impact on firms' decisions and strategies. The findings indicate that longer-tenured managers tend to follow more persistent, unchanging strategies consistent with industry averages (Finkelstein & Hambrick, 1990). Wang et al. (2016) argue that long-tenured CEOs are less likely to adopt a risky strategy. They also conclude that CEO tenure is positively associated with the firm's future performance. On the contrary, other studies show that short-tenured CEOs accept a higher level of risk and tend to apply new strategies (Hambrick & Fukutomi, 1991; Thomas et al., 1991). CEOs begin their work with a deficit of knowledge and power and learn to improve and

develop their skills as their tenure increases; however, later still, they tend to repeat strategies that were successful in the past (Hambrick & Fukutomi, 1991).

There are also studies which look at the impact of CEO tenure on acquisition activities. Yim (2013) documents a non-linear relationship between CEO tenure and acquisition, while Zhang et al. (2016) find that longer-tenured CEOs undertake fewer acquisitions than short-tenured CEOs. Carapeto et al. (2010) argue that newly hired CEOs tend to engage in frequent acquisitions as means of making their mark on the labour market. These findings suggest that short-tenured CEOs may be involved in personally motivated acquisitions.

A study by Zhou et al. (2020), concludes that long-tenured CEOs are associated with making better acquisition decisions, which then lead to higher acquisition returns to shareholders. They argue that long-tenured CEOs demonstrate more caution before choosing their acquisitions and tend to have private, related and domestic targets. This is because long-tenured CEOs receive higher compensation when they complete high-quality acquisitions. This acts as an incentive for them to target high-quality transactions (Zhou et al., 2020). Moreover, a positive relationship has been found between cash compensation and CEO tenure after acquisitions (Bugeja et al., 2012; Ozkan, 2012).

We argue that CEO tenure can affect the duration, as long-tenured CEOs have a strong incentive to complete their acquisitions and are more selective. They have a better ability to execute the acquisition transaction, especially as it gets longer. Thus, the following hypothesis is proposed:

H1: CEO tenure is negatively associated with acquisition duration.

CEO duality

The literature presents two main arguments about CEO duality, based on the underlying theories of agency theory and stewardship theory. Both highlight the differences between CEOs with and without duality. Agency theory assumes that CEO duality negatively affects firm valuation (Eisenhardt, 1989; Fama & Jensen, 1983), it can weaken board monitoring (Allegrini & Greco, 2013; Finkelstein & D'Aveni, 1994) and reduce the ability of the board to remove CEOs with poor performance (Goyal & Park, 2002). On the other hand, stewardship theory suggests that CEO duality generates a strong power within the firm and minimises the opportunity for managing conflict and political intrigue (Finkelstein & D'Aveni, 1994). CEO duality also increases

decision-making efficiency (Finkelstein & Hambrick, 1996) and organisational effectiveness (Cannella & Monroe, 1997).

CEO duality can be an important factor in acquisition duration. When a CEO serves as a chairman of the board of directors, he/she will be more courageous in ignoring signals sent by the market. Dual CEOs have greater structural power than non-dual, rely more on their beliefs, and become overconfident in acquisition decisions (Chikh & Filbien, 2011). Moreover, the level of cash compensation of the CEO is associated with managerial power (Coakley & Iliopoulou, 2006). Therefore, CEOs who serve as the chairman may differ from single CEOs in their ability to execute the acquisition and their incentive to complete the transaction. The two types of CEO will vary in their reaction and behaviour when a transaction becomes more complex. CEOs with duality are less worry about completing the acquisition and are more overconfident about executing the deal, perhaps prolong negotiations in order to receive more bonus from their M&As. Past findings reveal a link between M&A bonus size and acquisition duration. The amount of bonus paid increases as the acquisition transaction takes a longer time to complete (Grinstein & Hribar, 2004). Thus, the following hypothesis is proposed:

H2: CEO duality is positively associated with acquisition duration.

Foreign CEO

Based on upper echelons theory, it is assumed that foreign CEOs differ from domestic or local CEOs in their influence on firm behaviour due to differences in their values, organisational culture, external experience, and knowledge. Firms believe that the prospective advantages of employing a foreign top management team (TMT) outweigh the extra expenses. Hence, they tend to choose foreigners who are presumed to be qualified than local candidates (Nielsen & Nielsen, 2010). Firms may employ a foreign CEO when there is no talented domestic executive (Seelhofer, 2010). Pandey and Rhee (2015) investigate firm-level determinants of hiring foreign CEOs and how those CEOs affect a firm's strategy by employing 13 Japanese firms as a case study. The findings reveal that foreign CEOs tend to apply unconventional changes to firms' strategies.

Appointing foreign CEOs may be related to national diversity in TMT, especially when firms enter new foreign markets (Greve et al., 2009). Greve et al. (2015) argue that the experience of foreign TMT candidates is one of

the factors behind such appointments because they have superior knowledge of foreign markets. Foreign TMT members have the advantage of understanding their home countries and in finding alternatives that enhance information processing (Luo, 2005). Past studies have found that national diversity in TMT positively affect firm performance via shaping executives' strategic mindset and national values (Nielsen & Nielsen, 2013). Overall, this may result in faster completion of acquisitions. Thus, the following hypothesis is proposed:

H3: Hiring foreign CEOs is negatively associated with acquisition duration.

