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David R King, Gang Wang, Medhi Samimi and Andres Felipe Cortez



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David R. King

Florida State University
College of Business
821 Academic Way, RBA 305
Tallahassee, FL 32306-1110
E-mail: drking@fsu.edu

Gang Wang

Florida State University
College of Business
821 Academic Way, RBB 252
Tallahassee, FL 32306-1110
E-mail: gwang5@fsu.edu

Mehdi Samimi

The City College of New York/CUNY
Colin Powell School for Civic & Global Leadership
160 Convent Avenue
New York, NY 10031
E-mail: msamimi@ccny.cuny.edu

Andres Felipe Cortes

Sacred Heart University
Welch College of Business & Technology
5151 Park Avenue
Fairfield, CT 06825
E-mail: cortesortiza@sacredheart.edu

Keywords: Merger and acquisition, acquisition performance, financial performance, meta-analysis, deal characteristics, and acquisition integration

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Abstract. Different areas of focus in merger and acquisition (M&A) research have led to research fragmentation in theories and variables used to predict different measures of acquisition performance. We address fragmentation through broad meta-analyses to identify relevant theories and predictor variables. Specifically, we find 16 constructs (method of payment (cash); method of payment (stock); acquirer debt; acquisition premium; relatedness; acquisition experience; alliance experience; acquirer firm size; target firm size; acquirer prior performance; target prior performance; acquirer R&D; national cultural distance; geographic distance; relative size; integration depth) that are significant predictors of different measures of acquisition performance. Our results support signaling theory that identifies the importance of deal characteristics, as well as contingency theory and the importance of context. With the exception of method of payment (stock), the impact of a predictor variable often varies across different measures of acquisition performance driving the need to assess theoretical explanations for underlying relationships. Overall, our results show there is value in integrating different theories to inform our understanding of acquisition performance.

Keywords: Merger and acquisition, acquisition performance, financial performance, meta-analysis, deal characteristics, firm characteristics, and acquisition integration

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INTRODUCTION

Research examining merger and acquisition (M&A) performance has largely developed within different areas of focus (e.g., deal, firm or process) that apply different theories and use different predictor variables (e.g., Bauer and Matzler 2014). As a result, M&A research displays theoretical endogeneity or fragmentation (Busenbark, Krause, Boivie and Graffin, 2016; Zald, 1996) that is reflected in inconsistent application of research variables (Cording, Christmann and Weigelt, 2010; King et al., 2004; Meglio and Risberg, 2010). This causes different areas of research to overlook alternative explanations and potentially relevant research variables with significant effects (Leik, 1997), and it begins to explain why prior summaries of M&A research find limited predictors of acquisition performance (e.g., Datta, Pinches and Narayanan, 1992; King et al., 2004; Haleblian et al., 2009; Stahl and Voigt, 2008). A solution offered for addressing fragmentation from wider management research is to examine specific phenomenon that enables crossing boundaries (Birkinshaw, Healey, Suddaby and Weber, 2014). Our examination of a specific phenomenon (acquisitions) offers the potential to identify what drives significant variance in acquisition performance by aggregating results across M&A research.

Our study meta-analytically integrates M&A research across a diverse set of variables to provide evidence on the validity of various theoretical perspectives. In many cases, this is the first time that many of the variables are examined in a meta-analysis. In comparison to the last broad meta-analysis by King and colleagues (2004), we: 1) examine 220 studies (vs. 94) and 19 research variables (vs. 4)¹, and 2) aggregate results for additional measures of acquisitions performance (5 vs. 3) by including managerial assessment and innovative performance that go beyond considerations of financial performance, and 3) find significant predictors of acquisition

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performance (16 vs. none). Our associated contributions highlight the importance of aggregating current research findings across different variables and measures of performance. Specifically, we find acquiring and target firm size and relative size, as well as relatedness, method of payment (cash or stock), acquirer and target prior performance, alliance experience, cultural distance, geographic distance, integration depth, friendliness, acquirer R&D and debt, and acquisition premium are significant predictors of different measures of acquisition performance. Further, in comparison to other meta-analyses, we examine cultural distance and integration across a greater number of studies than Stahl and Voigt (2008), and a greater number of studies of relatedness (i.e., industry) than Homberg, Rost and Ostrloh (2009). This allows for better estimate of population relationships, and it represents a contribution of our broad review of M&A research. However, our results for relatedness and national cultural distance show indications of unidentified moderators, or the need to consider the influence of context. The importance of time as a context is reinforced by Schommer, Richter and Karna (2019) who find that levels of unrelated diversification has declined and the relationship of unrelated diversification on performance has improved over time. Further, we perform analysis to identify variables that significantly contribute to explained variance in acquisition performance measures.

Identifying variables from research that are significant predictors of different measures of acquisition performance enables validation of different theoretical predictions. Our results validate several theoretical expectations, including agency and signaling theory, and it identifies the applicability of contingency theory (Lawrence and Lorsch, 1967). The clearest support is for significant impacts of deal characteristics on acquisition performance, supporting signaling theory (Cornell and Shapiro, 1987). In other words, specific aspects of a deal, such as method of payment, are useful predictors of subsequent acquisition performance. The reasons for selecting

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stock as a method of payment also support expectations associated with agency theory and managerial hubris (Jensen, 1986; Roll, 1986). Within research on firm characteristics and variables associated with acquisition process or the interface between acquiring and target firms, there is less consistent support. Combined with evidence of potential moderators (subgroups), this suggests the need to consider context or develop theory for different circumstances (e.g., Lawrence and Lorsch, 1967) and observations that differences across M&A matter (Bower, 2001). Next, we summarize different theoretical perspectives and research variables for different focus areas of M&A research.

THEORETICAL BACKGROUND

While not mutually exclusive or exhaustive, research often takes a separate focus on deal characteristics, firm characteristics, or considerations of process and firm interface that apply different theories and use different predictors of M&A performance, see Figure I. Our review confirms that M&A performance research dominantly focuses on financial performance (Meglio and Risberg, 2010). However, firm performance is a multi-dimensional construct and individual measures have limited applicability in gaining broader insights (Richard, Devinney, Yip and Johnson, 2009). While we are able to summarize research on managerial assessments of acquisition performance and implications of acquisition performance on firm innovativeness, other outcomes to consider are firm survival (e.g., King, Bauer and Schriber, 2018), or changes in firm and labor productivity (e.g., Paruchuri, Nerkar and Hambrick, 2006; Siegel and Simons, 2010).²

----- Insert Figure I about here -----

In considering predictors of acquisition performance, *deal characteristics* include variables at the time of acquisition announcement, such as the premium paid for a target

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(Sirower, 1997). Meanwhile, *firm characteristics*, as a focus area, consider other predictors, such as the relatedness or similarity of acquirer and target industries (Wan, Hoskisson, Short and Yiu, 2011). Finally, another focus of research takes a *process* perspective that considers the compatibility or interface between firms (Sarala, Vaara and Junni, 2019). Inherently, the focus of research draws from different theoretical perspectives and relationships between predictor variables and different measures of acquisition performance. Theoretical integration can begin to address gaps and fragmentation in M&A research (Busenbark et al., 2016; Haleblan et al., 2009). In the following subsections, we briefly summarize the primary theories used to examine research variables within each research focus area.

Deal Characteristics

M&A research that examines deal characteristics typically focuses on the stock market's reaction to acquisition announcements. Common theoretical perspectives include agency theory (Berle and Means, 1932; Jensen, 1986; Manne, 1965), managerial hubris (Roll, 1986) or signaling (Cornell and Shapiro, 1987). In considering method of payment, there is an expectation that managers pay for an acquisition with stock when they believe their firm's share price is overvalued (Rau and Vermaelen, 1998). As a result, paying for an acquisition with stock provides a signal that is associated with a negative market reaction (Carline, Linn and Yadav, 2009; Moeller, Schlingemann and Stulz, 2004). Conversely, paying for an acquisition with cash can signal confidence surrounding an acquisition (Blackburn, Dark and Hanson, 1997). Still, agency theory also suggests that managers use excess cash to make acquisitions that can increase their pay (Jensen, 1986), and this could be viewed negatively by investors.

Research also considers the role of an acquiring firm's debt, as it can reduce agency monitoring costs (Jensen, 1986) from banks providing external governance (Alderson and

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Betker, 2003; Jandik and Makhija, 2005). Following an acquisition, debt can also serve as a financial constraint that may relate to managers overestimating their ability (hubris) to improve performance following an acquisition (Balakrishnan and Fox, 1993; Harford, 1999). Paying a premium for a target firm is also associated with hubris, and it provides a signal of decision quality (Hayward and Hambrick, 1997; Roll, 1986; Sirower, 1997). Simply, paying more for a target firm than it was trading at prior to an acquisition suggests hubris, or an assumption that acquiring firm managers can make better use of a target firm's assets. However, this also underlies agency theory expectations that the market for corporate control will replace bad managers (Manne, 1965).

Firm Characteristics

Variables associated with acquiring and target firm characteristics are often considered as predictors of acquisition performance using theories, such as behavioral theory of the firm (Cyert and March, 1963), organizational learning (Levitt and March, 1988), and firm resources and capabilities (e.g., Barney, 1991; Collis, 1994; Penrose, 1959; Sirmon, Hitt and Ireland, 2001). A firm characteristic unique to strategy research involves the relatedness between an acquirer and target firm (Wan et al., 2011), or theoretical expectations associated with strategic fit (Shelton, 1988) or portfolio theory and diversification (Markowitz, 1952; Rumelt, 1982).

In considering firm characteristics, M&A research examines whether acquiring firms learn from prior experience (e.g., Hayward, 2002; Zollo and Singh, 2004), as acquiring firms should have more success when a target firm is similar to prior acquisitions (Hitt, Harrison and Ireland, 2001). However, multiple theoretical perspectives are associated with predictions that acquiring firm size impacts acquisition performance. On the one hand, acquisitions by larger acquirers are considered a negative signal (i.e., Cornell and Shapiro, 1987) for large, acquiring

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firms lacking internal growth (Moeller, Schlingemann and Stulz, 2005). On the other hand, larger acquirers are expected to have more experienced managers to manage growth (Penrose, 1959), as well as associated financial and other resources and capabilities (e.g., Argyres, 1996) that may make them more active acquirers. Target firm size can provide an indication of valuable resources (Ahuja and Katila, 2001), and it also serves as a control as larger firms are less likely to be acquired (Offenberg, 2009). Still, larger target firm size may relate to a signal of indigestion, or that an acquirer may have difficulty integrating a target firm (Kusewitt, 1985).

Research also considers the prior performance of acquiring and target firms. For acquiring firm prior performance, theory suggests using this as a control for a firm's capabilities, as higher performing firms may be better managed. For target firms, there are different explanations for the impact of prior performance on acquisition performance. On the one hand, acquirers can benefit from selecting higher performing firms (Saxton and Dollinger, 2004) that can signal the presence of valuable resources. On the other hand, acquirers may use acquisitions as part of a turnaround strategy of poor performing firms (Tuch and O'Sullivan, 2007), consistent with the market for corporate control. For both circumstances, theory often draws on explanations of managerial search, such as the behavioral theory of the firm (Cyert and March, 1963). Finally, using arguments from absorptive capacity and organizational learning (Cohen and Levinthal, 1990; Zahra and George, 2004; Junni and Sarala, 2013), acquiring firm research and development (R&D) can help transfer (absorb) knowledge resources from a target firm (King, Slotegraaf and Kesner, 2008).

Process and Firm Interface

M&A research taking a process perspective of acquisition performance typically considers variables associated with the interface between firms, or their compatibility for integration.

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Variables considered include characteristics observable at acquisition announcement that can signal integration challenges, and variables following acquisition completion. Inclusion of variables at acquisition completion and during integration reflects that early decisions can have follow-on consequences, or the need to consider the acquisition process (Jemison and Sitkin, 1986).

