Crisis to Opportunity: The Role of Consumer Awareness in Mergers and Acquisitions (M&As) during the COVID-19 Pandemic

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Abstract

In the uncertainty fueled by the COVID-19 pandemic, mergers and acquisitions (M&As) have emerged as key strategic responses by firms. This study explores the impact of M&As on acquirers' firm value, utilizing a firm-level panel dataset from SDC Platinum. Empirical evidence recognizes the potential negative impact of transaction value in M&As and the pandemic's effect on market uncertainty that may occasionally exacerbate the adverse influence on acquirers' firm value. The findings indicate that effective marketing strategies, such as enhancing consumer awareness through increasing advertising expenditures, can counterbalance these influences, particularly during uncertain times. This study accentuates the importance of adaptability and a responsive marketing approach in managing M&As during a global crisis. It provides valuable perspectives on consumer awareness in strategic decision-making, offering insights for both academic and business communities and focusing on actionable strategies for navigating the global market turmoil transformed by COVID-19.

Keywords: Mergers and acquisitions (M&As), Consumer awareness, Advertising expenditure, Firm value, COVID-19

1. Introduction

The COVID-19 health emergency has been officially declared over (WHO 2023), yet many lingering challenges make the celebration premature. As of mid-2023, the pandemic continues to impact the world extensively, which claimed approximately 7 million lives and affected an estimated 0.7 billion individuals with varying degrees of health severity. Although originated as an individual health crisis, the pandemic affected the global economy, leading to a 4.9 percent contraction in global GDP during the second quarter of 2020 (IMF 2020). International Monetary Fund (IMF) anticipates that growth will decelerate from 3.5 percent last year to 3 percent in the present and the following year, marking a modest 0.2 percentage point upgrade for 2023 from its earlier projections (Gourinchas 2023).

The ripple effects of this crisis and the related fatalities have permeated various sectors, including M&As, adversely impacting economies (Andrade, Mitchell, and Stafford 2001; Bauer, Friesl, and Dao 2022; Herndon and Bender 2020; Maliszewska, Mattoo, and Mensbrugghe 2020; Officer 2007; Padhan and Prabheesh 2021). Our study examines actual M&A data during the pandemic to concentrate on how it has influenced acquiring firms, or acquirers, that contemplated M&As as a means of strategic alignment or adaptation. The pandemic-related challenges transcended mere economic factors and reflected significant shifts in investors' and consumers' psychological and behavioral tendencies (e.g., Baker et al. 2020; Eichenbaum et al. 2020; Gormsen and Koijen 2020; Lee, Huang, and Schwarz 2020). COVID-19 has necessitated a strategic realignment driven by macroeconomic uncertainties and an ever-changing landscape—elements that persistently shape the future direction of global commerce.

Many firms considered M&As a strategic response during the pandemic, reflecting similar patterns

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observed during the 2008 financial crisis (Baird 2023). M&As have provided pathways for growth, competitive advantage, synergies, and potential tax benefits for acquiring firms (Capron 1999; Dickerson, Gibson, and Tsakalotos 1997; Harrison et al. 2001; Hitt, Ireland, and Hoskisson 2019; Kim, Haleblian, and Finkelstein 2011; Levine 2017). This trend contributed to a $5 trillion allocation to M&A activities in 2021, which continued even with an economic slowdown prediction in 2022 (IMF 2023; Macmillan, Prakash, and Purowitz 2023).

M&As present both opportunities and risks. Challenges such as integration risks, timing, overpayment, cultural conflicts (Barkema and Schijven 2008; Homburg and Bucerius 2006; Rhodes-Kropf and Viswanathan 2004; Rhodes–Kropf, Robinson, and Viswanathan 2005; Zollo and Singh 2004), and impacts on consumer satisfaction and the acquirer's firm value have been documented (Umashankar, Bahadir, and Bharadwaj 2022).

The pandemic has intensified the above risks associated with M&As that influence corporate valuations and alter M&A dynamics (Chapman Cook and Karau 2023; Dash and Maitra 2022; Lee, Huang, and Schwarz 2020; Liu, Nakajima, and Hamori 2022; OECD 2020). The present study defines perceived uncertainty heightened by COVID-19 as stakeholders' or consumers' concerns and doubts about a firm's future performance (Altig et al. 2020; Caggiano, Castelnuovo, and Kima 2020; Szczygielski et al. 2022). The pandemic destabilized the market environment, reassessing confidence in established players (Lee, Huang, and Schwarz 2020; Nurhayati et al. 2021; Zhao et al. 2023). Elevated consumer awareness has become central, fostering brand loyalty during the crisis (Rather et al. 2022; Sashittal, Jassawalla, and Sachdeva 2023).