Deal Characteristics

Acquisition duration has been proven to be affected by deal characteristics (Chang et al., 2016; Ekelund et al., 2001; Li et al., 2017; Luypaert & De Maeseneire, 2015; Song et al., 2013; Wee et al., 2016; Wong & Hooy, 2018). Theoretically, no one theory satisfactorily explains all deal characteristics' impact on deal outcomes and duration. Welch et al. (2020) identify six themes of decisions and activities in the pre-deal that can be explained by a different set of theories¹. Mainly, firms involve in M&As to achieve specific goals. These goals can be linked to institutional or individual (related to top management) motivations. Consequently, transaction settings like target firm status, takeover form, and payment method are usually related to the deal's underlying motives and goals. Synergy theory, hubris theory and agency theory are among the most used theories by past studies. Auction theory is another important theory that has been used to explain how negotiations affect sub-set of M&A decisions. According to auction theory, acquirers aim to develop optimal bidding strategies that guarantee the success of the M&A transactions (Clayton & Ravid, 2002; Eckbo, 2014). Some theories explain different subsets of acquisitions very well. For example, information asymmetry theory and signaling theory can be used to explain why payment method, industry relatedness, target firm and cross-border have different impacts on acquisition duration. Organisational learning theory is another theory used to explain the impact of past acquisition experience on acquisition outcomes (Hayward, 2002; Levitt & March, 1988). Acquirers frequently take into consideration their previous acquisition experience when making decisions regarding payment method, target firm and acquisition duration. In this section, we discuss the influences of these characteristics on the duration of acquisition.

Merger form

Takeovers can take place in various forms, although M&A are the popular choices. There is no consensus on a specific theory about the takeover method. A few studies have attempted to develop a theory to explain how acquirers choose the takeover method. Previous works emphasise that the takeover method is related to an acquirer's strategy and characteristics, competitive environments, and government regulations (Berkovitch & Khanna, 1991; Offenbergl & Pirinsky, 2015). Offenbergl and Pirinsky (2015) find differences in announcement return, premiums and duration between merger transaction, and acquisitions and merger transactions tend to take a longer time to be completed. Luypaert and De Maeseneire (2015) document that mergers tend to take longer time than acquisitions. This is because in mergers, acquirers need to get the approval of their own and the target firm's shareholders. Getting approval and arranging for shareholder meetings from relevant parties may take a long time. On the contrary, in the case of acquisition, approval from the target firm's shareholders may not be necessary. Thus, the following hypothesis is proposed:

H4: Merger transactions are positively associated with acquisition duration.

Deal size

Servaes and Zenner (1996) use a set of variables to capture the complexity of a transaction, including large transactions and stock payment. Larger deals tend to be of longer duration (Chang et al., 2016; Ekelund et al., 2001; Luypaert & De Maeseneire, 2015; Song et al., 2013; Wee et al., 2016), reflecting their greater complexity. The valuation of large deals is more difficult and involves more business units, which can prolong the acquisition process (Servaes & Zenner, 1996). Large deals may also require the approval of regulators to check their effect on industry concentration, again prolonging the transaction (Ekelund et al., 2001). We argue that acquirers may take a longer time to execute large transactions. The larger the size, the more complex the deal. Hence, requiring more time. Thus, the following hypothesis is proposed:

H5: Deal size is positively associated with acquisition duration.

Payment method

Stock payment can result in a longer duration of M&As than cash payment offers (Agrawal et al., 2013; Chang et al., 2016; Dikova et al., 2010; Luypaert & De Maeseneire, 2015; Song et al., 2013). Doan et al. (2016) state that controlling

internal factors such as payment methods can partially reduce the deal's complexity. The long duration of stock payment offers may be caused by the need for more administration compared to cash offers. Cash acquisitions are easier to evaluate than stock transactions (or a combination of cash and stock). However, stock acquisitions require more expertise in putting the package together, valuing it, and obtaining permission to issue stock (Servaes & Zenner, 1996). For example, Ishak et al. (2017) explain that the regulations of the Malaysian security commission (SC) require firms to get approval from the shareholders before issuing stocks to settle the acquisition transaction. Consequently, acquirers might try to avoid this requirement by using cash payment rather than stock payment. Therefore, the following hypothesis is proposed:

H6: Cash payment is negatively associated with acquisition duration.

Industry relatedness

Industry relatedness between the acquirer and the target firm is another factor that can influence the duration of M&A. Previous studies indicate that M&A transactions between firms in the same industry and with similar industrial structures are considered as related (Haleblian & Finkelstein, 1999; Hayward, 2002; Laamanen & Keil, 2008). The empirical findings document that related M&As tend to be completed more quickly than unrelated or diversified M&As (Dikova et al., 2010; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015). The long duration of unrelated M&As can be explained by differences in regulations and levels of information between the acquirer and the target firm. In unrelated M&As the two may have different regulations with different requirements. Information asymmetry also tends to be higher in unrelated M&As than in related M&As, which can make negotiations difficult and long drawn-out. Thus, the following hypothesis is proposed:

H7: Related acquisition is negatively associated with acquisition duration.

Cross-border acquisition

Geographic distance is normally greater for cross-border M&A compared to domestic M&A, thus making it quite difficult for the acquirer to obtain information about the target firm (Uysal et al., 2008). In addition to geographic distance, differences in language, regulations, and culture can make negotiations more difficult and therefore can result in a longer duration. Firms often hire external consultants locally to obtain more information about the business

environment in which the target firm is located (Very & Schweiger, 2001). This may help to shorten the duration taken by cross-border M&As. Boeh (2011) finds that cross-border deals take less time than domestic deals, significant at the 1% level. He claims that cross-border M&As involve larger contracting expenses to overcome the higher level of information asymmetry, prompting a shorter duration than domestic M&As. Thus, the following hypothesis is proposed:

H8: Cross-border acquisition is negatively associated with acquisition duration.