Examined relationships often depend on what is observable from secondary sources or survey data, and the impact of variables of interest on acquisition performance draw on multiple theories. Theories that examine process relationships in M&A research include equity theory (Adams, 1963), including procedural and distributive dimensions of organizational justice (Ellis, Reus and Lamont, 2009; Greenberg, 1990), as well as sensemaking (Chreim and Tafaghod, 2012; Weick, Sutcliffe and Obstfeld, 2005) and status differences between the acquirer and target (Festinger, 1954; Hambrick and Cannella, 1993). Research also draws on social identity theory (Tajfel, 1981), as well as stakeholder theory (Freeman, 1984; Hitt, Harrison and Ireland, 2001), to explain the impact of national cultural differences on acquisition performance (Hofstede, 1983; Stahl and Voigt, 2008). Research also examines decisions associated with integration or autonomy (Haspeslagh and Jemison, 1991) and speed (Angwin, 2004; Stahl et al., 2013) that relate to coordination theory (Barkema and Schijven, 2008; Crowston, 1997; Sarala, Junni, Cooper and Tarba, 2016).

In summary, there are a couple of important qualifications. First, our review of acquisition theories is by necessity incomplete or not exhaustive. Further, theoretical explanations span different focus areas than we use to organize our review of M&A research variables. Second, in aggregating M&A research, it is worth noting that we examine variables represented in existing research and not necessarily the variables of interest to the authors. Next,

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we describe our research methodology before reporting our results and discussing their implications.

METHOD

Literature Search

We conducted an extensive literature search to identify primary studies in multiple ways. To begin, an electronic key word search using terms such as acquisition(s), merger(s), takeover(s), and performance was conducted in multiple databases, including EBSCO, Web of Science, and Google scholar. Next, we examined the reference lists of prior meta-analyses (King et al., 2004; Stahl and Voigt, 2008) and M&A research review articles (Cartwright and Schoenberg, 2006; Haleblan et al., 2009) and performed a descendent search by locating articles that cited these four articles. At the time of our research, these four influential articles received over 1,800 citations.

In addition, we also visited relevant journal websites in search of “in press” articles. Given that M&A research has been conducted in multiple disciplines, we searched top journals in management (e.g., *Academy of Management Journal*, *Administrative Science Quarterly*, *British Journal of Management*, *Journal of Management*, *Journal of Management Studies*, *Leadership Quarterly*, *Management Science*, *Organization Science*, *Scandinavian Journal of Management*, and *Strategic Management Journal*), human resource management (e.g., *Human Resource Management* and *International Journal of Human Resource Management*), international business (e.g., *Journal of World Business*, *Management International Review*, and *Journal of International Business Studies*), and finance (e.g., *Journal of Finance*, *Journal of Financial Economics*, and *Review of Finance*). Meanwhile, we also searched conference programs of the Academy of Management (AOM), AOM’s affiliates (e.g., Southern AOM and

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Western AOM), and Strategic Management Society. Finally, we also contacted authors for correlation tables missing from their published articles.

Inclusion Criteria

The above search effort resulted in 843 empirical articles on acquisition performance. We examined each primary study using the following inclusion criteria. First, articles needed to report correlations between measures of acquisition performance (financial, managerial, or innovativeness) and our theorized predictors of acquisition performance or other statistical information that allows us to compute such correlations. Second, articles needed to be written in English. Third, articles were published after 1990. Selecting articles published after 1990 reflects two considerations. First, research after 1990 increasingly relied on similar methods and databases, such as Thomson Financial's Security data Corporation (SDC) database (Schneper and Guillen, 2004), making findings across studies comparable and reducing heterogeneity in meta-analytic results. Second, the book on M&A by Haspeslagh and Jemison (1991) has been associated with an increase in M&A research focused on performance (Ferreira, Santos, de Almeida and Reis, 2014). In addition, following 1990, there has also been more consistency in regulatory review (Shapiro, 2010). In total, 220 articles, including 178 published and 42 unpublished studies, met our inclusion criteria and were used in our subsequent meta-analysis. Supplemental analysis comparing meta-analytic results for published and unpublished studies revealed differences for only 2 of 27 relationships, and we conclude our results are robust to publication status (Dalton et al., 2012). A full list of the included studies is available from the authors upon request.

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Coding of Information

Information coded included correlations between five different M&A performance variables and 19 predictor variables (see the list of primary studies for predictors coded from each study), variable means and standard deviations, and correlations between predictor variables. For each study, we also coded study source (e.g., journal, book, dissertation, etc.), and country or region of focus.

In validating the coding of articles, we followed a procedure that has been used by prominent meta-analysts (e.g., Crook, Todd, Combs, Woehr and Ketchen, 2011). First, three coders coded an initial set of twenty primary studies. The few instances of disagreement were resolved by discussion. For example, for employee turnover, some studies reported it as turnover and, in other cases, it was reported as retention. To resolve this issue, retention was reverse coded to result in a similar correlational relationship for turnover. Next, the three coders then independently coded the remaining studies and in turn cross-checked one another's codes. During the cross-check process, no more than five errors were detected in each of the coders' work. The errors were quickly corrected with reference to information reported in the original studies. Finally, a fourth author double-checked all codes by the three coders and spotted no discrepancies. In the following sections, we report the variables coded from the included studies.

Performance Measures

Accounting performance. We coded Return on Assets (ROA; Bettinazzi and Zollo, 2017), return on equity (ROE; Cannella and Hambrick, 1993), return on sales (ROS; Krishnan, Miller and Judge, 1997), as measures of M&A accounting performance. ROA was the dominant accounting measure used in acquisition research, and we divide its measurement for the length of observation into 1 year or more than one year (King et al., 2004). It is also worth noting that

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ROA can reflect a downward bias as a measure of acquisition performance, as paying a premium raises the asset base of an acquirer (Ravenscraft and Scherer, 1987; Sirower, 1997).

Short-term stock market performance. We coded Cumulative Abnormal Returns (CAR), as measures of short-term stock market performance. CAR measures were separated into different time periods consistent with King and colleagues (2004), including the day of announcement (Day 0), and windows using 1-5 days, 6-21 days, and longer periods. For example, a (-1,0) or a 2 day window would be coded with studies using a 1-5 day window around acquisition announcement, and a (-3,3) or 7 day window would be coded with studies using a 6-21 day window around acquisition announcement. In limited cases, longer CAR measures were used by studies and results were aggregated for windows between 180 days to three years for the impact of acquirer prior performance and acquisition experience. The most common time periods used in existing research ranges between 1 to 5 days around acquisition announcement, or CAR based on (-1,0), (0,1), (-1,1), or (-2,2) windows. For a discussion of limitations of CAR and different event windows, please see McWilliams and Siegel (1997).

Long-term stock market performance. Different measures of stock performance measured over 180 days in length were coded as measures of long-term stock market performance. The dominant measure was Buy and Hold Abnormal Returns (BHAR; Basuil and Datta, 2015), though Jensen's alpha was also observed (e.g., King et al., 2008). BHAR reflects the return to an investor if they bought an acquiring firm's stock on acquisition announcement to a specified later date. Jensen's alpha is similar, but it also approximates an investor's return in comparison to a benchmark (i.e., S&P500) from the date of acquisition announcement.

Managerial assessment. Survey scales asking managers to subjectively assess M&A performance were coded as managerial assessment of M&A performance (e.g., Bauer, King and

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Matzler, 2012). Reported Cronbach alphas were used to correct for measurement error.

Managerial assessment enables examining multiple dimensions of M&A performance and taking advantage of information only available to managers, such as integration outcomes (Gates and Very, 2003; Laamanen, 2007; Papadakis and Thanos, 2010).

Innovative performance. We coded variables that assess acquiring firms' post-M&A innovativeness (e.g., new patents, number of patent applications, and R&D expenditure) as measures of innovative performance (e.g., Certo, Dalton, Dalton and Lester, 2008).

Predictors of Performance

Aggregating research results was possible for 19 M&A research variables described below with similar measures (e.g., acquirer and target) described together.

Method of payment. Method of payment (e.g., Bodolica and Spraggon, 2009) acquiring firms used for an acquisition was coded with cash payment and stock payment separately. In some cases, studies reported a mix of both cash and stock payment.

Acquirer debt. We coded acquirer debt with different measures of firm debt (e.g., total, debt-to-equity). The most common measure of acquiring firm debt was debt-to-equity (e.g., Bergh, 1997).

Deal attitude. Hostile acquisitions that involved a tender offer and negotiated (i.e., friendly) acquisitions were coded as measures of deal attitude (e.g., Cho et al., 2016).

Acquisition premium. The percentage paid for a target firm in comparison to its market capitalization prior to acquisition announcement was coded as a measure of acquisition premium (e.g., Amel-Zadeh and Meeks, 2019).

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Relatedness. We coded different measures of relatedness, including standard industrial code (SIC) for the total number of SIC codes in common, or a match using each firm's primary 4-digit SIC code, and product similarity (e.g., King et al., 2008).

Acquirer acquisition experience. Acquirer acquisition experience was coded with a count of the number of acquisitions within a reported timeframe (e.g., King et al., 2008).

Acquirer alliance experience. We coded alliance experience (e.g., Khansa, 2015) with variables that measure whether an acquirer had a prior alliance with a target, or a count of the number of alliances by an acquirer within a timeframe considered.

Acquirer (target) firm size prior to acquisition. We coded acquirer firms' (target firms') size (e.g., Bebenroth and Hemmert, 2015) using total assets, number of employees, and sales.

Prior performance. The impact of prior firm performance for acquiring and target firms is often used as a control variable (e.g., King et al., 2008), as prior performance may influence subsequent performance. Prior performance was coded separately for acquiring and target firms, and measured using prior accounting performance (e.g., ROA, ROS or ROE) and market performance (e.g., Tobin's Q, market to book, or stock return).

Acquirer R&D. Acquirer R&D was coded with measures of acquiring firms' R&D intensity and expenditures (e.g., King et al., 2008).

National cultural distance. We coded different measures of national cultural distance (e.g., Basuil and Datta, 2017) for Hofstede or Globe, language difference, and religious difference, and we used them as measures of this variable. Additionally, we coded cultural fit as a reverse measure of cultural distance (Bauer and Matzler, 2014).

Geographic distance. Geographic distance (e.g., Basuil and Datta, 2015) was coded with different measures of geographic distance between and acquiring and target firm.

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Relative size. We coded variables that capture the comparison of acquiring and target firm size (e.g., King et al., 2008) using assets, market capitalization, sales, or number of employees.

Employee turnover. Measures of personnel turnover following an acquisition were coded as measures of this variable. As previously mentioned, information was reverse coded (multiplied by -1) when a study reported employee retention (e.g., Ahammad and Glaister, 2011).

Integration speed. We coded variables that assess the timeframe of overall integration, human (personnel) integration, sociocultural integration, and task integration as measures of integration speed (e.g., Bauer et al., 2016).

Integration depth. We coded variables that capture the degree and level of integration in various dimensions (e.g., marketing, production, employee, autonomy, and task), and we aggregated them as measures of integration depth (e.g., Cording, Christmann and King, 2008).

