

**The post-acquisition performance of cross-border mergers and acquisitions conducted by Chinese firms in the high-tech industries: Profitable or innovative?**

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# **The post-acquisition performance of cross-border mergers and acquisitions conducted by Chinese firms in the high-tech industries: Profitable or innovative?**

## **Abstract**

This paper examines the characteristics and performance of cross-border mergers and acquisitions (M&As) conducted by Chinese firms in the high-tech industries. Multiple measures of firm performance were used in exploring the profitability and innovativeness of both the acquiring and target firms. With 1,340 cross-border M&As completed between 1990 and 2014, the major characteristics of these deals (e.g., industries of acquiring firms, countries of target firms, and the level of ownership) were identified. In terms of the performance of acquiring and target firms, the value creation hypothesis was supported by the innovation measure; however, it was not supported by accounting-based measures. The implications of this study and directions for future research are thus discussed.

**Keywords:** Performance of cross-border M&As; Chinese firms; High-tech industries; Profitability; Innovativeness

## Introduction

Over the last few decades, cross-border mergers and acquisitions (M&As) have been widely conducted by multinational corporations from emerging economies (EMNCs)—notably China—to develop their corporate resources and capabilities in the international markets (Ramamurti & Hillemann, 2018; Shimizu, Hitt, Vaidyanath, & Pisano, 2004). Recent studies on the cross-border M&As conducted by Chinese firms have highlighted that they, like other EMNCs, are mostly motivated by the need to acquire the strategic assets—such as knowledge and capabilities—that they are not capable of developing internally (Deng & Yang, 2015; Luo & Tung, 2007). Following China’s determination that high-tech<sup>1</sup> industry sectors, such as the semiconductor industry, are strategic industries worth entering (Einhorn, 2011), Chinese cross-border M&As in such industries have steadily increased over time. Noteworthy examples of this include the cases of Lenovo acquiring IBM’s PC group, Alibaba’s acquisition of Lazada, and Huawei’s acquisition of several technology-intensive firms such as Neul in the United Kingdom (Securities Data Company Platinum, 2015). Studying Chinese cross-border M&As in the high-tech industries is crucial because such acquisitions of the strategic assets owned by other firms are expected to enable Chinese firms to catch up with the latest technological developments and bring forward their technological upgrading (Lee & Yoon, 2015). However, little is known about whether Chinese firms, and other EMNCs—that are lagging behind Western firms in the development of firm-specific advantages in relation to innovative activities or managerial capabilities (Child & Rodrigue, 2005)—would fully benefit from the positive outcomes of these cross-border M&As.

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<sup>1</sup> While filtering from different lists (e.g., AeA, BLS, Census, and OECD), we used the following two-digit SIC codes to capture the high-tech industries: 28, 35, 36, 37, 38, 48, 73, and 87. Please see Table 4 for the details of these SIC codes.

This study aims to advance our understanding of the post-acquisition performance of Chinese firms. An increasing volume of research has examined the performance of the cross-border M&As conducted by firms from China and other emerging markets (e.g., Aybar & Ficici, 2009; Boateng, Wang, & Yang, 2008; Du & Boateng, 2015; Tao et al., 2017; Yang, 2015), greatly improving our understanding of the determinants affecting their levels of performance. However, the most commonly examined cross-border M&As performance is that measured by short-term stock market reaction. We lack both a theoretical framework and empirical evidence of the effect of cross-border M&As on EMNC performance over a more extended period of time following the M&As; this would enable us to uncover whether the EMNCs' strategic asset-seeking M&As do improve profitability and innovation performance for both the acquiring and target firms. This study addresses this knowledge gap by asking: do cross-border M&As improve the post-acquisition performance of the Chinese acquirers and their target firms?

Drawing on the extant literature on EMNC international acquisitions (e.g., Ai & Tan, 2019; Liu & Meyer, 2018) and on the process perspective of post-acquisition performance (e.g., Haspeslagh & Jemison, 1991), we argue that M&As are not just a one-off choice, but a process that spans pre-acquisition due diligence, decision making, negotiation, and post-acquisition integration (Welch, Pavicevic, Keil, & Laamanen, 2019). Despite the synergy potential of an acquisition (which can be measured by stock market reaction) being affected by pre-acquisition factors such as strategic, organizational, and cultural fits (e.g., Larsson & Finkelstein, 1999), the value of M&As is created in their post-acquisition phase; this is because the extent to which such potential is realized depends on how the acquiring and target firms transfer and integrate their respective resources and capabilities (Graebner, Heimeriks, Huy, & Vaara, 2017; Wang, Sørensen, & Moini, 2018). Therefore, we contend that the post-acquisition performance of strategic asset-seeking EMNCs should be examined over more extended periods of time, which

allows strategic assets to be transferred and synergy to be created. Following this process logic of acquisition performance, we use multiple indicators—other than those capturing stock market reactions.

To empirically validate our arguments, we analysed 1,340 cross-border M&As conducted by Chinese firms in the high-tech industries between 1990 (when the first deal of this type was recorded in the Securities Data Company Platinum database) and 2014. We selected Chinese firms because they have been widely recognized as active players in cross-border M&As among emerging economies (Deng & Yang, 2015; He & Zhang, 2018). In addition, Chinese acquirers have shown a special interest in the high-tech industries, which provide them with advanced technologies and other forms of strategic assets (Zhang, Young, Tan, & Sun, 2018). In terms of post-acquisition performance, we examined two accounting-based measures (i.e., the ROA and ROS) that capture firm profitability, and one innovation measure (i.e., the amount of intangible assets) that reflects a critical outcome in the high-tech industries. To allow sufficient time to capture the long-term impacts of post-acquisition integration and knowledge transfer (Colman & Lunnan, 2011; Zollo & Meier, 2008), we made our measurements over the two-year period following the sample cross-border M&As.