Target status

Acquisition duration is affected by the public status of the target firm. Past studies document that the duration of M&A transactions is longer for public target acquisitions (Agrawal et al., 2013; Booij & Rao Sahib, 2012; Chang et al., 2016; Dikova et al., 2010; Li et al., 2017). When the target firm is a public firm, there is a requirement by legislators, for example, stock exchange and securities commission which may not be required when the target firm is a private firm. These requirements include disclosure of documents and a specific process flow schedule. Thus, the following hypothesis is proposed:

H9: Acquiring a public target is positively associated with acquisition duration.

Financial advisor

The presence of a financial advisor reflects the nature of the deal and reveals information about its level of complexity. Hiring advisors by the acquirer or target firm can influence the negotiation outcomes and duration of M&A. Servaes and Zenner (1996) argue that firms tend to use an investment bank as an advisor in complex transactions. In particular, the acquirer tends to use a financial advisor when there is greater information asymmetry between the acquirer and the target firm. It seems that acquirers employ financial advisors if they think M&A transactions will be difficult to execute. Hunter and Jagtiani (2003) find that acquisitions tend to be completed more quickly when they are initiated by the acquirer or target firm rather than an advisor. These findings suggest that using a financial advisor does not necessarily result in a shorter duration of M&A. Thus, the following hypothesis is proposed:

H10: Using a financial advisor is positively associated with acquisition duration.

Multiple acquisitions

Conducting multiple acquisitions in a short period may have an impact on M&A duration. According to Roll (1986), managers can be optimistic and confident in their assessment of target companies. Consequently, they tend to engage in frequent acquisitions. However, Doukas and Petmezas (2007) assert that excessively confident managers who involve in multiple acquisitions within a short time overestimate their ability to select profitable investments. They are also less likely to negotiate effectively. Undertaking multiple acquisitions at the same time may be associated with hubris hypothesis which leads to low-quality acquisitions. Inefficient negotiation with the target firm is also possible. Fuller et al. (2002) argue that acquirers may gain a small amount of synergy when they make multiple acquisitions simultaneously, while others confirm poor performance by multiple acquirers (Billett & Qian, 2008; Ismail, 2008). There is a strong probability that engaging in many acquisitions together will affect acquisition duration. Therefore, this study also investigates whether multiple acquisitions take a long time to complete. Thus, the following hypothesis is proposed:

H11: Conducting multiple acquisitions is positively associated with acquisition duration.

Acquisition experience

Firms learn and accumulate skills and tactics through repetition. Acquirers learn from their previous acquisitions and adjust their behaviors with future transactions accordingly (Aktas et al., 2011). Haleblan and Finkelstein (1999) measure experience by the total number of acquisitions completed before the focal acquisition in order to find the impact of experience on acquisition performance. Overall, past studies show that prior experience influences the duration of acquisitions (Ferreira et al., 2017; Luypaert & De Maeseneire, 2015; Park et al., 2016). This influence negatively affect the time needed to complete transactions as the acquirers must be able to plan well for their new acquisitions and react appropriately in unexpected situations. Thus, the following hypothesis is proposed:

H12: Acquisition experience is associated with a shorter acquisition duration.

METHODOLOGY

Sample and Data Collection

The sample of this study comprises 556 completed M & M&As by non-financial listed Malaysian firms from 2001 to 2019. Following earlier studies, we exclude deals with less than USD1 million and a ratio of the transaction value to total assets in the pre-acquisition year of less than 1%. We obtain data for acquisition duration and deal characteristics variables from the Eikon database. CEO characteristics data are obtained from firms' annual reports. Table 1 illustrates the mean and median of acquisition duration and deal value based on deal characteristics for the whole study sample.

Table 1
Descriptive statistics of the sample

Variable	Mean	SD	Skewness	Kurtosis
Duration (days)	142.23	123.340	1.119	3.986
CEO tenure (years)	6.264	5.815	1.477	4.928
CEO duality (dummy)	0.182	0.386	1.651	3.727
Foreign CEO (dummy)	0.085	0.278	2.987	9.922
Merger (dummy)	0.365	0.482	0.560	1.314
Deal value (\$ million)	42.995	173.1	10.81	142.82
Cash payment (dummy)	0.745	0.436	-1.122	2.258
Relatedness (dummy)	0.232	0.422	1.270	2.612
Cross-border (dummy)	0.182	0.386	1.651	3.727
Public target (dummy)	0.153	0.360	1.929	4.722
Financial advisor (dummy)	0.525	0.500	-0.101	1.010
Multiple acquisitions (dummy)	0.308	0.462	0.834	1.696
Acquisition experience (dummy)	0.441	0.497	0.239	1.057
Firm age (year)	11.804	9.192	1.522	5.935
Firm size (total assets million)	2063.2	5614.0	5.238	35.685
Cash holding	0.134	0.118	1.895	7.575
Leverage	0.227	0.170	0.593	2.792

Measurement of Variables

Regression models in this study include several factors that determine acquisition duration. The dependent variable is M&A duration measured by the total number of days between the announcement date and the closing date of the deal (Dikova et al., 2010; Offenbergh & Pirinsky, 2015). The independent variables are CEO characteristics (CEO tenure, CEO duality, and foreign CEO) and deal characteristics (form of deal, deal size, payment method, relatedness, public target, cross-border deal, financial advisor, multiple acquisitions and acquisition experience). Table 2 displays the definitions and data sources of the variables.