Meta-analytic Technique

We used Schmidt and Hunter's (2014) random-effect psychometric meta-analysis method to estimate true-score relationships among variables. We adopted this method, because its accuracy has been verified by other researchers (e.g., Field, 2001). Further, this method enables comparing our results to those reported in prior meta-analyses (e.g., King et al., 2004) that also adopted the same method. We corrected for measurement error in both the predictors and the M&A performance measures using reported Cronbach alpha or .80 for studies that did not report reliability information (King et al., 2004; Wang, Holmes, Oh, and Zhu, 2016). The Schmidt–Le (Schmidt and Le, 2004) meta-analysis package program (VG6 Module–individual correction methods for correlations) was used to calculate effect sizes. When primary studies reported

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multiple estimates of the same relationship (e.g., acquirer firm total assets and sales with ROA), we computed a composite correlation using Schmidt and Hunter's (2014) formula whenever possible or otherwise used the average of the multiple estimates. We report the number of studies (k), combined sample sizes (N), the sample-size weighted mean uncorrected correlation (r), the standard deviation of the sample-size weighted mean uncorrected correlation (SDr), an estimate of true-score corrected estimate (ρ), and standard deviation of the true-score, corrected estimated relationship ($SD\rho$). We also report 80% credibility intervals (CVs), 95 percent confidence intervals (CIs), and the percent of the total variance accounted for by statistical artifacts (VAR).

To account for intercorrelations among the predictors and reveal the unique effects of the predictors on M&A performance, we followed prior meta-analysts (e.g., Humphrey, Nahrgang, and Morgeson, 2007) and conducted analyses with meta-analytic correlation matrices as inputs. Specifically, we meta-analyzed the correlations among the predictors whenever there were more than three primary studies and reported the results in the Appendix. In line with prior research (e.g., Humphrey et al., 2007; Viswesvaran and Ones, 1995), we computed harmonic means, and we used them as sample sizes for our analyses. We also performed relative weight analysis based on the meta-analytic correlation matrices to examine the amount of variance each of the predictors explained in M&A performance (Johnson, 2000; Johnson and LeBreton, 2004; Tonidandel and LeBreton, 2015). One advantage of relative weight analysis is that it facilitates the interpretation of the relative validity of the predictors, when multicollinearity among the predictors is a concern.

RESULTS

We first examine the average acquisition performance across different financial measures by calculating the mean of means across studies using a separate meta-analysis for each

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performance variable, see Table I. Consistent with prior research (e.g., King et al., 2004), we find that the average performance, as measured using CAR, ROA, ROE and ROS, is not significantly different from zero, but there is wide variance from aggregating results from different studies. Meanwhile, aggregated results for BHAR, a long-term stock market performance measure is significantly negative ($p < 0.05$). However, we advise caution in interpreting the significance of BHAR, as summarized studies used different timeframes. Managerial assessment and innovativeness measures of performance were not meta-analyzed, as calculating the mean of means was not meaningful due to differences in measurement across studies. For example, different Likert scales used as part of managerial assessment would have different means for no change in performance, but correlation analysis reported later remains valid as higher numbers on a Likert scale were associated with better performance. Further, both measures reflect it is challenging to improve performance following an acquisition. For example, research suggests that the majority of acquirers do not improve innovative performance (McCarthy and Aalbers, 2015). As a precursor to examining aggregated, direct effects of research variables on different measures of performance in M&A research using meta-analysis, we examined variable cross-correlations, see Appendix.

----- Insert Table I about here -----

Next, as shown in Table II, we report the meta-analytic results organized around deal characteristics. While not a significant predictor of short-term stock performance, *method of payment* (cash) is a significant predictor of higher long-term stock performance overall ($\rho = 0.03$; $k = 7$; $N = 37,653$; 95% CI [0.02; 0.04]) and for studies examining a timeframe between 180 days to three years ($\rho = 0.03$; $k = 5$; $N = 28,659$; 95% CI [0.02; 0.04]). While slightly positive, the significance of a positive relationship is notable as the overall average BHAR across studies

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in Table I is negative. Using cash as method of payment is also positively and significantly related to higher accounting performance for aggregated measures ($\rho = 0.09$; $k = 7$; $N = 8,385$; 95% CI [0.02; 0.17]), and for ROA for one year ($\rho = 0.07$; $k = 3$; $N = 8,977$; 95% CI [0.04; 0.09]) and more than one year ($\rho = 0.09$; $k = 4$; $N = 8,036$; 95% CI [0.03; 0.14]). Overall, results suggest cash as a method of payment signals acquirer confidence in an acquisition (Blackburn et al., 1997), supporting the value of signaling theory and using deal characteristics to predict acquisition performance.

---- Insert Table II about here ----

Meanwhile, *method of payment* (stock) is consistently a negative and significant predictor of acquisition performance across the examined performance measures, providing additional support for the value of deal characteristics serving as a signal. This is reflected in significant, negative short-term stock performance when CAR is aggregated ($\rho = -0.09$; $k = 13$; $N = 16,580$; 95% CI [-0.14; -0.04]), or broken out for windows including days 1 to 5 around announcement ($\rho = -0.13$; $k = 9$; $N = 11,462$; 95% CI [-0.19; -0.08]) or days 6-21 ($\rho = -0.04$; $k = 4$; $N = 5,594$; 95% CI [-0.07; -0.02]). Paying for an acquisition with stock is also a significant, negative predictor of aggregated measures of long-term stock performance ($\rho = -0.09$; $k = 3$; $N = 4,272$; 95% CI [-0.12; -0.06]) and aggregated measures of accounting performance ($\rho = -0.16$; $k = 4$; $N = 754$; 95% CI [-0.29; -0.02]). A consistently negative and significant impact of stock payment for different measures of acquisition performance is noteworthy for at least two reasons. First, it directly relates to expectations of agency theory (Jensen, 1986; Manne, 1965), and the applicability of signaling theory (Cornell and Shapiro, 1987) to acquisitions. Second, it is the only consistent relationship out of the 19 variables we examine across different measures of performance.

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The impact of *acquirer debt* varies across different performance measures, but it is consistent with theoretical expectations of debt providing external governance and financial constraints. In support of debt providing external governance, debt serves as a significant predictor of higher short and long-term measures of stock performance. Specifically, acquirer debt is a significantly positive predictor of aggregated measures of the short-term stock market reaction to an acquisition ($\rho = 0.07$; $k = 26$; $N = 38,109$; 95% CI [0.03; 0.10]) and CAR for windows including days 1 to 5 around announcement ($\rho = 0.06$; $k = 19$; $N = 26,204$; 95% CI [0.03; 0.09]). A positive impact of acquirer debt on short-term stock performance is consistent with external governance. A significant and positive relationship of acquirer debt also exists for aggregated measures of long-term stock performance ($\rho = 0.03$; $k = 6$; $N = 29,810$; 95% CI [0.01; 0.05]), and studies examining stock performance 180 days to three years ($\rho = 0.03$; $k = 5$; $N = 29,494$; 95% CI [0.01; 0.05]). However, acquirer debt has a significantly negative impact on accounting performance (ROA) during the first year following an acquisition ($\rho = -0.16$; $k = 6$; $N = 3,611$; 95% CI [-0.21; -0.11]). Acquirer debt also has a significant and negative impact on firm innovativeness ($\rho = -0.05$; $k = 3$; $N = 2,865$; 95% CI [-0.08; -0.01]). This likely reflects that debt can increase financial controls that decrease R&D investment (Hitt, Hoskisson, Ireland and Harrison, 1991).

Deal attitude (friendliness) is not a significant predictor for available measures of acquisition performance by itself.

Acquisition premium has a significant, negative correlation with short-term measures of stock performance for CAR windows including days 1 to 5 around announcement ($\rho = -0.05$; $k = 7$; $N = 3,117$; 95% CI [-0.08; -0.01]). A negative impact of higher premiums is consistent with the level of premium providing a signal of managerial decision quality or overconfidence

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(Sirower, 1997). However, the impact of premium on short-term stock performance is not significant for different CAR windows or when different CAR windows are aggregated. In addition, acquisition premium is an insignificant predictor of long-term stock performance or accounting performance.

----- Insert Table III about here -----

In Table III, we report the meta-analytic results for research variables on firm characteristics. Again, we find mixed support for theoretical expectations across multiple measures of firm performance. For *relatedness*, a positive impact is only found for short-term measures of stock performance for CAR windows including days 6 to 21 around announcement ($\rho = 0.07$; $k = 33$; $N = 17,849$; 95% CI [0.03; 0.10]). However, a negative impact of relatedness exists for ROA 1 year after an acquisition ($\rho = -0.07$; $k = 7$; $N = 1,240$; 95% CI [-0.13; -0.01]) and measures of ROE aggregating different timeframes ($\rho = -0.21$; $k = 3$; $N = 299$; 95% CI [-0.32; -0.10]). The challenge of interpreting this result is compounded as research uses different measures of relatedness, and the impact of relatedness may be multi-dimensional and/or dependent on contextual factors (Homburg, Rost and Osterloh, 2009). For example, based on cross-correlations reported in the Appendix, relatedness is significantly correlated with several other research variables, including cash payment, acquisition experience, deal attitude, and cultural distance. Further, most of the performance measures have indications that sampling error accounts for less than 75 percent of observed variability (VAR), suggesting the potential presence of subgroups or moderators (Hunter and Schmidt, 2004) for the impact of relatedness on acquisition performance. One reason for additional variance is that the relationship between diversification and firm performance may not be stable over time (Schommer et al., 2019).

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Additional research is needed to identify context or conditions when relatedness influences acquisition performance.

In considering firm characteristics, research often examines an acquiring firm's prior acquisition and alliance experience. *Acquisition experience* displays significant findings, but they vary for different measures of acquisition performance. The overall effect for short-term stock performance when different CAR windows are aggregated is significantly negative ($\rho = -0.04$; $k = 44$; $N = 53,751$; 95% CI [-0.06; -0.01]), and this appears to be driven by shorter windows. This is opposite of expectations based on learning theory, but consistent with expectations that acquisitions signal a lack of internal growth (Moeller et al., 2005). Meanwhile, acquisition experience has a significant and positive impact for accounting performance (ROA), when aggregated ($\rho = 0.13$; $k = 21$; $N = 22,041$; 95% CI [0.09; 0.18]), and for ROA measured longer than one year ($\rho = 0.13$; $k = 11$; $N = 4,563$; 95% CI [0.09; 0.17]). Acquisition experience also has a significant impact on managerial assessment of acquisition performance ($\rho = 0.12$; $k = 18$; $N = 1,803$; 95% CI [0.05; 0.20]). Positive impacts of acquisition experience are consistent with expectations of learning theory and firms developing acquisition capabilities (e.g., Levitt and March, 1988; Collis, 1994). However, sampling error accounts for less than 75 percent of observed variability (VAR), suggesting the potential presence of subgroups or moderators (Hunter and Schmidt, 2004) for the impact of acquisition experience on performance. Conflicting results with negative short-term stock performance, and other measures may also relate to difficulty in assessing firm capabilities by investors. This interpretation is also consistent with conflicting results for *alliance experience* for short-term stock performance (aggregated) and measuring acquiring firm innovative performance (patents). The relationship between short-term CAR and alliance experience is significantly negative ($\rho = -0.04$; $k = 6$; $N = 4,411$; 95% CI [-

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0.07; -0.01]), but the correlation of alliance experience with innovativeness is significantly positive ($\rho = 0.20$; $k = 4$; $N = 2,017$; 95% CI [0.11; 0.29]).

We also report the impact of firm size for acquiring and target firms. An *acquirer's firm size* prior to acquisitions has a negative impact on short-term stock market performance (CAR) when results are aggregated across different windows ($\rho = -0.07$; $k = 54$; $N = 80,765$; 95% CI [-0.10; -0.04]), and for CAR windows including days 1 to 5 ($\rho = -0.07$; $k = 38$; $N = 65,456$; 95% CI [-0.10; -0.04]), and days 6 to 21 ($\rho = -0.14$; $k = 5$; $N = 7,418$; 95% CI [-0.22; -0.05]).