Firms strategically increased advertising expenditures to strengthen market positions and reduce risks and uncertainties (Grewal and Tansuhaj 2001; Kirmani and Rao 2000; Lee, Chung, and Taylor 2011; Reuer, Tong, and Wu 2012; Wu and Reuer 2021). Consumer awareness has become pivotal (Barroso and Llobet 2012; Liu and Mair 2023), and successful advertising campaigns augmented brand equity, reducing stock volatility and risk (Rego, Billett, and Morgan 2009).

Therefore, this study proposes reducing perceived uncertainties by improving consumer awareness during COVID-19. It offers both theoretical and practical insights by examining the relationship between transaction value and firm value, the pandemic's effect on this relationship, and the moderating role of consumer awareness. The present study recognizes the potential negative impact of transaction value in M&As on acquirers' firm value. It also emphasizes that effective marketing strategies can counterbalance these influences, providing valuable insights for corporate decision-makers in a fluctuating global context.

Furthermore, this study highlights actionable strategies for firms in a volatile market. It emphasizes adaptability and explains how a skillful and responsive marketing approach can minimize risks and discover opportunities during a global crisis. The study helps manage M&As in a world transformed by the COVID-19 pandemic, navigating the opportunities and complexities of this multifaceted landscape.

2. Theoretical background

2.1. Transaction value and its impact on the acquirer's firm value: Resource allocation approach

M&As are common pathways for corporate growth (e.g., Dickerson, Gibson, and Tsakalotos 1997; Harrison et al. 2001; Hitt, Ireland, and Hoskisson 2019; Kim, Haleblian, and Finkelstein 2011; Levine 2017), competitive advantages through synergies (Capron 1999; Feldman and Hernandez 2022; Haleblian et al. 2009; Zollo and Meier 2008), and potential tax benefits (Erel, Jang, and Weisbach 2015; Huizinga and Voget 2009). Simultaneously, they present several challenges, including integration risks (Barkema and Schijven 2008; Zollo and Singh 2004), timing (Homburg and Bucerius 2006; Rhodes-Kropf and Viswanathan 2004; Rhodes–Kropf, Robinson, and Viswanathan 2005), overpayment (Barraclough et al. 2013), and cultural conflict (Stahl and Voigt 2008; Weber and Camerer 2003; Weber, Shenkar, and Raveh 1996).

M&As influence a firm's capital structure (Harford, Klasa, and Walcott 2009; Shrieves and Pashley 1984), focusing on resource allocation or orchestration (e.g., Sirmon et al. 2011; Sirmon, Hitt, and Ireland 2007). Researchers have suggested M&As as one of the ways to acquire and leverage resources emphasized as important, thereby focusing on resource allocation or orchestration in the context of M&As (Sirmon, Hitt, and Ireland 2007). M&As necessitate limited resources that may result in strategic investments straining the acquirer's resources in the short term (Laamanen and Keil 2008). For instance, Laamanen and Keil (2008) identified a negative correlation between the frequency of acquisitions and the acquirer's market value over three years. Acquirers with a high rate of acquisitions may see a strain on resources, leading to adverse performance impacts in the short term. Additionally, this relationship was found to be influenced by the size of the acquirer and their past acquisition experience, which could moderate the intensity of these impacts (Laamanen and Keil 2008).

Therefore, transaction value, as observed during market reactions to M&A announcements, may indicate transaction merit and acquirer leverage (Barbopoulos, Adra, and Saunders 2020; Cai and Shefrin 2021; Krishnan and Yakimenko 2022). In addition, these acquisitions impact growth prospects and profitability (Dickerson, Gibson, and Tsakalotos 1997; Levine 2017). The core business may face an obscured deterioration (Kim, Haleblian, and Finkelstein 2011; Rosen 2006), supporting a potential detrimental effect of transaction value on the acquirer's firm value.

M&As may foster corporate growth and competitive advantage in the long term (Chiu et al. 2022; Cui and Leung 2020; Doukas and Zhang 2021; Thakor 2021); however, short-term negative influences have been observed (Chen, Harford, and Li 2007; Gaspar, Massa, and Matos 2005; Renneboog and Vansteenkiste 2020), such as reduced consumer satisfaction (Umashankar, Bahadir, and Bharadwaj 2022) and increased prices with suboptimal customer services (Kim and Singal 1993; Sikora 2005). These effects may be amplified during firms' expansion through M&As, leading to dissatisfaction, a decline in acquirers' firm value, and increased risk (Fornell, Morgeson, and Hult 2016; Lee and Koblin 2021; PwC 2019). Mergers primarily benefit target shareholders but may negatively affect the wealth of acquirers' shareholders (Cumming et al. 2023).