The key contributions of this study are twofold. First, it reveals an alternative performance mechanism—one based on capability transfer and upgrading logic—of the international acquisitions conducted by EMNCs. By doing so, it provides empirical evidence for the growing stream of research explicating how, in order to succeed in their international acquisitions, EMNCs strategically integrate their targets and facilitate knowledge transfer (Ai & Tan, 2019; He, Khan, & Shenkar, 2018; Liu & Meyer, 2018). Secondly, it takes into account multiple measures that cover both the accounting-based and innovation-related indicators of cross-border M&A performance for both the acquiring and target firms. In so doing, it may provide robust and new

insights into the differing performances of international acquisitions in the context of one of the most influential emerging countries.

The rest of the paper is organized as follows. In the next section, the literature on the cross-border M&A performance of EMNCs is reviewed, followed by the hypotheses. In Section 3, the data sources, variables, and methodology used in this study are described. In Sections 4 and 5, the results and the theoretical, methodological, and managerial implications of this study are discussed, and future research directions are suggested.

## **Literature review and hypotheses development**

### **The cross-border M&A performance of EMNCs**

The rising phenomenon of cross-border M&As conducted by EMNCs has drawn scholars to examine the post-acquisition performance of these firms, and particularly those from China (Zhu, Ma, Sauerwald, & Peng, 2019; Zhu, Xia, & Makino, 2015). As shown in Table 1, prior studies in this field have drawn upon the value creation or destruction arguments, identifying the factors that affect the performance of cross-border M&As, such as the size of the target firm (Aybar & Ficici, 2009), the cultural distance between the acquiring and target firms (Nicholson & Salaber, 2013), or the experience of the acquiring firm (Li, Li, & Wang, 2015). The most common measure of the performance of cross-border M&As are the cumulative abnormal returns recorded by the acquiring firm in the stock market. However, to date, this has yielded mixed empirical findings. For instance, whereas several studies (e.g., Du & Boateng, 2015; Kling & Weitzel, 2011; Li et al., 2015) have reported positive abnormal returns for the shareholders of the acquiring firms, others (e.g., Aybar & Ficici, 2009) have reported negative ones.

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Three critical issues have been overlooked in the study of the performance of cross-border M&As conducted by firms from emerging markets, and particularly from China. First, prior studies have only examined the performance of the acquiring firms, totally ignoring that of the target ones. Recent studies have suggested that, in addition to caring about their own growth, the acquiring EMNCs should also consider that of their target firms (Clegg & Voss, 2018). Second, prior studies have often measured post-acquisition performance by a single yardstick, such as stock market reaction (e.g., cumulative abnormal returns), ignoring the fact that M&As involve a process (Jemison & Stinkin, 1986), and that acquisition performance is a multi-dimensional construct (Cording, Christman, & Weigelt, 2010; Meglio & Risberg, 2011). In their international acquisitions, EMNCs usually focus on the reverse knowledge and capability transfer, rather than on immediate returns (Luo & Tung, 2018). The mere study of short-term events is thus not appropriate in this research context. Multiple measures need to be used to capture EMNC post-acquisition performance, such as firm profitability (ROA and ROS) and innovativeness (Zollo & Meier, 2008). Third, prior studies have examined post-acquisition performance across various industries, thus failing to take into account the idiosyncratic impact of the nature of the high-tech industry on the results. The knowledge-intensive nature of the high-tech industry—which is often characterized by the acquisition of complex knowledge-based resources overseas (Luo & Tung, 2018)—makes it a unique target for EMNC international acquisitions. Therefore, restricting a study's focus on this single industry provides a research context suited to yield insights into EMNC strategic asset-seeking M&As.

The prior research on cross-border M&As in the high-tech industries, as shown in Table 2, has largely focussed on the strategic decisions made by firms from developed markets (e.g., Benou & Madura, 2005; Ragozzino, 2006; Zaheer, Hernandez, & Banerjee, 2010). Yoon and Lee



(2016) is the only study to examine the performance of technological M&As conducted by Chinese firms; however, it examines the performance of the acquiring firms, ignoring that of the target ones. A noteworthy contribution made by this research field is that it has included multiple measures of high-tech M&A performance, such as sales growth (e.g., Kenny & Fahy, 2011) and innovation performance (e.g., Ahuja & Katila, 2001; Hagedoorn & Duysters, 2002). Overall, the study of the performance of cross-border M&As in the high-tech industries conducted by Chinese firms still presents ample room for development.

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We believe that an effective way to fill the research gaps recognized in the prior literature on the performance of cross-border M&As in the high-tech industries conducted by Chinese firms is to consider a broader range of post-acquisition performance measures and simultaneously take into account both the acquiring and target firms (Meglio & Risberg, 2011; Schiffbauer, Siedschlag, & Ruane, 2017; Zollo & Meier, 2008). In the next section, we explain the theoretical foundation of our research.

#### The process view of EMNC post-acquisition value creation

The process perspective of M&As has been widely used in recent studies to explain the strategies and performance of EMNCs in their international acquisitions (e.g., Ai & Tan, 2019; Yaprak, Demirbag & Wood, 2018; Wang, Sørensen, & Moini, 2018). The process perspective proposed by Jemison & Sitkin (1986) proclaims that M&As are not one-off deals. The M&A process starts with pre-deal actions—such as initiation, target selection, bidding, negotiation, valuation—and post-deal ones—such as a learning and integration phase that involves a

successful transfer of resources and capabilities (Haspeslagh & Jemison, 1991; Welch et al., 2019). Several of the challenges encountered in the post-acquisition phase are affected by the decisions made in the pre-deal one. In fact, the pre-acquisition strategic, organizational, and cultural fits (Larsson & Finkelstein, 1999) only determine the potential for synergy. The extent to which that potential is realized depends on the acquirer's ability to effectively manage the post-acquisition resource and capability transfer process (Graebner et al., 2017). Therefore, the arguments advocating for M&A value creation or destruction need to consider the entire M&A process, especially the post-acquisition phase.

The process perspective is in line with and complements other views on EMNCs, such as the springboard perspective (Luo & Tung, 2018), which suggests that cross-border M&As provide EMNCs with opportunities to acquire strategic resources and capabilities, achieve accelerated internationalization, overcome latecomer disadvantages, and enhance any competitive advantages. Yet, most studies conducted from the springboard perspective have focussed on the entrance stage of the EMNCs' global expansion, failing to shed light on their post-springboard performance. For example, Luo and Tung (2018) highlighted this knowledge gap and called for a greater recognition of the post-acquisition integration process, which occurs after the springboard act has unfolded. The authors argued that the success of a springboard act depends on firm-specific organizing and managing capabilities, and that the challenge for EMNCs “... *pertains to their weak skills in organizing the transfer, diffusion, and integration of what they have acquired abroad with what they already possess at home*” (Luo & Tung, 2018, p.147).