However, acquiring firm size has a significant and positive impact on long-term stock performance when aggregated ($\rho = 0.23$; $k = 8$; $N = 27,321$; 95% CI [0.16; 0.31]) or separated out for measures longer than 6 months ($\rho = 0.24$; $k = 7$; $N = 26,925$; 95% CI [0.18; 0.30]). The relationship for acquiring firm size on aggregated accounting performance ($\rho = 0.13$; $k = 22$; $N = 10,393$; 95% CI [0.02; 0.23]), and for accounting performance (ROA) for more than a year ($\rho = 0.31$; $k = 7$; $N = 3617$; 95% CI [0.21; 0.41]) are also positive and significant. Managerial assessment of firm performance also has a positive and significant relationship with acquiring firm size ($\rho = 0.08$; $k = 10$; $N = 8,873$; 95% CI [0.05; 0.11]). Interestingly, these results both support theoretical expectations of acquisition announcement by larger firms signaling a lack of external growth (Moeller et al., 2005), and larger firms developing acquisition capabilities or that they have resources that can be successfully combined with a target (e.g., Penrose, 1959). For example, in the Appendix, there is a significant correlation ($\rho = 0.15$, $p < 0.05$) between acquiring firm size and prior performance. The need to consider more complex relationships for the effect of acquiring firm size is also supported by indications that sampling error accounts for less than 75 percent of observed variability (VAR; Hunter and Schmidt, 2004). When considering *target firm size*, a significant, negative relationship exists for both short-term stock

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market performance (CAR) for windows including days 6 to 21 ($\rho = 0.14$; $k = 5$; $N = 3,786$; 95% CI [0.08; 0.19]) and managerial assessment ($\rho = 0.14$; $k = 5$; $N = 3,786$; 95% CI [0.08; 0.19]).

Both results relate to larger target firms signal integration challenges.

We find the impact of *prior acquirer performance* varies for different measures of acquisition performance with a significant, negative impact for CAR ($\rho = -0.06$; $k = 5$; $N = 5,187$; 95% CI [-0.10; -0.03]) with longer windows (more than 180 days), but a significant, positive impact for long-term stock performance when aggregated ($\rho = 0.07$; $k = 11$; $N = 40,047$; 95% CI [0.02; 0.11]) and broken out for over 180 days ($\rho = 0.07$; $k = 9$; $N = 39,602$; 95% CI [0.02; 0.12]). While the long-term stock relationship is based on a larger sample of studies and firm observations, the difference may relate to CAR correcting for market performance and BHAR not accounting for how a firm's share price performed in relation to the broader market. In considering the impact of the *prior performance of a target firm*, results also vary across different measures of firm performance. For short-term measures of stock performance (CAR), there is a negative relationship with target prior performance when aggregated ($\rho = -0.06$; $k = 11$; $N = 10,748$; 95% CI [-0.09; -0.03]) or broken out for CAR windows including days 6 to 21 ($\rho = -0.107$; $k = 3$; $N = 3,592$; 95% CI [0.01; 0.07]). A negative relationship means a negative reaction is more likely when better performing targets are acquired, and this result is consistent with expectations of the market for corporate control replacing bad managers at target firms (Manne, 1965). However, the relationship between target prior performance is significantly positive for aggregated measures of accounting performance ($\rho = 0.38$; $k = 9$; $N = 15,875$; 95% CI [0.26; 0.49]) and for ROA measured when it is measured more than one year ($\rho = 0.04$; $k = 5$; $N = 3,258$; 95% CI [0.01; 0.07]). The latter result is consistent with expectations that higher target firm performance provides an indication of valuable resources (e.g., Barney, 1991).

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In considering an *acquiring firm's prior R&D*, we only find a significant relationship with subsequent innovative performance ($\rho = 0.16$; $k = 8$; $N = 9,756$; 95% CI [0.01; 0.31]). This is consistent with acquirer R&D developing technology resources and an absorptive capacity (e.g., Barney, 1991; Cohen and Levinthal, 1990; Junni and Sarala, 2013). However, this is not consistently reflected in an acquiring firm's stock performance for either short or long-term measures. This may be due to a limited number of sampled studies using stock market measures of performance including a control for acquirer prior R&D. Additional research is needed to examine the impact of acquirer R&D on other measures of performance are consistent with theoretical expectations, as sampling error accounts for less than 75 percent of observed variability (VAR) indicating the presence of potential subgroups or moderators (Hunter and Schmidt, 2004).

----- Insert Table IV about here -----

In Table IV, we report the meta-analytic results for variables that consider the interface between firms. For *national cultural difference*, our findings vary for different measures of firm performance. We find a significant, negative relationship between national cultural distance and short-term measures of stock performance (CAR) when different windows are aggregated ($\rho = -0.05$; $k = 14$; $N = 18,827$; 95% CI [-0.08; -0.02]) and separated for CAR windows including days 6 to 21 ($\rho = -0.07$; $k = 5$; $N = 9,583$; 95% CI [-0.13; -0.01]). However, cultural distance has a significantly positive relationship with aggregated measures of accounting performance ($\rho = 0.04$; $k = 4$; $N = 12,310$; 95% CI [0.02; 0.06]). This suggests that cultural distance can signal integration difficulties, but that differences can be managed. Further, the impact of cultural distance may be contextual, as the Appendix shows acquisitions in culturally distant nations correlate with acquisitions by larger acquirers ($\rho = 0.08$; $p < .05$), related acquisitions ($\rho = 0.05$;

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$p < .05$), and other variables. Additionally, sampling error accounts for less than 75 percent of observed variability (VAR) for many performance measures, suggesting the subgroups or moderators may influence relationship of national cultural distance on acquisition performance (cf. Hunter and Schmidt, 2004). In considering the impact of *geographic distance*, we only find a significant and positive relationship on innovative performance ($\rho = 0.14$; $k = 3$; $N = 1,955$; 95% CI [0.09; 0.19]), providing results opposite expectations of coordination theory (Crowston, 1997). Overall, our results on measures of distance provide mixed support for expectations of social identity theory (Tajfel, 1981).

The remaining variables largely consider acquisition integration through proxies of its difficulty (relative size), impacts (employee turnover), or decisions associated with integration speed and depth (e.g., Cording et al., 2008). Our findings for *relative size* vary for different measures of acquisition performance. The impact of relative size for aggregated measures of short-term stock performance are not significant when aggregated, but they are significantly negative for several windows, including for CAR windows including day 0 ($\rho = -0.08$; $k = 4$; $N = 3,365$; 95% CI [-0.11; -0.04]), CAR windows including days 6 to 21 ($\rho = -0.07$; $k = 7$; $N = 8,483$; 95% CI [-0.11; -0.03]), and CAR windows over 180 days ($\rho = -0.13$; $k = 4$; $N = 4,696$; 95% CI [-0.21; -0.05]). While we do not find a significant impact of relative size on measures of long-term stock performance, managerial assessment of performance, or firm innovativeness, relative size also has a negative impact on measures of accounting performance (ROA) when aggregated ($\rho = -0.17$; $k = 16$; $N = 15,258$; 95% CI [-0.21; -0.14]) or separated by time frame. The high significance of relative size likely may reflect integration challenges or that ROA can be a biased measure of acquisition performance, as an acquisition increases the asset base of an acquirer (Ravenscraft and Scherer, 1987), and this will have a larger impact for acquisitions with

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a greater relative size (see Table V). Our results for relative size also show sampling error accounts for less than 75 percent of observed variability (VAR) for many performance measures, suggesting the subgroups or moderators may influence its relationship with acquisition performance (Hunter and Schmidt, 2004). In considering *employee turnover*, research generally anticipates a negative impact (equity theory); however, its impact is not significant when research results are aggregated for different measures of acquisition performance. This may reflect that turnover following an acquisition can be both planned and unplanned, and unplanned turnover is what likely has a negative impact on firm performance. Similarly, acquisition *integration speed* displays both costs and benefits (Angwin, 2004) that may contribute to our not finding a significant impact when aggregating research. However, we do find a significant, positive relationship between *integration depth* and managerial assessment of acquisition performance ($\rho = 0.14$; $k = 22$; $N = 3,183$; 95% CI [0.05; 0.23]). This is consistent with expectations that realizing the benefits of an acquisition requires coordination (Crowston, 1997) that results from integration (Barkema and Schijven, 2008; Sarala et al., 2016).

As shown in Table V, we report results of meta-analytic analyses to account for variable intercorrelations, as well as reveal the relative weight of predictors (Tonidandel and LeBreton, 2011). Relative weight evaluates the relative contribution of correlated predictor variables to aid understanding each variable's impact in explaining variance in a dependent variable.

----- Insert Table V about here -----

In considering aggregated short-term stock market performance (CAR), an *acquiring firm's debt* ($\beta = 0.06$, $p < 0.01$) is the single largest contributor to explaining the stock market's reaction to an acquisition announcement with a relative weight of 24 percent. The variable with the next largest relative weight, *acquiring firm size* ($\beta = -0.08$, $p < 0.01$) with a relative weight of

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21 percent. Target firm prior performance ($\beta = -0.06, p < 0.01$) displays the third largest relative weight of 16 percent. While they have a lower relative weight, the impact of *relatedness* is positive and statistically significant ($\beta = 0.03, p < 0.01$), as is *method of payment* ($\beta = 0.03, p < 0.01$), *national cultural difference* ($\beta = -0.06, p < 0.01$) and *geographic distance* ($\beta = 0.06, p < 0.01$). It is noteworthy that the impact of national cultural difference and geographic distance are opposite, and it suggests there are different dimensions of distance between an acquiring and target firm (Patel and King, 2016).

In considering aggregated measures of long-term stock performance (BHAR and Jensen's alpha), the single largest contributor is *acquiring firm size* ($\beta = 0.40, p < 0.01$) with a relative weight of 64 percent. This outcome suggests that larger acquirers can develop acquisition capabilities. However, this is inconsistent with the next largest variable, *acquisition experience*, that is both significant ($\beta = -0.25, p < 0.01$) and has a high relative weight of eight percent. Other significant predictors of long-term stock performance include *relative size* ($\beta = 0.03, p < 0.01$), *national cultural differences* ($\beta = 0.07, p < 0.01$), *geographic distance* ($\beta = -0.18, p < 0.01$), and *acquirer debt* ($\beta = 0.09, p < 0.01$). Again, the impact of national cultural differences and geographic are opposite one another, but they also have reverse impacts for short-term measures of stock performance. This is consistent with national distance having multiple dimensions (Ghemawat, 2001), as well as arguments that different measures of acquisition performance may represent different constructs that need a theoretical foundation for considering the impact of variables (Cording et al., 2010).

In considering aggregated measures of accounting performance, the largest predictor by relative weight is *relative size* ($\beta = -0.15, p < 0.01$) with a relative weight of 22 percent. Again, this likely reflects a statistical artifact from most M&A research examining accounting

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performance uses ROA that is confounded with larger acquisitions increasing an acquiring firm's asset base. The next highest predictor by relative weight (18%) is an acquisition's *deal attitude being friendly* ($\beta = -0.05, p < 0.01$). The next highest contributors are *target firm prior performance* ($\beta = 0.34, p < 0.01$) with a relative weight of 17 percent, and *acquiring firm prior performance* ($\beta = 0.23, p < 0.01$) with a relative weight of 12 percent. This suggests that prior firm performance provides an indicator of valuable firm resources and capabilities (e.g., Barney, 1991). *Method of payment* (cash) also has a relative weight of 12 percent and is a significant predictor of accounting measures of acquisition performance ($\beta = 0.06, p < 0.01$). Other significant predictors include *relatedness* ($\beta = -0.03, p < 0.01$), though opposite effect from short-term stock performance, and *acquiring firm size* ($\beta = -0.08, p < 0.01$). Additionally, *acquisition experience* has a significant, positive impact ($\beta = 0.09, p < 0.01$) on accounting measures of acquisition performance with a relative weight of 7 percent.