Consistent with prior findings, we assume that an increased transaction value can decrease acquirers' firm value with a price increase (e.g., Kim and Singal 1993; see also Das 2019; Hosken, Olson, and Smith 2018). M&As may decline customer satisfaction, potentially overshadowing gains in firm value from increased efficiency. Although marketing strategies may alleviate this effect, the shift in focus from customers to financial matters post-M&A underscores the comprehensive negative dynamics (Umashankar, Bahadir, and Bharadwaj 2022). M&A transaction value may negatively impact the acquirer's firm value, prompted by factors such as industry competition or cross-industry acquisitions (Kim, Jang, and Seok 2023). Based on these insights, we propose the following hypothesis:

H1. *The transaction value-to-sales ratio negatively affects the acquirer's firm value.*

2.2. The pandemic's influence on consumers' uncertainty: Amplified challenges

The COVID-19 pandemic has influenced various sectors, industries, and economies worldwide, fostering economic uncertainty beyond a simple demand shock (Maliszewska, Mattoo, and Mensbrugghe 2020; Padhan and Prabheesh 2021). This global crisis has heightened caution among individuals and corporations (Lee, Huang, and Schwarz 2020; Lee et al. 2010), significantly changing the dynamics of M&A transactions. The pandemic-related volatility has made these transactions complex and increased their associated risks (Bauer, Friesl, and Dao 2022; Herndon and Bender 2020) with more nuanced company valuations. Similar patterns were observed during previous economic disruptions (Andrade, Mitchell, and Stafford 2001; Officer 2007).

Our study focuses on the specific impact of COVID-19 on transaction value in M&As and its subsequent effect on the acquirer's firm value. We explore whether the pandemic has exacerbated the negative relationship between the transaction value-to-sales ratio and firm value.

Till August 9, 2023, COVID-19 has resulted in 769,369,823 confirmed cases and 6,954,336 deaths globally (WHO 2023), manifesting as a profound threat characterized by disease severity and widespread apprehension (Foa and Welzel 2023; Graffeo et al. 2022). The pandemic has amplified health-related uncertainties (Cristea et al. 2022) and resonated within the business sphere (Szczygielski et al. 2022). Governmental interventions, such as social distancing measures and business restrictions, have broadened this impact from the health sector to the wider economic context (Bollyky et al. 2023; Spiegel and Tookes 2021).

This pandemic-induced uncertainty has reverberated across various sectors, including energy stocks (Liu, Nakajima, and Hamori 2022), new ventures (Chapman Cook and Karau 2023), and corporate decision-making (Apedo-Amah et al. 2020). Investor sentiment shifted towards a more cautious outlook (Dash and Maitra 2022), affecting global equity markets. For example, high uncertainty levels lead to lower travel intentions. Uncertainty on travel intention was serially mediated by perceived controllability and mood state (Liu and Mair 2023). Such generalized uncertainty permeates consumer perceptions, shaping their assessments of firms' value and prospects (OECD 2020).

In the context of M&As, consumers consider these conditions to scrutinize acquiring firms more closely. M&A activities during the pandemic might be realized as bold moves (e.g., Bauer, Friesl, and Dao 2022; Herndon and Bender 2020; Kooli and Lock Son 2021; Ott 2020). It may reflect a firm's willingness to invest during uncertain times (Muralidhar 2020). The contrast between a firm's assertive actions and the prevailing cautious climate may disconnect consumer perceptions, prompting them to question the alignment of such strategic initiatives with current external conditions (Resick et al. 2023). This dissonance, adding to uncertainty, could negatively affect the firm's valuation.

Firms reassess their M&A strategies considering the mentioned dynamics (Bauer, Friesl, and Dao 2022). High-value M&A activities might be perceived as risky in an uncertain environment, reflecting the acquirers' readiness to invest during unstable times (Cho and Chung 2022; Kanungo 2021; Nguyen and Phan 2017; Ott 2020). As COVID-19-driven consumer uncertainty escalates, evaluating the firm value and future performance projections may become more unpredictable. It amplifies the negative relationship between the transaction value-to-sales ratio and the acquirers' firm value. Based on these notions, we propose the following second hypothesis:

H2. *The negative effect of the transaction value-to-sales ratio on the acquirer's firm value will increase during the COVID-19 pandemic.*

