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From Transaction to Co-creation in Geely's Acquisition of Volvo Cars: Impact on Innovation Output and Market Performance

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Abstract

The last decade has witnessed numerous cross-border mergers and acquisitions (M&As) undertaken by emerging market multinational enterprises (EMNEs). Only a few EMNEs achieve co-creation with the acquired partner by mobilising and enhancing their knowledge resources. This paper centres on how post-M&A co-creation is achieved and what its impacts are on the innovation output and market performance of firms. We employed an in-depth longitudinal case study of the acquisition of Volvo Cars by Geely, supplementing the case study with patent portfolio analysis and business analysis. We link innovation and cross-border M&A literature to address co-creation post-M&A. The findings showed how the high level of freedom given to the acquired firm allowed it to preserve innovation capacity and, later, successfully integrate with the acquirer. The patent portfolio analysis demonstrates that the firms' innovation outputs became more similar over time, demonstrating the successful knowledge integration achieved in the case.

Keywords: cross-border M&A, co-creation, Geely, Volvo, innovation output, market performance

1. Introduction

Emerging challengers are developing quickly and gaining resources that they are eager to put to use. As a result, the popularity of cross-border mergers and acquisitions (M&As) has grown steadily among emerging market multinational enterprises (EMNEs). In addition to providing access to Western markets, M&As may also become a source of technical manufacturing capabilities and advanced knowledge for EMNEs, particularly when these assets are scarce or difficult to develop in the domestic market. Although M&A transactions often generate positive effects on stock values, multiple challenges exist that pose risks for creating added value and sufficiently integrating the acquired assets (Deng, 2009; Li et al., 2016, Rouzies et al., 2019; Schweizer et al., 2022). One of the ultimate sought-after outcomes is co-creation, in which both parties dedicate resources to creating new knowledge leading to new value creation, delivery and capture. Numerous studies rely largely on quantitative methods to identify different elements affecting cross-border M&A performance and focus on financial indicators, stock market reaction, patents and acquisition data (e.g. Hain et al., 2016; Wang et al., 2020; Song et al., 2021). However, this approach lacks a deeper understanding of the processes and relations between the actors.

In this investigation, in addition to quantitative methods (used in later parts related to the patent portfolio and technological base analysis of firms), we employed a qualitative approach based on an in-depth longitudinal case study of the cross-border acquisition of Volvo Cars by Geely to delve into emerging developments and their trajectories over time. M&A is a complex process that creates uncertainty for both firms, and in the case of EMNEs acquiring Western firms, various types of cognitive distances, as well as geographic distances, can make the transaction convoluted. Geely, however, managed to integrate acquired assets and change a poorly perceived image at the beginning into a positive story. Our research investigates the process that led to this outcome and seeks to answer the following question: *How can EMNEs transition from a fragmented and transactional relationship with the acquired firm to integration and co-creation?*

This main research question is further supplemented by two sub-questions seeking to uncover and better understand post-M&A changes in the firms' 1) patent portfolios and technological bases and 2) market performance.

With regard to the first, co-creation by both actors requires more than the capture of successful assets; it also involves integration across multiple dimensions, including innovation processes. Uncertainty in the acquired firm after the transaction must be addressed correctly to prevent brain drain and other possible negative outcomes that can manifest post-M&A. If these issues are successfully overcome, then the desired outcome of innovation activities post-M&A can be reflected in the number of newly filed patents. Another, and perhaps even more important, indication of successful integration can be seen in how the patent portfolio and technological base of both firms become more alike. We examine this aspect of convergence in relation to knowledge co-creation in the innovation processes post-M&A, and in the first sub-question, we seek to answer the following: *How does M&A influence the similarity between the patent portfolios and technological base of firms?*

With regard to market performance, the extant literature (e.g. Boateng et al., 2008) suggests that in cross-border M&As, although actors enter the deal with different technological bases and positions in the markets, both can often gain access to the new markets. However, due to their different starting points, actors cannot transfer knowledge in the same way, and consequently, their market performance differs. Over time, this situation may change and co-creation may have an influence on the market performance of firms. We therefore seek to answer another sub-question: *How does knowledge co-creation influence the market performance of actors?*

The remainder of this paper is organised as follows. In Section 2, we review the existing literature on cross-border M&A, with a focus on organisational integration. In Section 3, we present the methodology, which consists of the qualitative and quantitative parts. In Section 4, we describe the case, followed by an analysis of the processes that led to the co-creation and its effects in Section 5. In Section 6, we conclude the paper with a summary of our key findings and their relevance for companies and scholars conducting research in the cross-border M&A context.