In considering aggregated measures of managerial assessment of acquisition performance, the variable with the largest relative weight (30%) is *target firm size* ($\beta = -0.15, p < 0.01$). This finding would be consistent with managerial hubris or indigestion that address assumptions that an acquiring firm can integrate and manage a target firm. *Acquisition experience* is the next largest predictor of managerial assessment ($\beta = 0.13, p < 0.01$) with a relative weight of 19 percent, suggesting that managers see benefits from learning from prior acquisitions. The third largest contributor to managerial assessment of acquisition performance is *acquiring firm performance* ($\beta = 0.11, p < 0.01$) with a relative weight of 16 percent, and this is also consistent with firm capabilities. Other significant predictors include *acquiring firm size* ($\beta = 0.05, p < 0.01$), *relatedness* ($\beta = -0.03, p < 0.01$), and *national cultural differences* ($\beta = 0.06, p$

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< 0.01). The impact of cultural difference is opposite the findings for short-term measures of stock performance (CAR), but it is consistent with long-term measures of stock performance.

DISCUSSION

We perform a broad meta-analysis of variables considered by M&A research and our results confirm and extend what we know about acquisition performance. Although our results confirm that acquisition performance, on average, is not significantly different from zero (e.g., King et al., 2004), we find that there continues to be wide variance in acquisition performance. We believe that one key effort to improve our understanding of acquisition performance is to clarify theoretical relationships between research variables and acquisition performance. To that end, our meta-analysis makes important strides in achieving an improved understanding of underlying relationships by providing a better estimate of population relationships both significant and insignificant and comparing them to existing theory. For example, significant impacts of deal characteristics across different measures of acquisition performance support the usefulness of signaling theory (Cornell and Shapiro, 1987). Additional implications for research and managers are discussed next.

Theoretical Implications

Our broad review of different theories and research variables allows identifying what theoretical expectations for the impact of constructs on acquisition are upheld through meta-analysis that better estimates population relationships. For example, theoretical integration may help address gaps and fragmentation in M&A research (Haleblian et al., 2009). In Table VI, we summarize theoretical relationships between variables and acquisition performance with the level of support from our analyses.

----- Insert Table VI about here -----

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In considering research examining deal characteristics, see Table VI, we find support for multiple theories. For agency theory, acquirer debt has a significant, positive impact on aggregated short-term stock performance (CAR) and this is consistent with debt providing a form of external governance (Alderson and Betker, 2003; Jandik and Makhija, 2005). However, negative long-term performance implications of acquirer debt (i.e., 1 year ROA and innovativeness) are consistent with expectations of managerial hubris and debt serving as a financial constraint (Balakrishnan and Fox, 1993; Harford, 1999). Agency theory expectations associated with the market for corporate control replacing bad managers are also supported with a negative relationship between prior target firm performance and short-term measures of stock performance (CAR), as it indicates the market tends to react more positively when a target firm displays lower performance. Overall, these relationships are consistent with signaling theory (Cornell and Shapiro, 1987), or that deal characteristics provide useful information in predicting acquisition performance. Still, the impact of deal attitude may be contextual. For example, hostile acquisitions are correlated with higher acquisition premiums and hubris (Schnitzer, 1996; Sirower, 1997); however, there were not enough studies in our sample to examine this correlation in the present study. In support of a contextual impact, deal attitude does correlate with a larger relative size between a target and acquirer and related acquisitions, see Appendix. Additionally, meta-analyses examining the contribution of research variables in explaining variance of accounting performance, deal attitude (friendliness) is a significant predictor when considered in conjunction with other variables.

----- Insert Table VII about here -----

In considering theory associated with firm characteristics, see Table VII, there is less consistent support. Still, consistent with absorptive capacity (Cohen and Levinthal, 1990) there is

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clear support that an acquiring firm's prior investment in R&D is significantly correlated with increased measures of innovativeness, see Table III. A negative relationship of target firm size with short-term stock performance (CAR days 6-21 around announcement) and managerial assessment of acquisition performance are consistent with indigestion, or difficulty integrating a target firm (Kusewit, 1985). However, the relative weight of target firm size is only a significant predictor of managerial assessment (see Table V). Similarly, theories on organizational learning, resource and capability, and strategic fit receive conflicting support. While organizational learning and development of firm capabilities receives support with positive relationships between acquisition experience and aggregated measures of accounting performance and managerial assessment of acquisition performance, there are negative relationships of experience with aggregated measures of short-term stock performance (CAR). Resource and capability theories (e.g., Penrose, 1959) receive additional support from higher performance of target firms being related to aggregate measures of accounting performance, as an indicator of valuable resources that also supports signaling theory. Theory associated with strategic fit (Shelton, 1988) that predicts a significant impact of relatedness is not consistently supported in examining correlations with different measures of acquisition performance, see Table III. However, in Table V, relatedness is a significant predictor of short-term stock performance, accounting performance and managerial assessment of acquisition performance. Combined with multiple significant variable cross-correlations with relatedness, see Appendix, this suggests the context of an acquisition is important in considering strategic fit, or a role for contingency theory (Hofer, 1975; Lawrence and Lorsch, 1967). Additional research is needed to confirm the dimensions of relatedness and the impact of contextual factors (Homberg et al., 2009).

----- Insert Table VIII about here -----

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In considering process theories associated with acquisitions, there is only conflicting support from associated research of variables associated with the interface between firms, see Table VIII. While coordination theory (Crowston, 1997) receives support from a positive correlation between integration depth and managerial assessment of acquisition performance (Table IV), there is mixed support of social identity theory (Tajfel, 1981) with conflicting findings across national cultural distance. Additional research is needed to clarify the impact of national cultural distance. For geographic distance, there is a conflicting finding for coordination theory (Crowston, 1997) with a finding opposite expectations for innovative performance. Still, research examining the overall acquisition process is less common, but it represents a clear research need (Junni, Sarala, Tarba and Weber, 2015; Sarala et al., 2019). One opportunity involves the application of organizational change theory (Armenakis and Bedeian, 1999) to M&A research (King et al., 2018).

Overall, due to recognition that not all acquisitions are similar (Bower, 2001), contingency theory offers an opportunity to identify when relationships will be significant or have opposite impacts and for examining variable interactions. Recent research is making important progress in this area with the application of fuzzy logic to identify acquisition configurations (Campbell, Sirmon and Schijven, 2016), meta-analysis structural equation modeling to test complex relationships (Bilgili, Calderon, Allen and Kedia, 2017), and meta-regression analysis to test for specific theoretical expectations (Maas, Heugens and Reus, 2019). Our broad identification of M&A research variable cross-correlations (Appendix), research variable correlations with multiple measures of acquisition performance (Tables II to IV), and relative weight of research variable impact in explaining different measures of acquisition performance (Table V) provides the building blocks for additional theory testing, as well as

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develop important contexts. For example, opportunities exist to consider the importance of context in national differences in cross-border acquisitions (Bauer et al., 2018), family firms (e.g., Chirico et al., 2019; Meglio and King, 2019), and integration processes (Bansal and King, 2020; King et al., 2020). Further, we encourage researchers to use multiple measures of performance, as well as control for variables in the current meta-analyses, to enable potential theoretical integration across fragmented areas of focus in M&A research.

Methodological Implications

Our research has several methodological implications that need to be considered by future research. In considering, the variables contributing to explanations across different measures of acquisition performance (see Table V), the variables across different M&A research theoretical perspectives underscore that theoretical endogeneity (Busenbark et al., 2016) contributes to inconsistency in research variables considered within M&A research (Cording, Christmann and Weigelt, 2010; King et al., 2004; Meglio and Risberg, 2010). For example, acquiring firm size and acquiring firm debt are significant predictors of all measures of acquisition performance where they are included, and these variables need to be controls in future M&A research. Additionally, a consistently negative and significant impact of method of payment (stock) on acquisition performance, when combined with significant, positive results for method of payment (cash), highlights the importance for M&A research to control for method of payment.

Separately, our research highlights an issue with the use of ROA as an accounting measure of acquisition performance in extant research. Consistent with established expectations ROA has a negative bias due to acquisitions increasing an acquiring firm's asset base (Ravenscraft and Scherer, 1987; Sirower, 1997). For example, we find a negative impact for relative size on ROA (Table IV) and it has the largest relative weight in explaining ROA (Table

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V). Larger relative size of an acquisition will increase an acquirer's asset base following an acquisition. While ROA could have a conservative impact by making significant results less likely, researchers are encouraged to use ROS or ROE as accounting measures of acquisition performance that are less sensitive to aspects of deal characteristics.

Managerial Implications

Roughly one-third of managers regret completing an acquisition (Cullinan et al., 2004).

Essentially, all acquisitions involve a level of hubris or an expectation that an acquiring firm can make better use of the resources of a target than target firm managers. Improving acquisition decisions requires a realistic assessment of whether this is justified. Based on our findings that relationships support predictions of signaling theory, managers can use the market's reaction to an acquisition announcement as a source of information to avoid bad deals (Schijven and Hitt, 2012). Additionally, managers need to be aware of relationships that are consistently significant across different measures of acquisition performance, such as stock payment, and carefully consider and justify it when it is used.

While the impact of acquisition experience is mixed (Table III; positive impact on ROA over 1 year and managerial assessment), there is also evidence that firms can develop acquisition capabilities, as better performing acquirers make better acquisitions (Table V). This coincides with observations that acquisition experience becomes positive after eight acquisitions (Haleblian and Finkelstein, 1999), or firms gaining enough experience to know when prior experience applies or contingency theory and relationships depending on context. Associated insights can help increase the relevance of management research to managers (e.g., Bartunek and Rynes, 2014; Ireland, 2012).

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Limitations and Future Research

The most obvious limitation is we are only able to examine research variables present in enough studies, and our review finds several significant variables (e.g., method of payment, acquirer size, and acquirer debt) are not consistently considered across empirical studies of M&A. Our methodology that enables comparing variable cross-correlations and our meta-analyses also required access to a correlation table, and needed variable descriptions and correlations are often not reported. A related concern is that recent research examining novel variables, such as the role of outside board of directors (e.g., Basuil and Datta, 2017), have not been considered by enough research studies to enable meta-analysis. Similarly, cross-correlation and several variables displaying less than 75 percent total variance attributed to sampling error (VAR) suggest unidentified moderators that may suggest interactions or the presence of subgroups (Hunter and Schmidt, 2004). Again, complex (i.e., non-linear or moderated) relationships were not consistently examined in sufficient frequency to enable meta-analytic examination. Further research on relatedness, acquisition experience, acquiring firm size, acquirer R&D, national cultural differences, and relative size represent variables needing additional testing to understand their impact on acquisition performance. In the case of national cultural distance, it will likely be worthwhile for research to consider how this may vary across firms in different countries due to organizational culture (Sarala, 2009; Vaara, Sarala, Stahl & Bjorkman, 2012) or other firm characteristics.

In closing, the high dollar value of M&A activity confirms the continued relevance and importance of studying acquisitions and their performance. We summarize M&A research, and we find multiple variables that significantly predict acquisition performance associated with different theoretical expectations. Additionally, some variables with expected significance are

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not significant when results are aggregated. However, the presence of unidentified moderators calls for additional research to identify circumstances (i.e., context or interactions with other variables) when they have a significant impact. Contingency theory (Lawrence and Lorsch, 1967) will likely be useful in developing and testing relationships. Our results also suggest that M&A research suffers from theoretical endogeneity or fragmentation that manifests in research not including variables of demonstrated importance from other theoretical perspectives. Our identification of significant variables provides building blocks for future research that can integrate different theoretical perspectives and overcome observed fragmentation and gaps in existing M&A research.