2.3. Enhancing consumer awareness as an alleviating factor

This study alleviates the consumers' perceived uncertainty regarding the acquirer's firm value during COVID-19, building upon resource orchestration and signaling theories. Leveraging consumer awareness can indicate a company's strategic resource allocation, thereby reducing consumers' perceived uncertainty toward the firm's future performance. The firm's amplified advertising efforts aim to enhance consumer awareness (Barroso and Llobet 2012; see also Liu and Mair 2023). Barroso and Llobet (2012) have demonstrated that advertising expenditures augment a product's consumer awareness, increasing its present and future sales. The level of advertising further accelerated the awareness process, affecting the product sales. Uncertainty can lead to lower consumption levels (Liu and Mair 2023). Therefore, increasing advertising expenditure to reduce uncertainty could potentially increase consumption. Advertising expenditure is often a measure of consumer awareness (Gong et al. 2019; Servaes and Tamayo 2013). Assessing a firm's potential for future growth may depend on consumers' perceptions of its strategic resource allocation (e.g., Jang and Lee 2018).

Rooted in Lavidge and Steiner's Hierarchy of Effects Model (1961), consumer awareness constitutes the cognitive step that drives subsequent decision-making (Bergkvist and Taylor 2022; Lemon and Verhoef 2016). Consumer awareness can invaluably inform stakeholders about a firm's strategic movements, such as M&A activities (Seok, Kim, and Go 2019). The firm's effective communication alleviates stakeholder concerns and positively influences its value during heightened uncertainty (Lee, Chung, and Taylor 2011). For example, in the M&A context, an appropriate brand message considers consumers' perceptions toward the brand during the pre-merger procedure. Mitigating consumer concerns and uncertainties is key to a successful merger (Mclelland, Goldsmith, and Mcmahon 2014). Similarly, tailored communication strategies, including the use of social media, that consider consumers' pre-existing brand perceptions can enhance brand loyalty (Chung and Kim 2020).

Consumer awareness, represented by marketing expenditure, can signal a firm's commitment to quality (Clark, Doraszelski, and Draganska 2009) and credibility (Luo and Donthu 2006) to shareholders, enhancing the firm's equity and market share (Grullon, Kanatas, and Weston 2004; Srivastava, Shervani, and Fahey 1998). Investors often view firms engaged in M&A transactions as cohesive, interconnected entities rather than mere collections of independent factors (Campbell, Sirmon, and Schijven 2016). Acquirers can elevate consumer awareness through strategic advertising, effectively utilizing the combined resources of the acquiring and target firms within the M&A framework to augment the firm's equity (Harrison et al. 2001).

According to signaling theory, firms deploy signals such as advertising to convey their quality, intentions, and capabilities to external stakeholders (Kirmani and Rao 2000; Reuer, Tong, and Wu 2012; Spence 1973; Wu and Reuer 2021). Enhanced consumer awareness, fostered by focused advertising, may indicate the acquirer's long-term financial stability (Kihlstrom and Riordan 1984; Nakamura 2015), commitment (Reuer, Tong, and Wu 2012; Tao et al. 2022; Wu and Reuer 2021), and risk management capacity (Zaheer, Hernandez, and Banerjee 2010; Zhang, Lyles, and Wu 2020).

Therefore, we illustrate that leveraging consumer awareness in M&A transactions, particularly during COVID-19, may signal a firm's capacity to alleviate consumers' concerns about future performance. Strategic consumer awareness counterweights the potential adverse effects of elevated transaction values on the acquiring firm's value, offering reassurances to stakeholders and enhancing firm value. Moreover, strategic consumer awareness in M&A decisions becomes especially pertinent in unpredictable economic environments, such as during the COVID-19 pandemic. When consumers' perception of uncertainty may be heightened, aligning M&A strategies with consumer awareness is wise and indispensable.

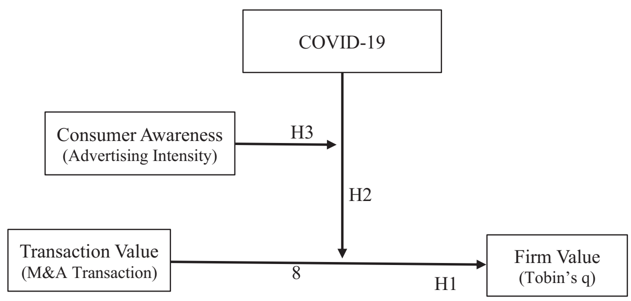

Fig. 1. Conceptual Framework

Considering these facts, we articulate the following third hypothesis and present a corresponding conceptual framework for our current study, as illustrated in Fig. 1:

H3. *The negative effect of the transaction value-to-sales ratio on the acquirer's firm value, amplified during the COVID-19 pandemic, is positively redirected through consumer awareness proxied by advertising intensity.*

3. Research methodology

3.1. Data

Data was collected regarding acquirers that completed M&A activities from 2014 to 2022, specifically those listed on the Standard & Poor's 500 (S&P500) index. The S&P500 index primarily consists of significant large-scale U.S. firms that have been investigated in previous studies (Anthony, Viguerie, and Waldeck 2016; Zhou, He, and Wang 2017). Information about M&A activities was extracted from SDC Platinum, and the acquirers' financial details were obtained using Compustat, a comprehensive source for financial information of publicly listed U.S. firms (Servaes and Tamayo 2013). The M&A and financial information of these S&P500 companies were merged to obtain a dataset of 978 M&A transactions by 340 acquirers.

3.2. Variable measurement

This study measured key variables to assess the effect of M&A activities, COVID-19, and consumer awareness expenditure on the firm value. First, we used Tobin's q (TQ) as a proxy for firms' financial performance (Tobin 1969). TQ is calculated by dividing a firm's total market value by its total asset value and is widely used to measure the firm value in the literature (Seok, Kim, and Go 2019; Servaes and Tamayo 2013). Following existing studies, we used a book value instead of substituting replacement value to calculate TQ due to the data unavailability on the replacement value of each firm's assets (Chung and Pruitt 1994; Griliches 1981; Servaes and Tamayo 2013). An M&A transaction value ratio (TR) represents a firm's total M&A transaction value for the specific year to the sales. This index is a proxy for the relative deal size of M&As (Brau, Sutton, and Hatch 2010; Koeplin, Sarin, and Shapiro 2000). To test the proposed hypotheses, we coded the years 2020 and 2021 that followed the COVID-19 outbreak as a COVID-19 period. We also used advertising intensity (ADV) as a proxy for customer awareness, similar to the prior studies (Seok, Kim, and Go 2019; Servaes and Tamayo 2013).

We assessed financial factors to control their effects on firm value, including research and development expense ratio (RND), firm size measured by the natural log of assets (SIZE), return on equity (ROE), leverage (LEV), tangible asset ratio (TANG), and industry-level market growth (MG). We also incorporated a dummy year to consider the characteristics of each year. Lastly, this study included industry dummy variables based on the first two digits of the Standard Industrial Classification (SIC) code to control for industry-fixed effects (Buchanan, Cao, and Chen 2018; Li et al. 2018). A detailed description of these variable measurements is provided in Table 1.

Table 1. Variable measurement.

Variable		Measurement
TQ	Tobin's q	Total market value / Total assets = (Equity market value + Liabilities book value) / (Equity book value + Liabilities book value)
TR	Transaction Value Ratio	Total M&A transaction value for a year / Sales
COVID	COVID-19 Period	1 if the year is 2020 or 2021; 0 otherwise
ADV	Advertising Intensity	Advertising expenditure / Sales
SIZE	Firm Size	Natural log of assets
RND	Research and Development Expense Ratio	Research and development expense / Sales
ROE	Return on Equity	Net income / Shareholders' equity
LEV	Leverage	Total debt / Total Asset
TANG	Tangible Asset Ratio	Tangible assets / Total assets
MG	Industry-level Market Growth	Average of four-digit SIC industry year-over-year sales growth over four years before year t
YD	Year	Year dummy (2014~2022)
ID	Industry	Industry dummy (Based on the first two digits of the SIC code)

3.3. Model

The current study implemented the following three models to test the proposed hypotheses. Model 1 assessed the effect of the transaction value ratio (TR; β_{11}) on TQ as a proxy for the firm value, as suggested in equation (1). Model 1 tested the first hypothesis in this study. This model includes control variables such as size (SIZE; β_{14}), R&D ratio (RND; β_{15}), ROE (β_{16}), leverage (LEV; β_{17}), tangible asset ratio (TANG; β_{18}), industry-level market growth (MG; β_{19}), year dummies (YD; γ_{1t}), and industry dummies (ID; δ_{1s}).

$$\begin{aligned} TQ_{it} = {} & \beta_{10} + \beta_{11} TR_{it} + \beta_{12} COVID_{it} + \beta_{13} ADV_{it} \\ & + \beta_{14} SIZE_{it} + \beta_{15} RND_{it} + \beta_{16} ROE_{it} + \beta_{17} LEV_{it} \\ & + \beta_{18} TANG_{it} + \beta_{19} MG_{it} + \sum_{t=1}^{9} \gamma_{1t} YD_t \\ & + \sum_{s=1}^{53} \delta_{1s} ID_s + \varepsilon_{it}, \quad i = 1, \ldots, 339, \\ & t = 1, \ldots, 9, s = 1, \ldots, 53. \end{aligned} \tag{1}$$