2. Theoretical and Conceptual Considerations

2.1 Cross-border M&As and EMNEs

The M&A literature is vast and overlaps with diverse literature streams. According to Dezi et al. (2018), there are two main study streams focused on M&As: economic and corporate. The economic approach explores the overall impact of M&As on the economy and the economic system, ranging from purely financial-based studies on M&A transactions and shareholders to ‘industrial organisation’ studies exploring firms’ structures and how they affect performance (e.g. Coeurdacier et al., 2009; Guo & Clougherty, 2020; Kiymaz & Baker, 2008). Meanwhile, the corporate approach investigates firms involved in M&As, focusing particularly on their strategies and behaviours (Alvstam et al., 2019; Chen et al., 2015; Guo, 2013). In the scope of this study, we undertake a more corporate management approach to the literature and focus on corporate strategies that may impact the performance of an acquisition in a specific case. To do so, we consider the literature on cross-border M&As from emerging markets and their cultural impacts, as well as on post-merger integration and restructuring.

Cross-border M&As have interested scholars and practitioners for many decades. However, it was only relatively recently that this practice gained popularity among emerging market firms who, through M&As abroad, seek to avoid institutional constraints, gain access to new markets and upgrade their existing technological base—also called the knowledge base (Luo & Tung, 2007; Mathews, 2006). Some studies (e.g. Alon & McIntyre, 2008; Deng, 2012; Liu & Deng, 2014) have found that cross-border M&A was the primary internationalisation mode for Chinese firms who, among other reasons, were motivated to choose it because of the government policy ‘Go Global’, which promoted outward foreign direct investment (FDI) (Ström & Nakamura, 2014; Wang et al., 2012). Despite outward FDI targeting both developed and developing countries, there are differences between the types of businesses targeted in different localities. In developed countries, the main focus is on advanced technology and high-end brands, whereas in developing countries, firms usually look for infrastructure projects (Kaplinsky & Morris, 2009; Liu & Deng, 2014). Guo and Clougherty (2020) tested the effect of cross-border M&A on Chinese domestic productivity,

and their results showed a positive effect, with high-tech and business-related targets having a more decisive influence than low-tech and unrelated targets.

The reasons for the new wave of cross-border M&As can also be linked to increased competition at the local level and the rise of the information and communication technology industry. Maintaining a competitive edge (Hitt et al., 1998; Hitt, 2000; Useem, 2009) and responding quickly to the fast-paced global economic environment (Andersen, 1997; Kogut & Singh, 1988) have become crucial.

However, cross-border deals are not a guarantee of success. There are many barriers for EMNEs seeking to benefit from their cross-border acquisitions. A number of studies have identified a lack of familiarity with economically developed markets, which increases uncertainty among prospective advanced markets targeting stakeholders (Rui & Yip, 2008; Tingley et al., 2015). As a result, this uncertainty lowers the performance of the deals (Aybar & Ficici, 2009) or the integration levels and prevents knowledge transfer (de Beule et al., 2014; Rao-Nicholson et al., 2016; Rao-Nicholson et al., 2016b), with deal abandonment occurring in more extreme cases (Zhang et al., 2011).

Caiazza and Volpe (2015) identified three main research areas common among prominent studies on cross-border M&As: 1) factors affecting M&A decisions, 2) organisational and cultural integration and 3) assessment and performance indicators. Recent research has argued for a closer look into the M&As of EMNEs in advanced markets because of the information asymmetries that affect cross-border M&A success (Heinrichs & Dikova, 2019). In response to this and similar calls, this paper looks into the process of integration and performance indicators post-M&A between a Chinese EMNE and an acquired firm from the Western market.