Table 2
Variables definition

Variable	Definition	Data source
Acquisition duration (<i>ACQ_{DUR}</i>)	Total days between the announcement day and the completion date.	Eikon
Extreme long duration	A dummy variable equal to one if firm duration fall in the highest quartile of duration, and zero otherwise.	
CEO characteristics		
CEO tenure (<i>CEO_tenure</i>)	The logarithm of the number of years between appointment date and acquisition date.	Annual report
CEO duality (<i>CEO_duality</i>)	A dummy variable equal to one if the CEO of the acquiring firm also serves as chairman of the board, and zero otherwise.	Annual report
Foreign CEO (<i>Foreign_CEO</i>)	A dummy variable equal to one if the CEO of the acquiring firm is not a Malaysian citizen, and zero otherwise.	Annual report
Deal characteristics		
Merger (<i>MERGER</i>)	A dummy variable equal to one if the acquirer is involved in a merger, and zero otherwise.	Eikon
Deal size (<i>LnDEAL_V</i>)	The natural logarithm of deal value.	Eikon
Cash payment (<i>CASH_BID</i>)	A dummy variable equal to one if only cash is used for payment, and zero otherwise.	Eikon
Relatedness (<i>RELATED</i>)	A dummy variable equal to one if the acquirer and the target are operating in the same industries with a common three-digit Standard Industrial Classification (SIC) code and zero otherwise.	Eikon

(continue on next page)

Table 2 (continued)

Variable	Definition	Data source
Cross-border deal (<i>CROSS</i>)	A dummy variable equal to one if the acquirer is involved in a cross-border transaction, and zero otherwise.	Eikon
Public target (<i>PUBLIC_T</i>)	A dummy variable equal to one if the target is a listed firm, and zero otherwise.	Eikon
Financial advisor (<i>ACQ_ADVISOR</i>)	A dummy variable equal to one if the acquirer hires a financial advisor for the deal and zero otherwise.	Eikon
Multiple acquisitions (<i>MULTIPLE_ACQ</i>)	A dummy variable equal to one if two or more open deals are being conducted by the acquirer during the duration of the acquisition.	Eikon
Firm characteristics		
Acquisition experience (<i>EXPER</i>)	A dummy variable equal to one if the firm has at least one completed acquisition or more with a value of at least \$1 million during the period of the study.	Eikon
Firm age (<i>FIRM_AGE</i>)	Firm age at acquisition year from year of listed.	DataStream
Total assets (<i>TA</i>)	Book value of total assets.	DataStream
Cash holding (<i>CASH</i>)	Ratio of cash and short investment over total assets.	DataStream
Leverage (<i>LEV</i>)	Total debt over total assets.	DataStream

Methodology

This study investigates the impact of CEO characteristics on the complete duration of M&As by non-financial listed firms in Malaysia. Univariate analysis and quantile regression (QR) have been applied to examine the impact of CEO and deal characteristics. QR is a method of estimating conditional quantile functions (Koenker & Bassett, 1978; Koenker & Hallock, 2001; Powell, 2019). The significant advantage of QR is that it provides an extensive description of the connection between the result variable Y and the input variable X, as opposed to the conventional ordinary least squares (OLS) estimator.

Furthermore, QR estimations are robust for outliers in the information set. As a result, quantile estimations are less likely to be affected by extreme information points. However, the main reason for using QR is that connections between dependent and independent variables can be quantified more comprehensively. QR has been used in several studies in the finance field. For

example, Chay et al. (2015) apply QR to overcome OLS limitations in dealing with the upper tail of the investment distribution when the distribution is positive for heavy-tailed distributions. As shown in Figure 2, the distribution of duration is positively skewed, which raises concerns that the estimated impact of CEO and deal characteristics on acquisition duration from OLS regressions are affected inordinately by the upper tail of the duration distribution.

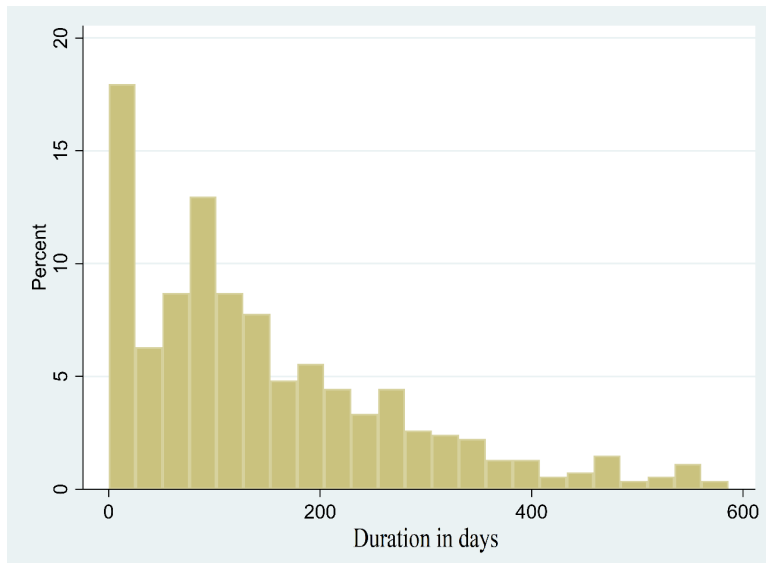


Figure 2. Distribution of acquisition duration.

Notes: The graph plots the distribution of acquisition duration, defined as the number of days between the announcement and completion dates of the deal. The sample covers the period 2001–2019.