To test the second hypothesis, we proposed Model 2, which includes the interaction term between COVID and TR ($\beta_{2,10}$), as suggested in equation (2). If the estimated values of β_{21} and $\beta_{2,10}$ have the same direction, the effect of TR on TQ is strengthened during the COVID-19 pandemic.

$$\begin{aligned} TQ_{it} = {} & \beta_{20} + \beta_{21} TR_{it} + \beta_{22} COVID_{it} + \beta_{23} ADV_{it} \\ & + \beta_{24} SIZE_{it} + \beta_{25} RND_{it} + \beta_{26} ROE_{it} \\ & + \beta_{27} LEV_{it} + \beta_{28} TANG_{it} + \beta_{29} MG_{it} \\ & + \beta_{2,10} TR_{it} \times COVID_t + \sum_{t=1}^{9} \gamma_{2t} YD_t \\ & + \sum_{s=1}^{53} \delta_{2s} ID_s + \varepsilon_{it}, \quad i = 1, \ldots, 339, \\ & t = 1, \ldots, 9, s = 1, \ldots, 53. \end{aligned} \tag{2}$$

Last, Model 3, as suggested in equation (3), added three-way interaction terms between TR, COVID, and ADV ($\beta_{3,13}$) to test the third hypothesis. If the estimated value of $\beta_{3,13}$ has been directed against $\beta_{3,10}$, advertising actions during the COVID-19 period can mitigate the interaction effect between TR and COVID on the firm value.

$$\begin{aligned} TQ_{it} = {} & \beta_{30} + \beta_{31} TR_{it} + \beta_{32} COVID_{it} + \beta_{33} ADV_{it} \\ & + \beta_{34} SIZE_{it} + \beta_{35} RND_{it} + \beta_{36} ROE_{it} + \beta_{37} LEV_{it} \\ & + \beta_{38} TANG_{it} + \beta_{39} MG_{it} + \beta_{3,10} TR_{it} \times COVID_t \\ & + \beta_{3,11} TR_{it} \times ADV_{it} + \beta_{3,12} COVID_t \times ADV_{it} \\ & + \beta_{3,13} TR_{it} \times COVID_t \times ADV_{it} + \sum_{t=1}^{9} \gamma_{3t} YD_t \\ & + \sum_{s=1}^{53} \delta_{3s} ID_s + \varepsilon_{it}, \quad i = 1, \ldots, 339, \\ & t = 1, \ldots, 9, s = 1, \ldots, 53. \end{aligned} \tag{3}$$

The dataset underpinning our study encompassed nine years of panel data from 340 unique acquirers, which presents the possible heterogeneity between the panel entities (e.g., Liu et al. 2021). To investigate this potential heterogeneity, we employed the likelihood ratio test, as suggested by Greene (2018). The outcomes clearly indicated the presence of meaningful heterogeneity across the panels ($p < .01$). Therefore, we opted to estimate the model using the feasible generalized least squares (FGLS) approach.

4. Empirical results

4.1. Descriptive statistics

The descriptive statistics for each variable are presented in Table 2. Before the main analysis, we conducted a winsorization method to eliminate outliers in the sample (Servaes and Tamayo 2013). Table 3 shows the correlation matrix with all explanatory variables significantly correlated with TQ but without high correlation ($p > .5$) with each other. We performed the ordinary linear regression with all variables to test the multicollinearity and calculated the variation inflation factor (VIF). We found that multicollinearity does not exist in the model because all VIF values are under 1.77.

4.2. Result

The results of FGLS is presented in Table 4. The main effect of TR is negative and significant, supporting H1. ($\beta_{11} = -.348$, $p < .01$) It indicates that increased M&A transaction values can decrease TQ.

Table 2. Descriptive statistics.