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APPENDIX

Below results are from performing separate meta-analysis for each pairwise relationship for 16 of our 19 research variables, or circumstances where aggregated studies had at least two research variables in common. Information comes from the correlation tables from each included study, reinforcing a restriction that only studies where a correlation table was available were included in our meta-analytic review. In reviewing research variable correlations, relationships are largely consistent with expectations. For example, target size (2) is positively, and significantly correlated ($r(\rho) = 0.23(0.29)$, $p < .05$) with relative size (3).

Table AI. Research variable cross-correlations

	1	2	3	4	5	6	7	8	10	11	15
1. Acquirer firm size prior to acquisition											
2. Target firm size prior to acquisition											
r(ρ)	.28(.28)										
CI 95	.15;.40										
CV 80	-.01;.56										
k (N)	13(14303)										
3. Relative size											
r(ρ)	-.19(-.19)	.23(.29)									
CI 95	-.25;-.13	.09;.48									
CV 80	-.37;-.02	-.03;.60									
k (N)	20(41,278)	6(5,320)									
4. Relatedness											
r(ρ)	.01(.00)	.03(.03)	-.02(-.02)								
CI 95	-.02;.03	-.03;.10	-.06;.01								
CV 80	-.10;.11	-.09;.16	-.17;.12								
k (N)	38(64,721)	11(7,344)	38(17,139)								
5. Method of payment (cash)											
r(ρ)	.06(.08)	-.06(-.08)	-.08(-.11)	.03(.03)							
CI 95	.04;.12	-.14;-.03	-.18;-.04	.01;.06							
CV 80	-.03;.20	-.16;-.00	-.29;.07	-.05;.12							

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k (N)	21(47,232)	6(8,370)	16(26,957)	28(52,189)						
6. Acquirer prior performance										
r(p)	.11(.15)	.02(.03)	.04(.04)	-.02(-.03)	-.01(-.02)					
CI 95	.09;.22	-.01;.07	-.01;.09	-.06;.01	-.09;.06					
CV 80	-.11;.42	-.04;.10	-.14;.21	-.17;.11	-.05;.01					
k (N)	38(90,823)	11(12,183)	29(38,403)	39(73,334)	18(54,100)					
7. Target prior performance										
r(p)	.24(.30)	.08(.11)	-.10(-.12)	.02(.03)	.04(.05)	.13(.16)				
CI 95	.22;.38	.03;.20	-.17;-.07	.00;.05	-.03;.12	.11;.21				
CV 80	.12;.48	.01;.22	-.25;.00	.02;.04	-.05;.14	.06;.26				
k (N)	11(26,688)	5(3,186)	15(26,199)	14(7,821)	5(2,885)	11(8,339)				
8. Acquisition experience										
r(p)	.34(.43)	.16(.25)	-.06(-.07)	-.05(-.07)	-.01(-.01)	.10(.13)	.01(.11)			
CI 95	.35;.50	.17;.32	-.13;-.02	-.11;-.03	-.04;.02	.09;.17	.06;.16			
CV 80	.12;.74	.09;.40	-.28;.14	-.25;.11	-.07;.04	-.03;.29	.00;.21			
k (N)	37(48,723)	12(4,500)	31(23,746)	42(54,603)	14(15,724)	38(49,749)	12(7,228)			
10. Cultural difference										
r(p)	.07(.08)	-.18(-.22)	-.02(-.02)	.04(.05)	.09(.11)	-.02(-.03)	.05(.06)	.06(.07)		
CI 95	.05;.11	-.41;-.03	-.06;.02	.02;.07	.06;.16	-.05;-.01	.01;.11	.04(.10)		
CV 80	.01;.16	-.65;.20	-.10;.06	-.02;.12	.00;.21	-.06;.01	.06;.06	-.04;.18		
k (N)	15(33,641)	12(4,602)	16(5,553)	27(46,567)	12(31,074)	10(38,745)	3(1,304)	29(25,483)		
11. Geographic distance										
r(p)	.26(.32)	-.07(-.09)	-.01(-.01)	.07(.07)	.06(.08)	.02(.03)	.09(.12)	.03(.04)	.34(.43)	
CI 95	.17;.47	-.23;.04	-.09;.07	-.01;.15	.04;.12	-.01;.07	.07;.16	-.01;.09	.27;.58	
CV 80	.01;.63	-.28;.09	-.19;.17	-.12;.26	.08;.08	-.04;.10	.08;.16	-.07;.14	.08;.77	
k (N)	10(10,735)	5(1,478)	13(11,496)	14(9,648)	6(2,163)	10(14,050)	3(5,466)	13(11,728)	13(4,088)	
15. Friendliness										
r(p)	.00(.00)	.01(.02)	.03(.04)	.04(.05)	-.05(-.06)	-.00(-.00)	.00(.00)	-.01(-.02)	.00(.00)	.10(.12)
CI 95	-.07;.06	-.06;.09	.02;.06	.03;.07	-.13;.02	-.01;.01	-.01;.01	-.04;-.00	-.02;.02	-.02;.26

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CV 80	-.17;.17	-.08;.11	-.01;.09	-.01;.10	-.23;.12	-.02;.02	-.01;.01	-.05;.02	-.02;.02	-.10;.35	
k (N)	16(61,197)	5(6,813)	17(36,243)	21(46,368)	12(47,273)	21(73,963)	6(21,763)	17(19,395)	6(26,141)	6(5,799)	
16. Acquirer debt											
r(p)	.00(.00)	.04(.06)	-.02(-.03)	-.07(-.10)	-.08(-.11)	-.07(-.09)	-.06(-.08)	.05(.06)	-.13(-.16)	.13(.16)	-.01(-.01)
CI 95	-.06;.06	-.00;(.12)	-.08;.03	-.15;-.05	-.20;-.01	-.13;-.05	-.22;.06	.00(.11)	-.20;-.12	.07;.25	-.06;.05
CV 80	-.22;.22	-.04;.15	-.16;.11	-.24;.04	-.30;.08	-.22;.05	-.23;.07	-.09;.21	-.21;-.12	.05;.28	-.14;.12
k (N)	30(56,986)	6(8,545)	16(16,038)	17(44,714)	9(30,823)	29(61,983)	3(2,698)	19(24,011)	4(24,431)	4(6,336)	13(38,991)

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Table I. Financial performance measure mean of means

M&A performance measures	k	N	Mean	SD	95% Confidence interval	
CAR	79	112,327	-.02	.18	-.06	.02
BHAR	22	41,515	-.11	.09	-.15	-.08
ROA	42	20,817	.04	.34	-.06	.15
ROE	6	777	.16	.26	-.04	.37
ROS	8	14,321	.05	.27	-.13	.24

Table II. Meta-analytic correlations between deal characteristics and different measures of acquisition performance

Relationships	k	N	r	SDr	ρ	SD ρ	80% CV	95% CI	Var		
Method of payment: Cash											
Abnormal return: CAR	26	54,033	.02	.05	.02	.06	-.06	.10	-.01	.04	18%
Abnormal return: CAR (Days 1-5)	23	51,858	.02	.05	.02	.06	-.06	.10	-.01	.05	16%
Abnormal return: BHAR/Jensen's	7	37,653	.02	.01	.03	.00	.03	.03	.02	.04	100%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	5	28,659	.02	.01	.03	.00	.03	.03	.02	.04	100%
Accounting performance	7	8,385	.08	.08	.09	.10	-.03	.22	.02	.17	11%
ROA (1 year)	3	8,977	.05	.01	.07	.00	.07	.07	.04	.09	100%
ROA (1 year+)	4	8,036	.07	.05	.09	.05	.02	.15	.03	.14	21%
Method of payment: Stock											
Abnormal return: CAR	13	16,580	-.07	.07	-.09	.09	-.20	.02	-.14	-.04	14%
Abnormal return: CAR (Days 1-5)	9	11,462	-.11	.07	-.13	.08	-.24	-.03	-.19	-.08	15%
Abnormal return: CAR (days 6-21)	4	5,594	-.04	.02	-.04	.00	-.04	-.04	-.07	-.02	100%
Abnormal return: BHAR/Jensen's	3	4,272	-.07	.01	-.09	.00	-.09	-.09	-.12	-.06	100%
Accounting performance	4	754	-.13	.12	-.16	.12	-.30	-.01	-.29	-.02	38%
Acquirer Debt											
Abnormal return: CAR	26	38,109	.05	.08	.07	.09	-.05	.18	.03	.10	12%
Abnormal return: CAR (Day 0)	4	3,296	.02	.04	.02	.02	-.01	.05	-.02	.06	80%
Abnormal return: CAR (Days 1-5)	19	26,204	.05	.05	.06	.06	-.01	.13	.03	.09	27%
Abnormal return: CAR (days 6-21)	4	9,279	.09	.11	.12	.13	-.06	.29	-.02	.25	4%
Abnormal return: BHAR/Jensen's	6	29,810	.02	.02	.03	.01	.01	.05	.01	.05	62%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	5	29,494	.02	.02	.03	.02	.01	.05	.01	.05	53%
Accounting performance	13	6,104	-.05	.17	-.06	.21	-.33	.21	-.18	.06	7%
ROA (1 year)	6	3,611	-.13	.05	-.16	.05	-.22	-.10	-.21	-.11	54%
ROA (1 year+)	4	575	-.15	.23	-.18	.26	-.52	.15	-.45	.09	13%
Innovativeness (e.g., patents)	3	2,865	-.04	.01	-.05	.00	-.05	-.05	-.08	-.01	100%

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Friendliness (deal attitude/tender offer)

Abnormal return: CAR	27	62,541	-.01	.05	-.01	.06	-.09	.07	-.03	.02	15%
Abnormal return: CAR (Days 1-5)	19	49,466	.00	.05	.00	.06	-.08	.07	-.03	.02	16%
Abnormal return: CAR (days 6-21)	3	5,793	.01	.01	.01	.00	.01	.01	-.02	.04	100%
Abnormal return: BHAR/Jensen's	10	41,594	.00	.02	.00	.00	.00	.00	-.01	.01	100%
Abnormal return: BHAR/Jensen's (days 6-21)	3	2,923	.01	.03	.01	.00	.01	.01	-.02	.05	100%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	8	41,171	.00	.02	.00	.01	-.01	.02	-.01	.02	68%
Accounting performance	6	11,084	.03	.05	.04	.06	-.03	.11	-.01	.09	21%
ROA (1 year+)	4	8,036	.01	.05	.02	.05	-.05	.09	-.04	.07	22%

Acquisition premium

Abnormal return: CAR	11	6,316	-.02	.03	-.03	.00	-.03	-.03	-.05	.00	100%
Abnormal return: CAR (Days 1-5)	7	3,117	-.04	.03	-.05	.00	-.05	-.05	-.08	-.01	100%
Abnormal return: CAR (days 6-21)	5	1,428	.01	.04	.01	.00	.01	.01	-.04	.06	100%
Abnormal return: BHAR/Jensen's	3	924	.01	.05	.01	.00	.01	.01	-.06	.07	100%
Accounting performance	6	4,520	.02	.06	.02	.06	-.05	.10	-.03	.08	41%
ROA (1 year+)	4	3,992	.02	.04	.02	.02	-.01	.06	-.02	.06	72%

Note. k = number of effect sizes in each meta-analysis; N = combined sample size; r = sample-size weighted mean uncorrected correlation; SDr = standard deviation of the sample-size weighted mean uncorrected correlation; ρ = estimated corrected mean correlation; SD ρ = standard deviation of the estimated corrected mean correlation; CV = credibility interval; CI = confidence interval; VAR = percentage of observed variance accounted for by statistical artifacts.