In addition, QR allows us to investigate the impact of CEO characteristics at different levels of acquisition duration. QR uses the median value of duration for the entire firm sample as a benchmark. Three different levels are considered: the 50% quantile, 25% quantile (lower) and 75% quantile (higher). These levels are defined as acquirers with medium duration, shorter and longer duration, respectively. By comparing these sets of conditional quantile regressions, we can find which determinants are more influential at medium, shorter and longer durations. This also allows us to see which determinants have a steady influence at the three levels. Based on the limitations of OLS, this study is one of the early studies to examine the determinants of acquisition duration in Malaysia using QR. In the model formatted in Equation 1, $Q_T(ACQ_{Dur})$ represents conditional quantiles at the 25%, 50% and 75% levels. The independent variables in Equation 1 are as defined in Table 2.

$$\begin{aligned} Q_T(ACQ_{DUR_i}) = & \beta_0 + \beta_1 CEO_{tenure_i} + \beta_2 CEO_{duality_i} + \beta_3 Foreign_{CEO_i} \\ & + \beta_4 MERGER_{it} + \beta_5 LnDEAL_{V_i} + \beta_6 CASH_{BID_i} \\ & + \beta_7 RELATED_i + \beta_8 CROSS_i + \beta_9 PUBLIC_{T_i} \\ & + \beta_{10} Fin_{ADVISOR_i} + \beta_{11} MULTIPLE_{ACQ_i} + \beta_{12} EXPER_i \\ & + \beta_{13} FIRM_AGE_i + \beta_{14} FIRM_SIZE_i \\ & + \beta_{15} CASH_HOLDING_i + \beta_{16} LEVERAGE_i \varepsilon \end{aligned} \quad (1)$$

The robust standard errors are applied during regression to overcome the heteroscedasticity issue in the model. We add more control variables related to firm characteristics that could influence the negotiation period. These variables include firm age, firm size, cash holding and leverage. Older firms have more knowledge and a higher probability of survival than younger firms (Agarwal & Gort, 2002). Bruneel et al. (2010) argue that firm experience accumulates with age. Firm age, firm size, cash level and leverage are added to control their effects on the M&A duration (Nguyen & Phan, 2017).

RESULTS AND DISCUSSIONS

Univariate Analysis

This section presents the results from the univariate analysis. It includes the correlation matrix and the main differences in duration based on deal characteristics. Table 3 is the correlations matrix between acquisition duration and the other determinants. The correlations allow us to expect the relationship between acquisition duration and the independent variables. Merger, financial advisor and multiple acquisitions have a significant positive correlation with duration. Factors such as cash payment, cross-border deal, and public target have a significant negative correlation with duration. The correlations among the independent variables are not high and range between -0.093 and 0.385 . The sample does not suffer from multicollinearity, and the variance inflation factor (VIF) is below 2 for all variables.

Table 3
Correlations between the variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	10	(11)	(12)	(13)	(14)	(15)	(16)
(1) CEO tenure (log)	1.000															
(2) CEO duality	0.152*	1.000														
(3) Foreign CEO	-0.012	0.108*	1.000													
(4) Merger	-0.037	0.040	0.078	1.000												
(5) Deal value (log)	0.023	-0.027	0.012	0.102*	1.000											
(6) Cash bid	0.065	0.019	0.045	-0.070	-0.136*	1.000										
(7) Relatedness	-0.061	0.006	0.032	-0.010	0.091*	0.009	1.000									
(8) Cross-border	0.071	0.105*	0.142*	-0.047	0.101*	0.094*	0.006	1.000								
(9) Public target	0.106*	-0.006	-0.075	-0.270*	0.220*	0.100*	0.003	0.046	1.000							
(10) Financial advisor	-0.005	0.037	-0.048	0.123*	0.357*	-0.392*	0.053	0.028	0.044	1.000						
(11) Multiple acquisition	-0.083	-0.051	-0.076	-0.068	0.068	-0.083*	0.068	-0.031	0.107*	0.119*	1.000					
(12) Acquisition experience	0.131*	-0.024	-0.009	-0.018	0.097*	0.013	-0.007	0.005	0.056	-0.034	0.084*	1.000				
(13) Firm age (log)	0.320*	0.119*	0.070	-0.010	0.252*	0.035	-0.196*	0.048	0.152*	-0.049	-0.060	0.166*	1.000			
(14) Firm size (log)	0.126*	-0.002	-0.034	-0.004	0.714*	0.108*	0.047	0.091*	0.283*	0.111*	0.125*	0.202*	0.397*	1.000		
(15) Cash holding	0.025	-0.060	-0.121*	-0.122*	0.141*	-0.050	0.017	0.008	0.140*	0.161*	0.145*	0.044	-0.020	0.245*	1.000	
(16) Leverage	-0.042	0.060	0.110*	-0.010	0.023	0.041	0.004	0.077	-0.040	-0.053	-0.005	-0.022	-0.067	-0.097*	-0.333*	1.000

Note: * indicates correlation coefficients with *p*-values of 5% or below.

Multivariate Analysis

CEO characteristics findings

Table 4 presents the regressions' results of CEO and deal characteristics on acquisition duration. The OLS regression outcomes show that of the three CEO characteristics, only CEO duality and foreign CEO have significant impacts on duration (at the 5% level). This result indicates that CEO duality can weaken the firm's ability to finish the transaction quickly. Specifically, acquisition duration is prolonged by 29 days when the CEO serves as chairman of the board. On the other hand, foreign CEOs can finish their acquisitions in a shorter period of 30 days than local CEOs.