The post-acquisition performance of acquiring firms

In order to mutually transfer their embedded resources and capabilities, the acquiring and target firms need to achieve an adequate level of integration (Ranft & Lord, 2002), which aids in

the transfer of tacit and intangible resources by creating a unified social community (Zander & Zander, 2010). However, it also increases the operational and coordination costs and triggers organizational conflicts, such as cultural clashes and employee resistance (Weber, Shenkar, & Raveh, 1996). Thus, the level of integration needs to be carefully tailored, being contingent on the characteristics and capabilities of both parties.

Compared with their developed country counterparts, EMNCs seem particularly susceptible to any adverse effects involved in the process of managing post-acquisition integration and capability transfer; this is due to the following two reasons. First, EMNCs are found to be motivated to acquire complementary—rather than similar—strategic assets (Zheng, Wei, Zhang, & Yang, 2016). The value creation process involving complementary resources and capabilities is more complex, because the benefits of complementarity have to be created through previously non-existent combinations of less familiar resources (Zaheer et al., 2013). Second, most EMNCs seeking rapid internationalization are still in their infancy (Ramamurti & Hillemann, 2018). They thus generally lack sufficient talents and capabilities to deal with the significant challenges and obstacles that emerge in the process of communicating and collaborating with target firms located in institutionally and culturally distant countries (Luo & Tung, 2018; Peng, Wang, & Jiang, 2008). The relatively weak absorptive capacity of EMNCs may also hinder the transfer of the desired strategic assets (Ai & Tan, 2018).

Despite the difficulties of creating value in cross-border M&As, recent studies have suggested that EMNCs, and particularly Chinese ones, have unique advantages in the management of post-acquisition integration and the reverse transfer of capabilities (Ai & Tan, 2018; Luo & Tung, 2007). First, being latecomers in the global market, EMNCs are likely to learn from the failures of other firms and enjoy late-mover advantages (Luo & Tung, 2007). Ai & Tan (2018) found that the late-mover-related knowledge held by Chinese MNCs' influences the reverse transfer of

knowledge by directly improving their absorptive capacity and contributing to build a harmonious organizational climate suited to facilitate such transfer. Second, in recent years, Chinese markets have outperformed developed ones in terms of economic growth and potential market size, which has led to strong domestic market performance for Chinese acquirers. Ai & Tan (2019) suggested that the home market performance of Chinese MNCs is positively correlated to the creation of a favourable organizational atmosphere suited to foster the post-acquisition transfer of capabilities from the target firms to the acquiring ones. Third, Chinese MNCs tend to adopt a ‘light-touch’ integration approach (Liu & Woywode, 2013) that involves very little or no post-acquisition integration in the management of their target firms, which have stronger technological resources and capabilities (de Oliveira & Rottig, 2018). Although the low level of integration linked to a light-touch approach does not favour the transfer of capabilities, Liu & Meyer (2018) claimed that the personal characteristics—such as the ability and motivation—of individual boundary spanners can facilitate reverse knowledge transfer in the international acquisitions conducted by Chinese MNCs. The authors also found that Chinese acquirers use supportive human resource management practices to foster the transfer of knowledge from subsidiaries to headquarters.

In summary, the unique advantages held and approaches taken by Chinese MNCs in the post-acquisition process are likely to help them realize the synergy potential of their cross-border M&As. Given that the performance of overseas acquisitions can be simultaneously measured in terms of firm profitability and firm innovation (King, Dalton, Daily, & Covin, 2004; Meglio & Risberg, 2011), we develop our hypotheses in regard to the performance of Chinese acquirers in the high-tech industries as follows:

**Hypothesis 1a:** Chinese firms conducting high-tech cross-border M&As will experience positive returns in terms of firm profitability.

**Hypothesis 1b:** Chinese firms conducting high-tech cross-border M&As will experience positive returns in terms of firm innovation.

The post-acquisition performance of the target firms

The performance of the target firms in cross-border M&As conducted by Chinese MNCs is a natural extension of our above arguments. Chinese MNCs seem to focus on the reverse transfer of resources and capabilities from their target firms (Ai & Tan, 2018); this is due to their strategic intent, which involves their acquisition of strategic assets to compensate for their disadvantages (Luo & Tung, 2018). Nevertheless, the empirical evidence suggests that, in international acquisitions conducted by Chinese MNCs, the advanced firms acquired also benefit in terms of upgrading their capabilities and learning. In their recent case study, He, Khan, and Shenkar (2018) found that the capabilities of acquired subsidiaries are enhanced via process, product, functional, and inter-sector upgrading. Chinese acquirers facilitate the capability upgrading process of their subsidiaries as impellers and co-learners. The rationale underlying the efforts made by Chinese MNCs to upgrade their target firms' capabilities is twofold. First, the acquired foreign firms are the sources of the strategic assets to be transferred to the Chinese acquirers. The internationalization steps taken by EMNCs are deliberately designed as part of grand plans and long-term strategies aimed at establishing their competitive positions more solidly in the global market (Luo & Tung, 2018). Accordingly, in order for the Chinese acquirers to leverage their technology in the long run, the acquired firms need to be sources of technology and innovation (Puraam & Srikanth, 2007). The literature suggests that high levels of post-acquisition structural integration hinder the acquiring firms' reliance on the acquired firms as independent sources of ongoing innovation (Puranam, Singh, & Zollo, 2006). Therefore, the light-touch integration approaches widely used by Chinese acquirers in the high-tech industry represent a powerful tool

in preserving their targets' autonomy—and thus their capacity for innovation (Liu & Woywode, 2013). Moreover, the recent literature suggests that Chinese MNCs work with their acquired foreign firms to create strategic assets in the post-acquisition stage. Yakob, Nakamura, and Strom (2018) explained how Geely harnessed, absorbed, and augmented the existing assets of Volvo and jointly created new strategic ones. The authors defined the creation of strategic assets as the carrying out of new and/or old activities to create technological innovativeness and increase an R&D capacity with the potential to benefit both the acquiring and acquired firms.