Table III. Meta-analytic correlations between firm characteristics and different measures of acquisition performance

Relationships	k	N	r	SDr	ρ	SD ρ	80% CV	95% CI	Var		
Relatedness											
Abnormal return: CAR	49	61,106	.02	.06	.02	.07	-.06	.11	.00	.04	23%
Abnormal return: CAR (Day 0)	4	4,297	-.02	.05	-.02	.04	-.07	.04	-.07	.03	43%
Abnormal return: CAR (Days 1-5)	33	38,919	.01	.06	.01	.07	-.07	.10	-.01	.04	24%
Abnormal return: CAR (days 6-21)	13	17,849	.05	.05	.07	.06	-.01	.14	.03	.10	28%
Abnormal return: BHAR/Jensen's	15	30,806	-.01	.06	-.01	.07	-.11	.08	-.05	.03	13%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	12	29,882	-.01	.06	-.02	.07	-.11	.08	-.06	.03	10%
Accounting performance	25	19,955	-.01	.05	-.02	.04	-.08	.04	-.04	.00	50%
ROA (1 year)	7	1,240	-.06	.08	-.07	.02	-.10	-.04	-.13	-.01	95%
ROA (1 year+)	14	5,177	.00	.06	.00	.04	-.05	.05	-.04	.03	74%
ROE (any)	3	299	-.17	.09	-.21	.00	-.21	-.21	-.32	-.10	100%
ROS (1 year+)	3	12,256	-.02	.01	-.03	.00	-.03	-.03	-.04	-.01	100%
Manager self-assessment	16	1,862	.06	.15	.07	.15	-.12	.26	-.01	.16	38%
Innovativeness (e.g., patents)	7	2,371	.12	.14	.16	.25	-.16	.49	-.03	.35	12%
Acquisition Experience (count)											
Abnormal return: CAR	44	53,751	-.03	.06	-.04	.06	-.12	.05	-.06	-.01	24%
Abnormal return: CAR (Day 0)	6	4,973	-.04	.05	-.04	.04	-.09	.00	-.09	.00	59%
Abnormal return: CAR (Days 1-5)	25	27,934	-.02	.06	-.02	.07	-.11	.06	-.05	.00	23%
Abnormal return: CAR (days 6-21)	9	14,830	-.02	.06	-.03	.07	-.11	.06	-.08	.02	18%
Abnormal return: CAR (days 180 to 3 year)	4	4,440	-.02	.08	-.02	.10	-.14	.10	-.12	.08	15%
Abnormal return: BHAR/Jensen's	12	9,543	.00	.06	-.01	.06	-.09	.07	-.05	.03	36%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	10	8,993	-.01	.06	-.01	.08	-.11	.09	-.07	.04	27%
Accounting performance	21	22,041	.11	.08	.13	.09	.02	.25	.09	.18	15%
ROA (1 year)	7	4,118	.06	.16	.08	.19	-.17	.32	-.07	.22	7%
ROA (1 year+)	11	4,563	.10	.06	.13	.04	.08	.18	.09	.17	70%
Manager self-assessment	18	1,803	.10	.15	.12	.13	-.04	.28	.05	.20	47%
Alliance experience (count)											

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Abnormal return: CAR	6	4,411	-.03	.04	-.04	.01	-.05	-.02	-.07	-.01	94%
Accounting performance	3	406	.01	.09	.01	.03	-.02	.05	-.09	.11	94%
ROA (1 year+)	3	406	.01	.09	.01	.03	-.02	.05	-.09	.11	94%
Innovativeness (e.g., patents)	4	2,017	.16	.08	.20	.08	.09	.30	.11	.29	31%
Acquirer firm size prior to acquisition											
Abnormal return: CAR	54	80,765	-.06	.10	-.07	.12	-.22	.08	-.10	-.04	7%
Abnormal return: CAR (Day 0)	6	2,818	.08	.30	.10	.37	-.37	.58	-.20	.40	2%
Abnormal return: CAR (Days 1-5)	38	65,456	-.06	.07	-.07	.08	-.18	.04	-.10	-.04	11%
Abnormal return: CAR (days 6-21)	5	7,418	-.11	.08	-.14	.10	-.26	-.01	-.22	-.05	10%
Abnormal return: CAR (days 180 to 3 years)	4	3,522	-.02	.07	-.03	.07	-.12	.06	-.11	.04	27%
Abnormal return: BHAR/Jensen's	8	27,321	.19	.09	.23	.10	.10	.37	.16	.31	4%
Abnormal return: BHAR/Jensen's (days 180 to 3 years)	7	26,925	.20	.07	.24	.08	.14	.35	.18	.30	5%
Accounting performance	22	10,393	.10	.20	.13	.25	-.19	.44	.02	.23	5%
ROA (1 year)	12	4,888	.03	.23	.04	.28	-.31	.40	-.12	.20	5%
ROA (1 year+)	7	3,617	.25	.11	.31	.12	.15	.47	.21	.41	15%
ROE (any)	4	424	.04	.20	.05	.22	-.23	.34	-.19	.29	23%
Manager self-assessment	10	8,873	.07	.04	.08	.03	.04	.12	.05	.11	63%
Innovativeness	10	10,158	.02	.20	.03	.24	-.28	.34	-.13	.18	3%
Target firm size prior to acquisition											
Abnormal return: CAR	16	23,731	-.02	.09	-.02	.10	-.15	.11	-.07	.03	9%
Abnormal return: CAR (Days 1-5)	13	20,778	-.01	.09	-.02	.11	-.15	.12	-.08	.04	8%
Abnormal return: CAR (days 6-21)	3	3,020	-.05	.04	-.07	.02	-.09	-.04	-.11	-.03	79%
Accounting performance	8	4,035	.06	.10	.07	.11	-.07	.22	-.01	.16	20%
ROA (1 year+)	7	3,957	.07	.09	.08	.10	-.05	.21	.00	.16	20%
Manager self-assessment	5	446	-.10	.11	-.12	.06	-.19	-.04	-.22	-.01	82%
Acquirer Prior performance											
Abnormal return: CAR	45	85,162	.01	.08	.01	.11	-.12	.15	-.02	.04	8%
Abnormal return: CAR (Day 0)	3	3,237	.01	.00	.01	.00	.01	.01	-.02	.05	100%
Abnormal return: CAR (Days 1-5)	31	62,062	-.01	.06	-.02	.08	-.12	.09	-.05	.02	12%

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Abnormal return: CAR (days 6-21)	7	17,263	.08	.10	.10	.12	-.05	.26	.01	.20	4%
Abnormal return: CAR (days 180 to 3 year)	5	5,187	-.05	.04	-.06	.02	-.10	-.03	-.10	-.03	71%
Abnormal return: BHAR/Jensen's	11	40,047	.05	.06	.07	.07	-.03	.16	.02	.11	8%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	9	39,602	.05	.05	.07	.07	-.02	.16	.02	.12	7%
Accounting performance	10	9,914	.08	.35	.28	.51	-.38	.93	-.04	.60	1%
ROA (1 year+)	6	8,116	.05	.32	.36	.46	-.23	.95	-.01	.73	1%
Manager self-assessment	7	664	.09	.17	.12	.18	-.11	.34	-.03	.27	36%
Innovativeness (e.g., patents)	9	9,874	-.09	.16	-.12	.20	-.37	.14	-.25	.02	3%
Target prior performance											
Abnormal return: CAR	11	10,748	-.05	.05	-.06	.04	-.12	.00	-.09	-.03	44%
Abnormal return: CAR (Days 1-5)	6	4,823	-.02	.03	-.02	.00	-.02	-.02	-.05	.01	100%
Abnormal return: CAR (days 6-21)	3	3,592	-.06	.04	-.07	.04	-.12	-.03	-.13	-.02	51%
Abnormal return: BHAR/Jensen's	4	685	-.06	.08	-.08	.03	-.11	-.05	-.16	.00	93%
Accounting performance	9	15,875	.30	.14	.38	.18	.15	.60	.26	.49	2%
ROA (1 year+)	5	3,258	.03	.03	.04	.00	.04	.04	.01	.07	100%
Acquirer Prior R&D											
Abnormal return: CAR	9	4,360	.09	.32	.11	.39	-.39	.61	-.15	.37	2%
Abnormal return: CAR (Days 1-5)	6	3,582	-.02	.11	-.02	.12	-.18	.13	-.12	.08	15%
Abnormal return: BHAR/Jensen's	3	1,181	.04	.08	.05	.07	-.05	.14	-.06	.15	42%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	3	1,181	.04	.08	.05	.07	-.05	.14	-.06	.15	42%
Innovativeness (e.g., patents)	8	9,756	.13	.17	.16	.21	-.11	.43	.01	.31	3%

Note. k = number of effect sizes in each meta-analysis; N = combined sample size; r = sample-size weighted mean uncorrected correlation; SDr = standard deviation of the sample-size weighted mean uncorrected correlation; ρ = estimated corrected mean correlation; SD ρ = standard deviation of the estimated corrected mean correlation; CV = credibility interval; CI = confidence interval; VAR = percentage of observed variance accounted for by statistical artifacts.

Table IV. Meta-analytic correlations between firm interface and process characteristics with measures of acquisition performance

Relationships	k	N	r	SDr	ρ	SD ρ	80% CV	95% CI	Var		
National cultural difference/fit											
Abnormal return: CAR	14	18,827	-.04	.05	-.05	.05	-.12	.01	-.08	-.02	30%
Abnormal return: CAR (Days 1-5)	10	10,140	-.03	.06	-.04	.07	-.12	.05	-.08	.01	26%
Abnormal return: CAR (days 6-21)	5	9,583	-.05	.06	-.07	.06	-.15	.01	-.13	-.01	18%
Abnormal return: CAR (days 22-180)	3	1,688	-.04	.02	-.05	.00	-.05	-.05	-.10	.00	100%
Abnormal return: BHAR/Jensen's	3	991	-.01	.09	-.02	.10	-.14	.11	-.14	.11	34%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	3	991	-.01	.09	-.02	.10	-.14	.11	-.14	.11	34%
Accounting performance	4	12,310	.03	.02	.04	.01	.02	.05	.02	.06	81%
Manager self-assessment	20	2,013	.07	.25	.11	.27	-.24	.46	-.02	.23	17%
Geographic distance											
Abnormal return: CAR	10	11,412	.02	.05	.02	.06	-.05	.09	-.02	.06	29%
Abnormal return: CAR (Days 1-5)	6	3,999	.04	.09	.05	.10	-.07	.18	-.03	.14	20%
Abnormal return: BHAR/Jensen's	3	22,789	.01	.01	.01	.00	.01	.01	.00	.03	100%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	3	22,789	.01	.01	.01	.00	.01	.01	.00	.03	100%
Innovativeness (e.g., patents)	3	1,955	.11	.04	.14	.02	.12	.16	.09	.19	89%
Relative size (target/acquirer)											
Abnormal return: CAR	45	60,079	.00	.09	.00	.11	-.13	.14	-.03	.03	10%
Abnormal return: CAR (Day 0)	4	3,365	-.06	.03	-.08	.00	-.08	-.08	-.11	-.04	100%
Abnormal return: CAR (Days 1-5)	31	45,185	.02	.09	.03	.10	-.10	.16	-.01	.07	9%
Abnormal return: CAR (days 6-21)	7	8,483	-.06	.04	-.07	.04	-.12	-.01	-.11	-.03	41%
Abnormal return: CAR (days 180 to 3 years)	4	4,696	-.08	.07	-.13	.08	-.23	-.03	-.21	-.05	24%
Abnormal return: BHAR/Jensen's	13	18,953	-.02	.05	-.03	.05	-.10	.04	-.06	.00	28%
Abnormal return: BHAR/Jensen's (days 6-21)	3	2,923	.04	.05	.05	.04	-.01	.11	-.01	.11	45%
Abnormal return: BHAR/Jensen's (days 22-180)	3	9,182	-.03	.04	-.04	.04	-.10	.01	-.09	.01	22%
Abnormal return: BHAR/Jensen's (days 180 to 3 year)	6	8,798	-.03	.04	-.03	.04	-.08	.01	-.07	.00	46%
Accounting performance	16	15,258	-.14	.06	-.17	.06	-.26	-.09	-.21	-.14	28%
ROA (1 year)	4	9,204	-.15	.02	-.18	.00	-.18	-.18	-.20	-.16	100%