Table 4
Acquisition duration regressions on CEO and deal characteristics

Variable	OLS	Quantile regressions		
		0.25	0.50	0.75
CEO tenure (log)	-2.987 (-0.584)	4.778 (1.353)	-4.405 (-1.024)	-9.446** (-1.993)
CEO duality	28.78** (2.075)	8.280 (0.743)	22.49** (2.047)	34.88** (2.204)
Foreign CEO	30.36** (-2.029)	-26.24** (-2.402)	-49.37*** (-3.712)	-36.44** (-2.397)
Merger	28.43** (2.476)	19.53*** (2.835)	30.77*** (3.549)	45.21*** (3.932)
Deal value (log)	6.445 (1.148)	7.168** (2.200)	9.249** (2.374)	6.047 (1.329)
Cash payment	-76.91*** (-4.783)	-42.53*** (-4.613)	-76.16*** (-7.501)	-111.5*** (-7.197)
Relatedness	-23.09** (-2.070)	-13.46** (-2.316)	-12.82 (-1.630)	-25.12** (-2.214)
Cross-border	-28.52** (-2.442)	-16.04** (-2.504)	-23.21** (-2.169)	-35.58*** (-3.217)
Public target	-62.67*** (-4.885)	-35.78*** (-5.321)	-48.97*** (-5.565)	-64.74*** (-4.645)
Financial advisor	47.20*** (3.880)	55.48*** (8.256)	45.69*** (5.406)	28.78** (2.535)
Multiple acquisitions	14.52 (1.169)	16.12*** (2.600)	13.91** (1.990)	35.60*** (2.989)

(continue on next page)

Table 4 (continued)

Variable	OLS	Quantile regressions		
		0.25	0.50	0.75
Acquisition experience	-8.681 (-0.728)	-4.462 (-0.851)	-9.506 (-1.192)	-13.31 (-1.264)
Firm age (log)	3.231 (0.409)	0.825 (0.197)	8.113 (1.435)	2.047 (0.239)
Firm size (log)	1.284 (0.234)	-7.348** (-2.266)	-4.411 (-1.099)	8.633 (1.571)
Cash holding	-50.67 (-1.219)	-37.71 (-1.271)	12.70 (0.431)	-82.10*** (-2.804)
Leverage	31.66 (0.849)	11.55 (0.533)	57.82** (2.173)	11.66 (0.36)
Constant	170.5*** (2.790)	155.9*** (3.570)	192.9*** (3.841)	162.6** (2.296)
Year effects	Yes	Yes	Yes	Yes
Observations	556	556	556	556
R ² / Pseudo R ²	0.349	0.229	0.227	0.251

Notes: This table reports the results of the OLS and QR regressions. The dependent variable equals the number of days between the announcement date and completion date of the M&A. The independent variables include CEO characteristics variables and deal characteristics variables as defined in Table 2. *t*-statistics are calculated using robust standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

The QR findings reveal that CEO tenure affects duration only in the longer duration quantile. CEO tenure negatively affects the duration, significant at the 5% level. The findings suggest that long-tenured CEOs may not be worried about completing the transaction when they have information that the acquisition processes are running as planned. However, they make more effort to execute the acquisition transaction when they believe that the process deviates from the plan. These findings partially support H1, about the negative relationship between CEO tenure and acquisition duration, when a transaction takes longer. These findings are an extension of the previous studies that investigate the impact of CEO tenure on acquisition outcomes (Zhang et al., 2016; Zhou et al., 2020).

There is no significant influence of CEO duality on duration in the shorter quantile. In the medium and longer duration quantiles, acquisition duration becomes significantly longer by 23 days and 35 days, respectively, when the CEO serves as chairman of the board. This finding supports H2, that CEO duality is associated with longer duration. It may be consistent with

Chikh and Filbien (2011) argue that dual CEOs are more overconfident than non-dual CEO, ignore market signals, and depend on their own beliefs. Dorata and Petra (2008) document evidence that better governance exists when the CEO does not serve as the chairman at the same time. Acquirers with dual CEOs are more subject to agency problem and gain less from their M&A (Desai et al., 2003). Empirical evidence from Malaysia shows that CEO duality is one factor that motivates the CEO to engage in M&As to increase their compensation (Ya'acob, 2016). M&A transactions may be motivated by dual CEOs' interest which consequently may result in poor acquisition with less strategic planning. As a result, transaction negotiation may take a longer duration. We argue that CEOs with chairman positions may not take things seriously during the negotiation period or deliberately prolong the acquisition duration to get bonuses.

Foreign CEOs appear to have a significant impact on acquisition duration. This impact is negative in the three duration quantiles and is independent of duration length. Foreign CEOs complete acquisitions by 26 days, 49 days, and 36 days less in the shorter, medium, and longer duration quantiles. Firms hire foreign CEOs because they believe these CEOs have international experience and skills that will enhance their performance. International CEOs are usually perceived to have valuable international skills and network access, which enhances the firm's competitive advantage in the global market (Piaskowska & Trojanowski, 2014). Foreign CEOs usually receive higher compensation than domestic CEOs (Conyon et al., 2019). This may help to increase their job satisfaction, and consequently results in higher productivity. These are some explanations why foreign CEOs may plan and manage M&A transactions better than domestic CEOs do. The result of the study suggests that foreign CEOs benefit from their greater experience and knowledge, resulting in shorter time than domestic CEOs. This finding is consistent with earlier works (Greve et al., 2015; B. B. Nielsen & Nielsen, 2013; S. Nielsen & Nielsen, 2010) and supports H3.