Variable	Mean	Standard deviation	Minimum	Maximum
TQ	2.52	1.65	.94	10.9
TR	.22	.42	.00	2.81
COVID	.21	.41	.00	1.00
ADV	.01	.03	.00	.15
SIZE	9.96	1.35	6.17	13.73
RND	.05	.07	.00	.36
ROE	.04	.04	−.21	.17
LEV	.99	2.59	−13.91	13.16
TANG	.19	.20	.00	.86
MG	.05	.15	−.49	1.11

Table 3. Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) TQ	1								
(2) TR	−.062*	1							
(3) ADV	.258***	−.033	1						
(4) SIZE	−.359***	0	.03	1					
(5) RND	.323***	.071**	.120***	−.065**	1				
(6) ROE	−.192***	−.133***	−.049	.157***	−.130***	1			
(7) LEV	−.069**	.013	.114***	.127***	−.071**	−.052	1		
(8) TANG	−.156***	−.012	−.081**	.075**	−.235***	−.144***	.089***	1	
(9) MG	.109***	.047	−.013	−.032	.042	.084***	−.034	−.028	1

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$.

Therefore, larger M&A transactions might be perceived as riskier or inexpedient by stakeholders.

The interaction effect between TR and COVID is significantly negative ($\beta_{2,10} = -.155$, $p < .1$; $\beta_{3,10} = -.246$, $p < .05$), supporting H2. Therefore, the negative effect of M&A transaction value can be more prominent during COVID-19. The pandemic has introduced a high uncertainty level to M&A transactions, which may increase the risk of adverse selection in M&A transactions, negatively impacting firm value (Akerlof 1970).

Table 4. Empirical results.

Variables	Model 1	Model 2	Model 3
TR	−.348***	−.348***	−.322***
	(.031)	(.031)	(.029)
TR × COVID		−.155*	−.246**
		(.083)	(.112)
TR × ADV			−2.539
			(3.291)
COVID × ADV			1.772
			(2.095)
TR × COVID × ADV			11.846**
			(5.485)
COVID	.892***	.928***	.936***
	(.057)	(.060)	(.061)
ADV	16.587***	16.515***	15.711***
	(.877)	(.876)	(1.000)
SIZE	−.359***	−.359***	−.364***
	(.015)	(.015)	(.015)
RND	3.830***	3.955***	3.830***
	(.373)	(.376)	(.389)
ROE	−3.383***	−3.314***	−3.416***
	(.392)	(.388)	(.393)
LEV	−.039***	−.038***	−.038***
	(.004)	(.004)	(.004)
TANG	.104	.113	.089
	(.084)	(.082)	(.090)
MG	.575***	.567***	.559***
	(.101)	(.102)	(.104)
Constant	4.811***	4.795***	4.846***
	(.252)	(.251)	(.240)
Year dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Observations	977	977	977
Number of firms	340	340	340
Adj. R-squared	.418	.417	.419

Standard errors in parentheses.
$^{***}p < .01$, $^{**}p < .05$, $^{*}p < .1$.

The three-way interaction effect between TR, COVID, and ADV is found to be positive and significant, supporting H3 ($\beta_{3,13} = 11.846$, $p < .05$). Increased ADV (i.e., increased customer awareness) can mitigate transaction value's negative effect on firm value during the pandemic. This result may be because firms that expand ADV signal long-term stability and adaptability (Harrison et al. 2001; Kihlstrom and Riordan 1984; Nakamura 2015). In addition, heightened customer awareness can produce a synergy effect between firms' resources, offsetting the stronger negative effect of transaction value on firm value.

The effects of ADV and RND are significantly positive, as expected. Increased marketing actions such as advertising enhance brand visibility, customer loyalty, and market share. Investing in research and development can lead to innovation, product differentiation, and long-term competitive advantage, contributing to higher firm value. The direction of the estimated effects of LEV, TANG, and MG are as expected. Concurrently, the firm size was negatively impacted across all models. This result may be attributed to the formula to calculate the dependent variable. We replaced the denominator, the replacement value, with the book value of assets in the equation for calculating TQ (Chung and Pruitt 1994; Griliches 1981; Servaes and Tamayo 2013).

Our results reveal that the transaction value in M&A activities negatively impacted the resultant firm value. However, this effect is influenced by various elements in the business environment, including the COVID-19 pandemic dynamics and the associated perceived risks among shareholders. The findings suggest that the negative effect of transaction value is intensified due to the heightened uncertainty and risk perception fostered by the pandemic crisis. However, strategic marketing efforts, such as comprehensive advertising campaigns, can mitigate this negative impact. Acquirers can confidently navigate strategic decisions, including M&A activities, even amidst periods of profound crisis by employing fitting marketing strategies. Therefore, the results underscore the importance of a well-orchestrated marketing strategy in alleviating the adverse effects of high transaction values in M&A, particularly during turbulent times.