Second, upgrading the capability and enhancing the performance of their target firms may help Chinese acquirers to achieve internal legitimacy<sup>2</sup> (Zhang et al., 2018). High levels of internal legitimacy lead to high levels of acceptance and approval by target firm employees, which foster an organizational atmosphere favourable to the transfer of knowledge and capability within the combined entity (Ai & Tan, 2019; Zander & Zander, 2010). Previous studies have suggested that Chinese acquirers usually have a money-injection plan designed to solve any financial issues faced by their acquired firms (Deng, 2012). Such capital support can help the acquired firms benefit from the established advantages held by Chinese MNCs' in their home country in terms of cheap labour, flexible institutions, and governmental support (Delios & Beamish, 2001). In summary, upgrading the capability of target firms in cross-border M&As is likely to enable them to experience positive returns in both profitability and innovation. Therefore, we propose the following hypotheses:

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<sup>2</sup> Legitimacy is “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574). Internal legitimacy refers to acceptance and approval by managers, major owners, employees, subsidiaries or other internal stakeholders (Zhang et al., 2018).

**Hypothesis 2a:** the target firms of cross-border M&As in the high-tech industries conducted by Chinese firms will experience positive returns in terms of firm profitability.

**Hypothesis 2b:** the target firms of cross-border M&As in the high-tech industries conducted by Chinese firms will experience positive returns in terms of firm innovation.

## Methods

### Data and data collection

We collected data on foreign market entries involving Chinese cross-border M&As in the high-tech industries from the Thomson Reuters Securities Data Company Platinum acquisition database—the largest database of international acquisitions for the 1990-2014 period. To be selected, the cross-border M&A needed to have been completed by a publicly held firm, and its transaction value announced. In addition, we obtained data on financial and innovation performance from Bloomberg—an online database that provides current and historical financial quotes, stock market indices, and statistics on more than 52,000 companies worldwide. To ensure the availability of data from secondary sources, we limited our sample population to public firms and then excluded those cases in which complete data on the firms' characteristics were unavailable. The final sample consisted of 1,340 cross-border M&A deals.

### Measures

*Performance of cross-border M&A*—the dependent variable in this study—was operationalized in three different ways: return on assets (*ROA*) and return on sales (*ROS*)—representing the profitability of the firms—and the amount of intangible assets (*Intangibles*) that add value to firms—representing their innovativeness. To capture the profitability of both the acquiring and target firms, and following previous acquisition studies (e.g., Krishnan, Miller, & Judge, 1997), we measured the average ROA and average ROS over the two-year period

following the cross-border M&A. This two-year window was set to allow sufficient time to capture the long-term impacts of post-acquisition integration and knowledge transfer (Zollo & Meier, 2008; Colman & Lunnan, 2011).

To measure the firms' innovative performance, we considered not only the number of patents measure widely used in previous studies (e.g., Ahuja & Katila, 2001) but also the intangibles one—i.e., nonphysical assets, including intellectual property (e.g., patents, trademarks, and copyrights), customer relationships, and brand names. To measure this variable and using data obtained from Bloomberg, we took the natural logarithm of the average value of the *Intangibles* over the two-year period following the cross-border M&A.

As a robustness check, we ran additional analyses using alternative measures for the post-acquisition performance. For instance, we measured the difference between *ROA*, *ROS* and *Intangibles* two years after a given acquisition and the year prior to the acquisition to observe the change in performance (Ellis, Reus, Lamont, & Ranft, 2011). Moreover, we tried a longer observation window, from the two-year window to a three-year and five-year one, to observe the impact of cross-border M&As on both acquiring and target firms. Finally, we examined the number of patents variable used in prior studies to measure innovative performance. As we obtained the same results from the robustness check, the three measures mentioned above were used in the following analysis.

## **Results**

### **Descriptive statistics**

Figure 1 shows the numbers and total value (in millions) of cross-border M&As conducted by Chinese firms in the high-tech industries between 1990 and 2014. Until 1997, both the number and value of deals stay low. Between 1997 and 2000, the number of deals increases dramatically, while their value decreases. From 2000 to 2007, the number of deals keeps increasing, then



declines a little, but increases again to reach another peak in 2014. Similarly, the value of deals increases, reaching two peaks in 2008 and 2014.

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Regarding the industry sector distribution, 58 % of the acquiring firms were from the high-tech industries and 42% were from others (see Table 3). Using the first two-digit SIC codes to analyse the acquiring firms, 33.05% of them were from the finance industry, followed by the manufacturing industry (28.74%) and the service industry (25.93%). In terms of the target firms' industries, 40.73% were from computer programming services, followed by electronic and other electrical equipment/components (19.90%) and communications (12.64%).

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Regarding the distribution of the target countries, 536 deals (40%) had involved target firms from developed markets and 804 (60%) firms from developing ones (see Table 4). For the specific countries, the top three were the United States (19.67%), Hong Kong (18.32%), and Japan (7.82%), followed by Singapore and Australia. Most of the countries were located geographically in Asia.

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Finally, in terms of the distribution of ownership, 496 deals (36.99%) involved full ownership, and 183 (13.65 %) majority ownership—totalling 50.64% (see Table 5). Minority ownership was

also popular, totalling 31.82%. Very few instances of equal ownership were found in the data (1.36%). No information was available for the remaining 16.18% of M&As.