Overall, the findings suggest that CEO tenure and CEO duality depend on the length of duration or complexity level. The foreign CEO effect does not depend on duration length. The findings related to CEO characteristics are consistent with the upper echelon theory (Hambrick & Mason, 1984) that they have a significant influence on acquisition duration.

Deal characteristics findings

In Table 4, the findings from OLS regression regarding the deal characteristics show that merger and hiring a financial advisor are significantly associated with longer duration of M&As. Using cash payment reduces acquisition duration by 77 days, significant at the 1% level. Acquisition duration is also significantly shorter when the firm is involved in a related acquisition, cross-border transaction, and acquiring a public target.

Quantile regression findings show that merger transactions have a significant positive impact on duration. The impact is constant across all quantiles with an increasing trend. M&A duration tends to increase by 20 days, 31 days, and 45 days in the shorter, medium and longer quantiles, respectively, when it is a merger transaction. Merger transactions involve a major change for the target firm's structure, and many details should be discussed and settled during the negotiation between the acquirer and target firms. For example, the acquirers may combine some departments and production lines or abort some managements, departments or production lines. These factors make merger transactions experience a longer duration compared to acquisition transactions. This finding is consistent with Luypaert and De Maeseneire (2015) and supports H4.

The deal value significantly affects the duration of the short and medium duration quantiles, but the effect is insignificant in the longer duration quantile. Acquisition duration is positively and conditionally associated with deal value, consistent with past empirical findings (Chang et al., 2016; Ekelund et al., 2001; Luypaert & De Maeseneire, 2015; Song et al., 2013). Larger value M&A transactions tend to be more complicated compared to small transactions in term of valuation. Also, acquirers may show more diligence and sobriety when dealing with large-sized transactions due to the large amount invested and the high level of risk in these transactions. This finding also supports the H5.

Cash payment negatively affects acquisition duration, consistently across the three quantiles, but is independent of the duration length. In contrast to cash payment, acquirers need to decide about the share price and number of shares corresponding to target firm shares. Moreover, acquirers may need approval from their shareholders and the regulators when using stock payment instead of cash payment. In addition to that, evaluating the offer price in cash is more

manageable than evaluating the offer price in stock value. These facts may result in a short duration for cash payment compared to stock payment. The finding of the cash payment effect is consistent with past empirical findings (Agrawal et al., 2013; Chang et al., 2016; Dikova et al., 2010; Luypaert & De Maeseneire, 2015; Song et al., 2013) and supports H6.

Relatedness affects acquisition duration and is significant in the shorter and the longer quantiles. The effect is dependent on the duration length. Acquisition duration is lower by 13 days and 25 days in the short and long duration quantiles, respectively, when acquirers are involved in related acquisitions. Being in the same or similar industry makes the evaluation process easier. Acquirers have more information about the target firm, which help them to evaluate the transaction price faster. Negotiations may be easier as the target firm knows that the acquirer has better information about its value and financial position. In line with past findings (Dikova et al., 2010; Ferreira et al., 2017; Luypaert & De Maeseneire, 2015), relatedness is associated with short acquisition duration. This finding supports H7. Acquirers spend a short time completing cross-border transactions. The effect of cross-border deals is significant across all duration quantiles. This finding suggests that the cross-border effect is independent of duration length or deal complexity. In cross-border transactions, This is consistent with past findings by Boeh (2011). It also supports H8.

Public target effect is significant across the three duration quantiles and independent of the duration length. Acquisition duration tends to be shorter by 36 days, 49 days and 65 days in the short, medium and long duration quantiles. Our findings differ from past findings (Agrawal et al., 2013; Dikova et al., 2010; Li et al., 2017), which document long duration for public target acquisitions. The finding does not support H9. One explanation for this result can be related to the Malaysian family business characteristic. Acquirers may have difficulty in acquiring private firms, given the opinion of family firms on mergers. However, this result needs further investigation.

Hiring a financial advisor affects acquisition across the three duration quantiles is independent of the duration length. Moreover, the influence of using a financial advisor is stronger in the short duration quantile and reduces from the short to the longer duration quantile. Acquisition duration is extended by 55 days in the short duration quantile, 46 days in the medium duration quantile and 29 days in the longer duration quantile. This finding suggests that the effect of using a financial advisor is less when transaction duration is

longer, suggesting that acquirers may hire a financial advisor when they expect some difficulties in executing the acquisition transaction with the target firm. This result is consistent with past findings (Hunter & Jagtiani, 2003), and supports H10 that using a financial advisor is associated with a longer duration.

Involvement in multiple acquisitions significantly affects the duration of acquisition in the three duration quantiles; the influence is stronger in the short and the medium quantiles than in the longer duration quantile. This finding suggests that duration can be longer when acquirers start to involve in a new transaction before completing the current one. This supports H11, that conducting multiple acquisitions is associated with a longer acquisition duration. The finding is in line with Doukas and Petmezas (2007), who suggest less efficacious negotiations in the presence of multiple acquisitions.

Findings related to acquisition experience show that it has an insignificant relationship with acquisition duration. This result does not support H12. The relationship between firm age and duration is insignificant across the three duration quantiles. Firm size has a significant effect on duration only in the short duration quantile. The impact is negative. Cash holding negatively affects duration in the longer quantile, which is significant at the 1% level. Acquirers with a high level of cash may use to facilitate the processes of their transactions when getting longer. Luypaert and De Maeseneire (2015) document a negative impact for cash level of acquirer on the duration of the U.S. M&As. Leverage affects duration only in the medium quantile of duration. The effect is significantly positive at the 5% level. Nguyen and Phan (2017) report a significant positive impact for leverage on duration. One explanation for this result can be related to the high level of monitoring, which increases the tendency to involve in long time negotiation with target firms.