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ROA (1 year+)	11	5,876	-.14	.08	-.17	.08	-.28	-.06	-.23	-.11	29%
Manager self-assessment	11	1,336	.03	.17	.04	.17	-.18	.26	-.08	.15	28%
Innovativeness (e.g., patents)	5	364	-.01	.10	.02	.00	.02	.02	-.09	.12	100%
Employee turnover											
Abnormal return: BHAR/Jensen's	3	398	-.04	.02	-.05	.00	-.05	-.05	-.15	.05	100%
Accounting performance	8	846	-.06	.22	-.08	.25	-.40	.25	-.26	.11	19%
ROA (1 year+)	5	535	.06	.15	.07	.15	-.12	.27	-.08	.23	39%
Manager self-assessment	3	231	-.06	.14	-.08	.08	-.18	.03	-.24	.08	76%
Integration speed											
Manager self-assessment	4	563	.03	.19	.03	.21	-.24	.30	-.20	.25	20%
Integration depth											
Accounting performance	4	306	.08	.10	.10	.00	.10	.10	-.01	.21	100%
ROA (1 year+)	3	201	.04	.09	.05	.00	.05	.05	-.09	.19	100%
Manager self-assessment	22	3,183	.11	.18	.14	.20	-.11	.40	.05	.23	21%
Innovativeness (e.g., patents)	3	207	.08	.06	.10	.00	.10	.10	-.04	.23	100%

Note. k = number of effect sizes in each meta-analysis; N = combined sample size; r = sample-size weighted mean uncorrected correlation; SDr = standard deviation of the sample-size weighted mean uncorrected correlation; ρ = estimated corrected mean correlation; $SD\rho$ = standard deviation of the estimated corrected mean correlation; CV = credibility interval; CI = confidence interval; VAR = percentage of observed variance accounted for by statistical artifacts.

Table V. Meta-analytic analysis of research variable explanatory power for different measures of acquisition performance

Predictors	Short-term market-based performance (Abnormal return: CAR)		Long-term market-based performance (Abnormal return: BHAR/Jensen's)		Accounting-based performance		Management self-assessed performance	
	β	RW(%)	β	RW(%)	β	RW(%)	β	RW(%)
Acquirer firm size prior to acquisition	-.08**	21	.40**	64	-.08**	1	.05**	9
Target firm size prior to acquisition	-.01	1	–	–	-.01	3	-.15**	30
Relative size	-.02	1	.03**	1	-.15**	22	.01	8
Relatedness	.03**	3	-.01	0	-.03**	7	.08**	8
Method of payment (cash)	.03**	3	.02	1	.06**	12	–	–
Acquirer prior performance	.03**	3	-.00	5	.23**	12	.11**	16
Target prior performance	-.06**	16	-.01	15	.34**	17	–	–
Acquisition experience	-.01	4	-.25**	8	.09**	7	.13**	19
Cultural difference	-.06**	14	.07**	0	.00	8	.06**	10
Geographic distance	.06**	9	-.18**	3	–	–	–	–
Deal attitude (friendliness)	-.02	1	.02	0	.05**	18	–	–
Acquirer debt	.06**	24	.09**	2	-.07**	8	–	–
R^2	.02**		.12**		.23**		.06**	
Harmonic N	10,300		9,726		11,157		3,656	

Note. RW = relative weight as percentage of R^2 ; * $p < 0.05$; ** $p < 0.01$

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Table VI. Summary of theory and level of support for deal characteristics prediction of acquisition performance

Deal Characteristic	Theory	Performance Measure	Level of Support
<i>Method of payment (cash)</i>	Agency, signaling	Short-term stock (CAR)	None
	Agency, signaling	Long-term Stock (BHAR)	Support (positive impact)
	Agency, signaling	Accounting performance (ROA)	Support (positive impact)
<i>Method of payment (stock)</i>	Agency, signaling	Short-term stock (CAR)	Strong support (negative impact)
	Agency, signaling	Long-term Stock (BHAR)	Strong support (negative impact)
	Agency, signaling	Accounting performance (ROA)	Strong support (negative impact)
<i>Acquirer debt</i>	Agency (external governance)	Short-term stock (CAR)	Mixed support (positive impact)
	Agency (external governance)	Long-term Stock (BHAR)	Strong support (positive impact)
	Financial constraint	Accounting performance (ROA)	Mixed support (negative impact)
	Financial constraint	Innovativeness	Support (negative impact)
<i>Deal attitude (friendliness)*</i>	Managerial hubris	Short-term stock (CAR)	None
	Managerial hubris	Long-term Stock (BHAR)	None
	Managerial hubris	Accounting performance (ROA)	None
<i>Acquisition premium</i>	Managerial hubris	Short-term stock (CAR)	Mixed support (negative impact)
	Managerial hubris	Long-term Stock (BHAR)	None
	Managerial hubris	Accounting performance (ROA)	None

* Additional research needed

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Table VII. Summary of theory and level of support for deal characteristics prediction of acquisition performance

Firm Characteristic	Theory	Performance Measure	Level of Support
<i>Relatedness*</i>	Portfolio theory, Strategic fit	Short-term stock (CAR)	Mixed support (positive impact)
	Portfolio theory, Strategic fit	Long-term Stock (BHAR)	None
	Portfolio theory, Strategic fit	Accounting performance (ROA, ROE, ROS)	Mixed support (negative impact)
	Portfolio theory, Strategic fit	Managerial assessment	None
	Strategic fit	Innovativeness	None
<i>Acquisition experience</i>	Signal (lack of growth)	Short-term stock (CAR)	Mixed support (negative impact)
	Organizational learning	Short-term stock (CAR)	None
	Organizational learning	Long-term stock (BHAR)	None
	Organizational learning	Accounting performance (ROA)	Support (positive impact)
	Organizational learning	Managerial assessment	Support (positive impact)
<i>Alliance experience</i>	Organizational learning	Short-term stock (CAR)	Conflicting finding (negative impact)
	Organizational learning	Accounting performance (ROA)	None
	Organizational learning	Innovativeness	Support (positive impact)
<i>Acquiring firm size</i>	Signal (lack of growth)	Short-term stock (CAR)	None
	Signal (lack of growth)	Long-term stock (CAR/BHAR)	Conflicting finding (positive impact)
	Firm resources/capabilities	Long-term stock (CAR/BHAR)	Support (positive impact)
	Firm resources/capabilities	Accounting performance (ROA/ROE)	Mixed support (positive impact)
<i>Target firm size</i>	Signal (valuable resources/integration difficulty)	Short-term stock (CAR)	None
	Signal (valuable resources)	Long-term stock (BHAR)	Support (positive impact)

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	Signal (integration difficulty)	Long-term stock (BHAR)	Conflicting finding (positive impact)
	Signal (integration difficulty)	Managerial assessment	Support (negative impact)
<i>Acquirer prior performance</i>	Firm resources/capabilities	Short-term stock (CAR)	None
	Signal (lack of growth)	Short-term stock (CAR)	Mixed support (negative impact)
	Firm resources/capabilities	Long-term stock (BHAR)	Support (positive impact)
	Signal (lack of growth); Firm resources/capabilities	Accounting performance (ROA)	None
	Firm resources/capabilities	Managerial assessment	None
	Firm resources/capabilities	Innovativeness	None
<i>Target prior performance</i>	Signaling	Short-term stock (CAR)	Mixed support (negative impact)
	Signaling	Long-term stock (BHAR)	None
<i>Acquirer R&D</i>	Absorptive capacity (learning)	Short-term stock (CAR)	None
	Absorptive capacity (learning)	Long-term stock (BHAR)	None
	Absorptive capacity (learning)	Innovativeness	Support (positive impact)

* Additional research needed

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Table VIII. Summary of theory and level of support for firm interface predictions of acquisition performance

Firm Characteristic	Theory	Performance Measure	Level of Support
<i>National cultural distance*</i>	Signal (integration difficulty), Social identity	Short-term stock (CAR)	Mixed support (negative impact)
	Signal (integration difficulty), Social identity	Long-term stock (BHAR)	None
	Resource/Learning	Accounting performance (ROA)	Support (positive impact)
	Resource/Learning	Managerial assessment	None
<i>Geographic distance</i>	Coordination	Short-term stock (CAR)	None
	Coordination	Long-term stock (BHAR)	None
	Coordination	Innovativeness	Conflicting finding (positive impact)
<i>Relative size</i>	Signal (integration difficulty)	Short-term stock (CAR)	Mixed support (negative impact)
	Signal (integration difficulty)	Long-term stock (BHAR)	None
	Signal (integration difficulty)	Accounting performance (ROA)	Support (negative impact)
	Signal (integration difficulty)	Managerial assessment	None
	Signal (integration difficulty)	Innovativeness	None
<i>Employee turnover</i>	Equity	Short-term stock (CAR)	None
	Equity	Accounting performance (ROA)	None
	Equity	Managerial assessment	None
<i>Integration speed</i>	Coordination	Managerial assessment	None
<i>Integration depth</i>	Coordination	Accounting performance (ROA)	None
		Managerial assessment	Support (positive impact)
		Innovativeness	None

* Additional research needed

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Figure I. Organizing Framework of M&A Performance Predictor Variables and Theories

Focus of Research	Variables	Acquisition Phases and Theories		
		<i>Pre-acquisition</i>	<i>Completion</i>	<i>Post-acquisition</i>
Deal characteristics	Method of Payment (cash/stock) Acquirer Debt* Deal Attitude* Acquisition Premium*	Agency theory; Managerial Hubris; Signaling theory		
Firm characteristics	Relatedness Acquisition Experience Alliance Experience Size (acquirer/target)* Prior performance (acquirer/target) Acquirer R&D*	<i>Organizational Learning; Portfolio Theory; Resource Based View; Strategic fit</i>		
Process/Firm interface	National Cultural Distance Geographic Distance* Relative Size Employee Turnover Integration Speed* Integration Depth	<i>Coordination Theory; Equity theory; Social Identity; Stakeholder theory</i>		

Notes: 1) * indicates a new variable in the meta-analysis of M&A research, 2) Common theories are listed for acquisition phases that associated with different schools of thought and research variables. When subsequent results support a theoretical explanation, a theory's name is bolded. When there are conflicting results, a theory's name is italicized.

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NOTES

¹ The 94 papers in King et al. (2004) spanned a timeframe of 1921 to 2002, and eight overlap with the 220 papers in the current meta-analyses. This is largely due to limiting the time frame considered to after 1990 to ensure greater homogeneity with similar regulatory conditions and research data sets. For example, the four variables included by King et al (2004) are conglomerate, related acquisition, method of payment, and acquisition experience; however, the variable ‘conglomerate’ represents an artifact of research using the FTC merger database that was maintained between 1948 to 1979, and the typology has recognized limitations (Golbe and White, 1988). Additionally, King et al (2004) did not require variable correlations for their coding and analysis.

² Our review only identified a handful of published M&A research articles that consider productivity as a performance measure, and meta-analysis needs a minimum of 3 studies with common variables (Lipsey and Wilson, 2001). A general finding of existing research is that acquisitions improve firm productivity by increasing utilization of assets (e.g., Siegel and Simons, 2010), but this may depend on an acquiring firm being more productive than a target firm (Maksimovic and Phillips, 2001). Meanwhile, there are R&D productivity losses in knowledge intensive industries due to the disruption of knowledge workers, and their status and routines (e.g., Paruchuri, Nerkar and Hambrick, 2006).