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The firm profitability and innovativeness of cross-border M&As conducted by Chinese firms

The results of the empirical analysis of firm profitability (*ROA* and *ROS*) and innovation (*Intangibles*) are presented in Table 6. A one sample test of means (t-test), comparing the mean of a sample to a pre-specified value and testing for a deviation from that value, is adopted to verify if post-acquisition performance of acquiring or target firms is positive. As shown, both the results of t-tests for the mean *ROA* ( $t = -2.97$ ,  $p > 0.05$ ) and *ROS* ( $t = -1.80$ ,  $p > 0.05$ ) of the acquiring firms were negative and statistically not significant. As a result, H1a was not supported; we did not find any significant evidence to support that Chinese acquirers would experience positive returns in terms of profitability following high-tech M&As. This firm profitability finding contradicts those of other studies on the positive returns of overseas M&As conducted by EMNCs (e.g., Bhagat et al. 2011; Boateng et al. 2008), yet it is consistent with the view that strategic asset seeking EMNCs focus on gaining synergies based on complementarity rather than similarity (Ai & Tan, 2020). Growth based on complementarity is difficult to be realized and captured by accounting and market return (Zaheer et al., 2013). The mean *Intangibles* of the acquiring firms was positive and statistically significant ( $t = 4.62$ ,  $p < 0.001$ ). Unlike H1a, H1b was supported by the measure of firm innovation, empirically proving that high-tech cross-border M&As conducted by Chinese firms are, on average, associated with positive returns in terms of firm innovation. This finding supports the process view of EMNCs' cross-border M&As (Ai & Tan, 2020), suggesting that Chinese acquirers do create value via post-acquisition knowledge and capability transfer (Liu & Meyer, 2018).

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Similarly, the results of t-tests for the mean *ROA* and *ROS* of the target firms, shown in Table 6, were negative but not statistically significant ( $p < 0.05$ ). As a result, we did not find significant evidence to support H2a, which posited that target firms in high-tech cross-border M&As would experience positive returns in terms of profitability. However, the mean *Intangibles* of the target firms was positive and statistically significant ( $t = 2.30$ ,  $p < 0.05$ ). Thus, like H1b, H2b was supported, indicating that, in high-tech cross-border M&As initiated by Chinese firms, target firms, on average, experience positive returns in terms of firm innovation. As a result, the value creation argument is consistently supported by the innovation performance—but not by the profitability performance—of both Chinese acquiring firms and their targets in high-tech cross-border M&As. This finding supports the recent studies suggesting that EMNCs' strategic asset seeking M&As help two-way knowledge transfer and upgrade the capability of both the parent and foreign acquired subsidiary firms (He et al., 2018). Moreover, these results show the importance of the use of multiple measures of acquisition performance and of the examination of both the acquiring and target firms; this is because we can then clearly see *whether* and *how* cross-border M&As affect the performance of acquiring and target firms.

To further verify if the results shown in Table 6 would vary in some conditions, we used several two-sample t-tests to explore if the location of target country (Nicholson & Salaber, 2013; Deng & Yang, 2015), industry relatedness (Ahuja & Katila, 2001; Orsi, Ganzaroli, De Noni, & Marelli, 2015), and the impact of the financial crisis (Hasija, Liou, & Ellstrand, 2020) would affect acquisition performance. Firstly, the results of the location of target country showed that *ROA* of acquiring firms ( $t = 2.866$ ,  $p < .05$ ) and *ROA* of target firms ( $t = 4.033$ ,  $p < .01$ ) were higher

when target countries were emerging markets rather than developed markets. No significant difference was found in *ROS* and *Intangibles* of both acquiring and target firms in developed markets as opposed to emerging markets. Therefore, the motives that drive high-tech M&As by Chinese firms to enter developed or emerging markets might partially affect firm profitability but not affect firm innovativeness. Secondly, prior studies have shown that industry relatedness is related to acquisition performance (e.g., Ahuja & Katila, 2001; Orsi et al., 2015). However, we did not find significant support in this study across various measures for firm profitability and innovativeness. Therefore, the results shown in Table 6 will not vary no matter whether acquiring and target firms are both in the high-tech industries or not. Finally, in terms of the influence of significant event such as the financial crisis (Hasija et al., 2020) on post-acquisition performance, we did not find significant differences between high-tech M&As completed before the financial crisis and those completed after the financial crisis across various performance measures for both acquiring and target firms.

## **Discussion**

With the increasing importance of Chinese firms in global investment (UNCTAD, 2015), increasing numbers of researchers are becoming interested in whether high-tech cross-border M&As conducted by Chinese firms create value for the acquirers and their targets. Diverging from the existing research, this study uses multiple indicators to measure the effects of cross-border M&As on both the acquiring and target firms.

In terms of the trend of the high-tech cross-border M&As conducted by Chinese firms between 1990 and 2014, the results of this study show that, until 1997, both the value and number of deals remained low. Between 1997 and 2000, the number of M&As increased dramatically, while their value remained low. From 2000 to 2007, the number of deals kept increasing. Then it declined a little, and increased again to reach another peak in 2014. Similarly, the value of deals

generally increased between 2001 and 2014, reaching two peaks in 2008 and 2014. Moreover, in terms of the distribution of industries, most of the acquiring firms were from the high-tech industries and the target ones were in computer programming services. The most popular destination countries of these deals were, in descending order, the United States, Hong Kong, and Japan. Finally, the most popular choice of ownership type was full ownership, followed by minority ownership.

To understand whether the acquiring Chinese firms and their targets would both experience positive outcomes after the M&As, we used two accounting-based indicators (*ROA* and *ROS*) and one innovation-related one (*Intangibles*) to measure both the acquiring and target firms. The results of this study show that, although the challenges and obstacles involved in cross-border M&As are significant, the light integration approach taken by Chinese firms—which preserves the target firms’ structures and systems while simultaneously emphasising sufficient coordination and collaboration between the acquiring and target firms—enables both the acquiring and target firms to experience high performance in terms of firm innovation (but not necessarily in terms of firm profitability). Our results thus confirm that the use of multiple performance measures in relation to both the acquiring and target firms provides robust and new insights into the differing performance of cross-border M&As.