ROBUSTNESS CHECK

We conduct additional analysis to check whether our findings from the main analysis are robust. Past studies have used logit regression to investigate the probability of deal completion (Chang et al., 2016; Muehlfeld et al., 2012; Muehlfeld et al., 2007), and we adopt logit regression for the dependent variable to fit duration. The dependent variable is a dummy variable equal to one if acquisition duration falls in the longest quartile of duration and zero otherwise. The logit model will help to explain the main factors that increase the probability of executing acquisitions over a longer duration.

Table 5 shows the logit regression findings. Of the three CEO characteristics, only CEO duality and foreign CEO significantly affect the probability of acquisition duration being in the longer duration quartile. CEO duality significantly increases the probability of acquisition duration to be filled in the longer quartile, and foreign CEO significantly reduces it. Among the deal characteristics, only merger, deal value, cash payment, relatedness, cross-border and public target have a significant effect on the probability of acquisition duration being in the longer duration quartile. Deal value significantly increases the probability; cash payment, relatedness, cross-border and public target CEO significantly reduce it. Overall, the additional analysis suggests that CEO duality, foreign CEO, merger, deal value, cash payment, relatedness, cross-border, public target, cash holding and leverage have a robust significant effect on duration. These characteristics affect the probability of acquisition duration to be longer.

Table 5
Acquisition duration logit regression on CEO and deal characteristics

Variable	(1)	Δ	(2)	Δ
CEO tenure (log)	-0.143 (-1.390)	-0.019	-0.161 (-1.535)	-0.020
CEO duality	0.824*** (2.716)	0.119**	0.940*** (3.064)	0.133***
Foreign CEO	-1.449** (-2.568)	-0.156***	-1.240** (-2.339)	-0.135***
Merger	0.465* (1.702)	0.064*	0.538* (1.933)	0.071*
Deal value (log)	0.254*** (2.772)	0.035***	0.237* (1.857)	0.032*
Cash payment	-1.532*** (-4.775)	-0.249***	-1.565*** (-4.449)	-0.246***
Relatedness	-0.808*** (-2.652)	-0.100***	-0.797** (-2.460)	-0.096***
Cross-border	-0.874** (-2.156)	-0.107**	-0.880** (-2.168)	-0.105**
Public target	-1.308*** (-3.297)	-0.148***	-1.434*** (-3.481)	-0.156***
Financial advisor	0.467 (1.489)	0.064	0.408 (1.216)	0.053

(continue on next page)

Table 4 (continued)

Variable	(1)	Δ	(2)	Δ
Multiple acquisitions	0.0516 (0.178)	0.007	0.0312 (0.101)	0.004
Acquisition experience	0.0102 (0.0375)	0.001	0.00892 (0.0318)	0.001
Firm age (log)			0.0701 (0.331)	0.009
Firm size (log)			0.0146 (0.121)	0.002
Cash holding			-2.226 (-1.534)	-0.190**
Leverage			1.844** (2.067)	0.288**
Year dummies	Yes		Yes	
Observations	556		556	
Prob > χ^2	0.000		0.000	
Pseudo R ²	0.254		0.275	

Notes: This table reports the results of logit regressions. The dependent variable is a dummy variable equal to one if the acquisition duration falls in the larger quartile of duration and otherwise zero. The independent variables include CEO characteristics variables and deal characteristics variables as defined in Table 2. The z-values are given in parenthesis and are adjusted for standard errors clustered by firm. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

CONCLUSION

This study investigates the effects of CEO characteristics on acquisition duration using a sample of Malaysian M&As by listed firms over the period 2001–2019. Adopting 556 observations, it can be concluded that the findings are in line with upper echelons theory (Hambrick & Mason, 1984). Specifically, the empirical findings show that CEO tenure, CEO duality, and foreign CEO affect acquisition duration. Nevertheless, this effect is conditioned on duration quantiles for CEO tenure and duality. CEO tenure has a negative effect on duration only in the longer duration quantile, while it is positive for CEO duality. Foreign CEO has a negative effect on duration in all three duration quantiles. These findings suggest that CEO characteristics are more significant when M&A transactions get longer and complicated. The findings also show that value and relatedness have significant impacts on acquisition duration but are conditioned on the quantile. Acquisition duration tends to be longer when merger transaction, large deal value, financial advisor and multiple

acquisitions are involved. Cash payment, relatedness, cross-border, public target, and acquisition experience are the deal characteristics that reduce acquisition duration. The robustness check shows that CEO duality and deal value have robust impacts on acquisition duration and increase the probability of duration being longer. Even though foreign CEO, cash payment, relatedness, cross-border and public target also have robust impacts on acquisition duration, but they reduce the probability of duration being longer.

The study has implications and contributions for both theory and practice. A better understanding of acquisition duration determinants is needed. We use the upper echelons theory to suggest some of these determinants. The long acquisition duration may involve additional costs (Dikova et al., 2010). For that reason, shortening the whole process may reduce these costs. As such, these factors may serve as general guidelines in assessing and directing the process during the acquisition planning and negotiation stages. Proactive approach should be taken by taking into consideration all these underlying factors so that optimal duration and cost can be achieved.

NOTES

1. These categories include (a) initiation; (b) target selection; (c) bidding and negotiation; (d) valuation, financial terms and financing; (e) announcement; and (f) closure.

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