5. Discussion and implications

5.1. General discussion

This study aims to assess the impact of M&As on acquirers' firm value during the COVID-19 pandemic. Data involving firm-level information was collected regarding acquirers that completed M&A activities from 2014 to 2022, listed on the Standard & Poor's 500 (S&P500) index, from SDC Platinum and Compustat. We used the FGLS approach to test the proposed hypotheses. The empirical results show that the transaction value in M&A activities negatively impacted the resultant firm value. The dynamics of COVID-19 pandemic could exacerbate this effect and the associated perceived risks among shareholders. We found that strategic marketing efforts can counterbalance this negative impact, implying the importance of adaptability and a responsive marketing approach in managing M&As during a global crisis.

5.2. Theoretical and managerial implications

Our findings extend the theoretical understanding of how acquiring firms allocate resources during M&A activities (e.g., Barbopoulos, Adra, and Saunders 2020; Cai and Shefrin 2021; Sirmon et al. 2011). Considering the resource orchestration theory, we focus on a firm's internal resource allocation to align with consumers' perceptions (Cording, Christmann, and King 2008; Wu and Reuer 2021). Integrating consumer behavior into a firm-centric theory enriches its applicability and provides insights into market participants' interpretation and response to M&As.

This study further illustrates how applying signaling theory (Kirmani and Rao 2000; Spence 1973) to M&As can shape consumer perceptions and influence firm value (e.g., Reuer, Tong, and Wu 2012; Wu and Reuer 2021). Advertising expenditures broaden the scope of signaling theory to connect firm strategies, market signals, and consumer psychology. The study helps understand how firms adapt strategies during uncertain times, such as the COVID-19 pandemic (Bauer, Friesl, and Dao 2022; Lee, Huang, and Schwarz 2020), contributing to crisis management and resilience theories (Williams et al. 2017).

From a managerial standpoint, our findings advocate aligning resources and signaling during M&As to foster value creation. Managers may benefit from considering the financial and operational facets of an M&A and consumers' perspectives. Insights into signaling theory and its application in M&As may guide managers to craft transparent communication strategies through advertising, press releases, or targeted marketing.

Our study, drawing on principles of classic behavioral economics such as cognitive biases and decision-making shortcuts (e.g., Thaler 1980; Tversky and Kahneman 1974), emphasizes how psychological factors influence consumer reactions to M&As. For example, consumers may exhibit a status quo bias, favoring existing brands over new entities formed through M&As. Understanding these underlying biases can guide advertising and branding strategies during transitional periods like M&As, helping firms to navigate consumer perceptions. Additionally, our findings highlight the importance of strategic flexibility during uncertainty, offering insights into balancing growth and risk mitigation for potential business resilience.

Our study offers insights into the complex link between market factors and consumer perceptions by considering various stakeholders, including consumers, employees, and investors, in M&A decisions. Such insights may be valuable for firms engaging in cross-border M&As. Furthermore, our findings underscore the importance of regulatory compliance and ethical approach to signaling during M&As, focusing on long-term planning and adaptability to market conditions.

5.3. Limitations and future research directions

Our study provides the fundamentals for comprehending the dynamics of M&A activities and consumer behavior, focusing on the relationship between consumer awareness and consumer-based brand equity (CBBE) in the context of the COVID-19 period. Brand awareness has been closely linked to CBBE, but the unprecedented circumstances of the pandemic may introduce nuanced variations in this established relationship. Our study has unraveled certain facets of consumer perceptions; however, further exploration is required to precisely identify how these perceptions affect corporate value or equity, especially in the M&A landscape. Behavioral research must be conducted through controlled experiments, allowing for a more targeted and empirical analysis of these intricate dynamics.

Investigating the impact of M&As on corporate image during the COVID-19 period has become necessary. Although our study focuses on M&As during the pandemic inspired by existing research (Lee, Lee, and Wu 2011; Plumeyer et al. 2019), we recognize a more thorough examination of potential shifts in corporate image induced by these actions. Exploring how the pandemic's influence on consumer behavior and sentiments may uniquely shape the effect of M&As on corporate image is necessary.

Our study intricately explores consumer awareness, corporate image, and M&As, especially during COVID-19. These aspects uncover present fertile ground for future inquiry. By broadening the scope of our study by including these areas, subsequent research can substantially enrich our collective understanding of these compelling dynamics.

The study could also benefit from employing mediation analysis through experimental research. Examining elements such as perceived uncertainty and consumer awareness during COVID-19 provides an understanding of the underlying mechanisms. It may yield direct insights into consumer behavior related to M&As, offering a more focused perspective on potential strategic adjustments. By delineating these future directions, our study addresses the current research landscape and actively encourages new avenues of exploration.

Conflict of interest

The authors declare no conflicts of interest.

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