#### Theoretical contributions

Our study contributes to the literature on cross-border M&As and EMNCs in the following ways. First, it contributes to the literature on the growth of EMNCs by empirically examining whether cross-border M&As create value for the emerging market acquirers and their target firms. Prior research on the performance of EMNC cross-border M&As focussed on their value-creating potential. Being often underpinned by resource-based and/or institutional theory, these studies argue that EMNCs have good reason to generate positive abnormal returns/value for their

shareholders from their cross-border M&As; because acquisitions provide ready access to valuable, innovative, and location bounded resources and capabilities that can be integrated with the EMNCs' own unique local competencies and institutional advantages (e.g., Gubbi, Aulakh, Ray, Sarkar, & Chittor, 2010). However, the contentions of this stream of research are mostly based on the expectations of the stock market in relation to the synergy potential of these acquisitions. Whether such potential can be successfully realized in the post-acquisition integration phase, however, remains unclear (Graebner et al., 2017). Underpinned by the process perspective of M&A performance, this study reveals an alternative performance mechanism of the international acquisitions conducted by EMNCs, one based on capability transfer and upgrading logics. We argue that the extent to which the expected synergy potential is realized depends on the acquirer's ability to effectively manage the post-acquisition process (Gomes et al., 2013; Liou & Rao-Nicholson, 2019). By measuring ROA, ROS, and innovation performance over the two years immediately following the acquisition, we uncovered and presented the long-term post-acquisition performance of cross-border high-tech M&As conducted by Chinese firms.

In addition, our findings have important implications for the springboard view of EMNC internationalization (Luo & Tung, 2007). Research underpinned by the springboard perspective mostly focusses on the rationale of EMNC internationalization, failing to uncover the post-springboard performance (Luo & Tung, 2018). Our findings show that, once the general integration is completed (in two years), international springboard acquisitions do not bring accounting profitability to either the emerging market acquirers or their acquired firms, despite both parties benefitting from post-acquisition knowledge transfer—as measured by their innovation performance. This is in line with Luo and Tung (2018), who proposed the springboard internationalization process of EMNCs as an upward spiral process in which bringing home the resources and capabilities gained from international acquisitions takes a long time (such as two

years), and helping to realize the capability upgrading of both the parent and foreign acquired subsidiary firms an even longer one (He et al., 2018). Previous studies also validate our finding by arguing that Chinese strategic asset seeking acquirers focus mainly on transferring knowledge and capabilities rather than improving the profitability of their acquired firms (Ai & Tan, 2020).

Recently, a stream of research has been explicating how, in order to succeed in their international acquisitions, EMNCs strategically integrate their targets and take a long-term orientation in facilitating the transfer of knowledge (Ai & Tan, 2019; He et al., 2018; Liu & Meyer, 2018). However, these studies are based on qualitative data. We contribute to this stream of research by empirically proving that both the emerging market acquirers and their target firms achieve good innovation performance following integration and the transfer of knowledge. The mechanisms and antecedents disclosed in previous qualitative studies, such as boundary spanners, HRM practices, home market profits, and acquirer attractiveness and absorptive capacity, are deserving of being tested in future research (Dhir et al., 2020).

Moreover, this study provides implications for the literature on the acquisition of technology by extending the discussions of its performance to the context of EMNCs venturing abroad. Prior research has suggested that acquisitions of technology are particularly susceptible to the adverse consequences of the integration dilemma: low levels of integration would hamper the process of knowledge transfer (Puranam et al., 2006), whereas high levels could lead to high coordination costs and result in cultural conflicts and employee resistance (Stahl, Maznevski, Voight, & Jonsen, 2011). The difficulties presented by this paradox could be amplified when EMNCs seek to acquire technology from targets from developed countries (Cooke, Wu, Zhou, Zhong, & Wang, 2018; Luo & Tung, 2018). The results of our study extend the current understanding of this business phenomenon by showing that Chinese acquirers can gain innovation performance from

their acquisitions of technology. To further advance our knowledge, further research could explain the rationales and mechanism behind EMNC acquisitions of technology.

Second, this study makes a valuable methodological contribution to the M&A literature by empirically proving that the question of whether cross-border acquisitions create value needs to consider multiple measures to capture the impact of cross-border M&As on the acquiring and target firms—which the literature suggests would provide more robust results than the use of a single measure (King et al. 2004; Lebedev, Peng, Xie, & Stevens, 2015). This study tested the performance of both acquiring and target firms and used multiple measures (related to profitability and innovation). Although profitability has become a key measure for those scholars who seek to understand how a firm's resources create value through its operational and organizational efficiency (Zollo & Meier, 2008), it is still not adequately emphasised in cross-border M&A settings, as indicated in Tables 1 and 2. Similarly, the important consideration of innovation performance in high-tech industries (Ahuja & Katila, 2001; Yoon & Lee, 2016) has been ignored in the extant literature on the acquisition performance of firms from emerging markets. By exploring multiple measures of acquisition performance for both acquiring and target firms, we have provided a more integrative view of how overseas M&As can be understood within the broader context of Chinese firms' corporate development portfolio. Although different performance measures could tell different stories (Meglio & Risberg 2011), the results of our study provide evidence that both the accounting-based measures of the cross-border M&A performance of the acquiring and target firms tell an identical story; i.e., that international acquisitions by Chinese firms in the high-tech industries do not create value in relation to firm profitability. Conversely, the measurement of firm innovation shows that the value creation argument of cross-border high-tech M&As conducted by Chinese firms is strongly supported by both the acquiring and the target firms.



## Managerial implications

In addition to its theoretical contributions, this study has far-reaching implications for those managers who are actually implementing or potentially contemplating foreign acquisitions to create new value. First, the finding related to acquisition performance measured by multiple accounts informs us that overseas acquisitions present both challenges and opportunities to firms from emerging markets. Once they have decided to adopt cross-border M&As as a primary strategy to enter foreign markets, managers need to carefully consider the performance of this strategy and ways to improve its effectiveness over an extended period. Second, our findings show that both Chinese acquirers and their target firms experience positive innovation outcomes but not profitability. Chinese acquirers should therefore think about how to transform their transferred strategic assets into firm profitability. For example, the managers of acquiring firms may find it helpful to improve their managerial and marketing skills in parallel with their technological and innovation capabilities. In addition, in order to overcome barriers in cross-border settings, managers from emerging markets should particularly take into account the extent to which their firms could adopt different strategies (e.g., hiring foreign-educated managers with a deep understanding of institutional and cultural differences) in mediating the institutional constraints on the effectiveness of managing their targets. Finally, our results suggest that a light-touch integration approach facilitates firm innovation in the setting of cross-border M&As in the high-tech industries conducted by Chinese firms; managers of EMNCs could take this into consideration in improving their innovation capability.

## Limitations and future research

This study has several limitations that may offer promising opportunities for future research. First, due to data availability considerations, only public firms with sufficient information in relation to their characteristics and performance were included in this study's sample. Second,

many factors affecting M&A performance could be included in future research, which could adopt statistical modelling, such as multivariate regression. Factors such as country-level institutional or cultural distance (Meyer & Peng, 2005; Nicholson & Salaber, 2013), and target firm status and absorptive capability (Dikova, Rao, & van Witteloostuijn, 2010; Haapanen et al., 2019; Lebedev et al., 2015; Xie & Li, 2013) should be considered. Family ownership and business group affiliation could also be examined in future research. While family ownership minimizes traditional principal-agent conflicts, it also creates agency issues, wherein majority shareholders misappropriate firm value at the expense of minority ones (Chrisman & Patel, 2012). Finally, in addition to considering the individual effects of country-level or firm-level factors, future studies may consider their combined or integrated effects from the different levels that affect the performance of acquiring and target firms, thus painting a comprehensive picture of the exponential surge of cross-border acquisitions conducted by Chinese firms.

## **Conclusion**

Drawing upon the process view of M&As, we have provided much needed empirical evidence on the post-acquisition performance of cross-border M&As conducted by Chinese firms in the context of high-tech industries. Multiple measures of firm performance (ROA, ROS, and innovation) were used in exploring the profitability and innovativeness of both the acquiring and target firms. This study's value creation hypotheses were supported by the results obtained in relation to the innovation measure, but not by those related to firm profitability. Our findings contribute novel insights into the understanding of the post-internationalization performance of EMNCs, and support those extant conceptual and qualitative empirical papers that have suggested that EMNCs can achieve post-acquisition knowledge transfer and capability upgrading for both themselves and their target firms.

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Figure 1 Frequency and value of cross-border high-tech M&As completed by Chinese firms, 1990-2014

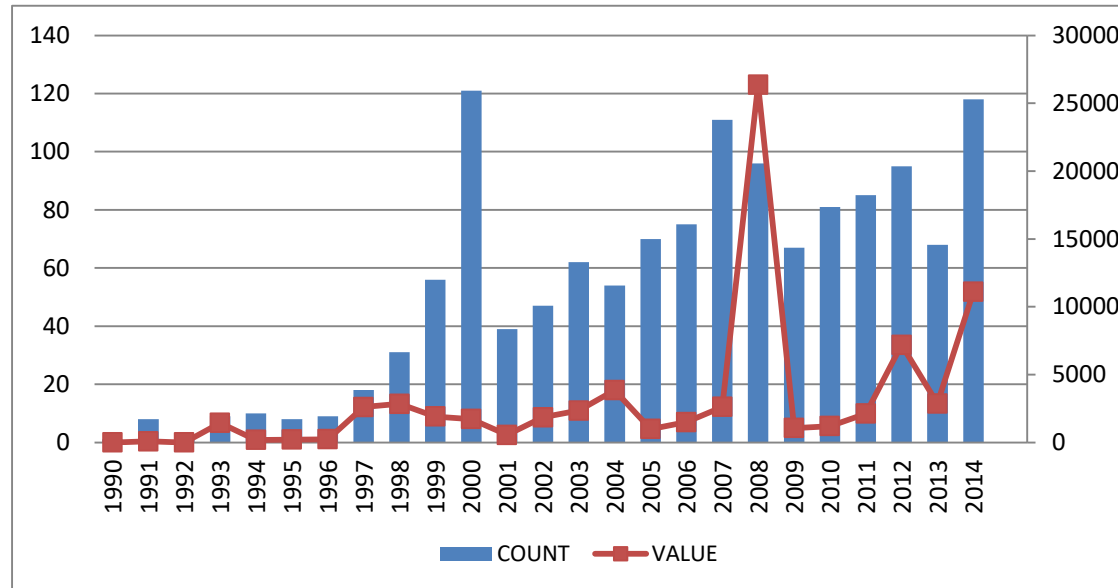


Table 1 Sample of research on the performance of cross-border M&As by Chinese firms

Articles	Setting	Dependent variables	Important findings
Aybar and Fici (2009)	Cross-border M&As conducted by firms from 13 emerging markets between 1991 and 2004	Cumulative Abnormal Return	International acquisitions do not create value but point to value destruction. Target size, target ownership (public vs. private), and bidder structure (diversified vs. non-diversified) positively affect bidder value, while the high-tech nature of the acquisitions and their related industry sectors negatively affect bidder value.
Bhagat, Malhotra, and Zhu (2011)	Cross-border M&As conducted by firms from nine emerging countries between 1991 and 2008	Cumulative Abnormal Return	Emerging market acquirers experience a positive and significant market response of 1.09% on announcement day. Also, in the cross-section, acquirer returns are positively correlated with better corporate governance measures in the target country.
Boateng, Wang, and Yang (2008)	Cross-border M&As conducted by Chinese firms between 2000 and 2004	Cumulative Abnormal Return	Cross-border M&As create value for Chinese acquiring firms. In addition, international acquisitions conducted by Chinese firms are primarily motivated by market development; to enable faster entry into new markets, promote diversification, and obtain advanced technologies and other valuable resources.
Chen and Young (2010)	Cross-border M&As conducted by Chinese firms between 2000 and 2008	Cumulative Abnormal Return	Investors are sceptical of cross-border M&A deals when the government is the majority owner (i.e., principal-principal conflicts).
Du and Boateng (2015)	Cross-border M&As conducted by Chinese firms between 1998 and 2011	Cumulative Abnormal Return	Chinese bidders experience financial gains ranging from 0.4771% to 1.521% over a ten-day event window. State ownership, formal institutional distance, and reforms in foreign currency approval systems exert a significant impact on shareholder value.
Kling and Weitzel (2011)	Cross-border M&As conducted by Chinese firms between 2001 and 2008	Cumulative Abnormal Return; likelihood of undertaking cross-border M&As	Cross-border M&As conducted by Chinese firms create value for shareholders, but no more than domestic expansions. While state ownership predicts fewer deals, favourable board structures and corporate transparency explain higher M&A returns.
Li, Li, and Wang (2015)	Cross-border M&As involving Chinese listed firms between 2000 and 2011	Cumulative Abnormal Return	On average, cross-border acquisitions create market value for the acquirers' shareholders, but cultural distance is negatively related to the extent of such value creation. Larger firms, more experienced firms, and acquisitions conducted within the same industry are found to be less

			affected by cultural distance, emphasizing the importance of learning and absorptive capacity.
Nicholson and Salaber (2013)	203 Indian and 63 Chinese cross-border M&A deals conducted between 2000 and 2010	Cumulative Abnormal Return	International acquisitions conducted by firms from both countries lead to significant shareholder wealth creation, with acquisitions into developed countries generating higher returns. Indian shareholders are more likely to benefit from deals in small cultural distance countries, whereas Chinese investors gain from the cross-border expansion of manufacturing firms.
Yang (2015)	Panel data of cross-border M&As conducted by emerging market firms between 2000 and 2012	Cumulative Abnormal Return	Investors give high valuation to those emerging market firms that choose high ownership participation in cross-border M&As.

Table 2 Sample of research on the performance of domestic and cross-border M&As in the high-tech industries

Articles	Setting	Dependent variables	Important findings
Ahuja and Katila (2001)	Panel data (1980-1991) from the global chemicals industry	Innovation performance of acquiring firm	The absolute size of the acquired knowledge base enhances innovation performance, while its relative size reduces innovation output. The relatedness of the acquired and acquiring firms' knowledge bases has a nonlinear impact on innovation output.
Benou and Madura (2005)	3816 acquisitions in high-tech industries completed by US firms between 1980 and 2001	Cumulative Abnormal Return	The valuation effects are dependent on factors specific to the acquirers or targets.
Canace and Mann (2014)	IT sector technology-motivated joint ventures and M&As conducted between 1995 and 2003	Cumulative Abnormal Return	Markets react more favourably to the announcement of technology M&As relative to joint ventures for both IT and non-IT samples.
Hagedoorn and Duysters (2002)	201 M&As conducted between 1986 and 1992 in the computer industry	Technological performance	The technological performance of M&As is related to the high-tech sector. The so-called strategic and organizational fit between companies involved in M&As plays a role in improving the technological performance of companies.
Kenny and Fahy (2013)	A survey of 154 firms in the telecom industry in Ireland	International market share, international sales growth, and customer satisfaction	No support for the relationship between network resource combination, information sharing, and international performance.
Liu and Zou (2008)	133 Chinese high-tech industries	Innovation performance: the ratio of new products sales to the total sales	Foreign greenfield R&D by multinational firms in a host country significantly affect the innovation performance of domestic firms. Both intra-industry and inter-industry spillovers from foreign greenfield R&D.
Orsi, Ganzaroli, De Noni and Marelli (2015)	152 biopharmaceutical acquirers between 2001 and 2005	Ratio of patent citations	The effects of technological relatedness and managerial experience on post-M&A technological performance are highlighted.
Porrini (2004)	398 acquisitions conducted in the US by American firms in	Cumulative Abnormal Return	Alliance experience correlates with market returns and the results differ between high-tech and low-tech acquisitions.

	manufacturing industries between 1988 and 1998		
Ragozzino (2006)	A sample of domestic acquisitions of high-tech firms conducted by US bidders between 1992 and 2000	Cumulative Abnormal Return	New ventures experience lower average performance in general. Yet, they outperform established firms when the targets are privately held entities.
Sears and Hoetker (2014)	97 technological acquisitions conducted between 1995 and 2004	Cumulative Abnormal Return	The performance of technological acquisitions depends heavily on the overlap between the knowledge bases of the target and acquirer.
Yoon and Lee (2016)	BRICM firms in high-tech industries between 2000 and 2013	Cumulative Abnormal Return	The value creation nature is confirmed. Additionally, the number of patents owned by the targets shows a positive and significant effect on the stock performance of the acquirers. Finally, bilateral trade openness significantly and positively moderates the relation between the innovation capability of the targets and the acquirers' stock performance.
Zaheer, Hernandez and Banerjee (2010)	High-tech acquisitions conducted by US firms between 1990 and 1998	Cumulative Abnormal Return	Prior alliances with targets reduce information asymmetry to create 'partner-specific absorptive capacity' and yield superior stock returns on acquisition (not significant).

Table 3 Industry distribution of the sample

Industry	Percentage %
Acquiring firms	
High-tech	58
Others	42
Finance	33.05
Manufacturing	28.74
Service	25.93
Transportation	8.98
Trade	2.08
Others	1.23
Target firms (first two-digit SIC)	
73 Computer programming Services	40.73
36 Electronic equipment/Components,	19.90
48 Communications	12.64
28 Chemicals and allied products	9.99
87 Engineering, Accounting, services	5.82
38 Measuring, Analysing, and	5.10
Controlling Instruments	
35 Industrial/ Commercial	4.45
machinery computer equipment	
37 Transportation equipment	1.36

Table 4 Country distribution of the sample

Country	Percentage %
Developed	40
Developing	60
Top five Target Countries	
United States	19.67
Hong Kong	18.32
Japan	7.82
Singapore	7.82
Australia	6.59

Table 5 Ownership distribution of the sample

Ownership	Percentage %
Full	36.99
Majority	13.65
Equal	1.36
Minority	31.82
Unknown	16.18

Table 6 Average return on assets (*ROA*), return on sales (*ROS*), and amount of intangible assets (*Intangibles*)

Performance of cross-border M&A	Mean	T-Statistic	P-Value	
Acquiring firm				
ROA	-10.58	-2.97	0.9985	H1a is not supported
ROS	-0.499	-1.80	0.9640	H1a is not supported
Intangibles	2.23	4.62***	0.0000	H1b is supported
Target firm				
ROA	-12.81	-3.01	0.9985	H2a is not supported
ROS	-0.109	-2.41	0.9916	H2a is not supported
Intangibles	0.21	2.30*	0.0113	H2b is supported

\*p&lt;0.05; \*\*\*p&lt;0.001