2.2 Post-M&A Integration and Co-creation

Getting the integration strategy right is crucial for realising the desired performance post-M&A. Existing literature (e.g. Graebener et al., 2017; Zaheer et al., 2013) acknowledges that determining the optimal degree of integration is not as straightforward as it may seem, and that ‘the more the better’ approach does not always apply. In fact, integration often manifests itself as a double-edged sword. While it may be necessary for effective and efficient collaboration between the acquirer and the target firms, in

many M&As, a high degree of integration implemented with disregard for the autonomy and unique characteristics of the target firm may be counterproductive for an M&A's performance (Puranam et al., 2009; Zaheer et al., 2013).

To determine approaches to post-M&A integration as a multifaceted and dynamic process, several research streams have emerged. In their review and agenda of future research on the post-M&A integration process, Graebener et al. (2017) highlight the importance of three streams in particular: sociocultural integration, strategic integration and organisational learning.

Among the factors that may affect the process of integration in cross-border M&As, sociocultural factors are extremely important. According to numerous studies (e.g. Bauer et al., 2016; Cartwright & Schoenberg, 2006; Datta & Puia, 1995), cultural differences strongly influence the outcome of cross-border M&As, with most research indicating underperformance due to cultural differences. In nomothetic research with multiple cases, cultural differences have been measured using Hofstede's cultural distance (Chakrabarti et al., 2009; Erramilli, 1991; Kogut & Singh, 1988), which was later expanded by House et al. (2004) to the Globe model. Both models have inconsistencies (McCrae et al., 2008; Venaik & Brewer, 2008), and generalising the culture of millions of individuals to the country's score is not always useful in decision-making at a firm level. The majority of articles studying the effect of cultural factors on M&As are based on nomothetic research; however, 'case study contributions can be relatively greater by exploiting underutilized idiographic research benefits' (Bengtsson & Larsson, 2012, p. 150).

With regard to strategic integration, the literature centres on organisational and resource coordination and alignment. In addressing how synergieis between the acquirer and the target firms can be realised, Haspeslagh and Jemison (1991) proposed a typology based on the dimensions of strategic interdependence and organisational autonomy. In this prominent early work, which draws on the resource-based view (Barney, 1991), four distinct approaches to post-M&A integration are identified: holding, preservation, absorption and symbiosis. Within the 'holding' and 'preservation' approaches, the target remains relatively independent with both being characterised by a low level of strategic interdependence between the acquirer and the target firm. The 'absorption' approach entails a low level of organisational

autonomy and a high level of strategic interdependence, essentially leading to assimilation of the target by the acquirer. The ‘symbiotic’ approach is characterised by both a high level of interdependence and a high level of organisational autonomy, gradually leading to the dissolution of organisational boundaries and emerging new identities of the two organisations.

The literature on organisational learning also offers important insights into the critical aspects of post-M&A integration. As previously mentioned, the positive outcome of an M&A is not a result of acquired knowledge but rather the ability to absorb and integrate it into new products and processes. Cohen and Levinthal (1989) defined absorptive capacity (AC) as the capability of a firm to recognise, assimilate and commercialise the value of external knowledge. In an attempt to strengthen the conceptual underpinnings of AC, Lane et al. (2001) developed three basic dimensions of the concept further. From the perspective of joint ventures, cultural aspects and understanding of the other party’s knowledge were added to the first dimension of recognition. Assimilation was further expanded to the firm’s flexibility, adaptability and management skills in enabling it. Finally, the success of commercialisation relies on the capability of both firms to work strategically together. Zahra and George (2002) further reconceptualised AC as being situated in the processes—dynamic capability—rather than seen in financial statements. Consequently, the authors’ four dimensions—acquisition, assimilation, transformation and exploitation—focus more on the quality of the firm’s processes to transform potential AC into realised AC.

With the increasing number of M&As, scholars began to analyse the role of AC in the success or failure of transactions, focusing on M&As with technical objectives (Collins et al., 2009; Deng, 2010; Jo et al., 2016; Liu & Woywode, 2013). Deng (2010) analysed cross-border M&As and identified the ability to handle acquired knowledge as a critical determinant of the deal’s outcome. Furthermore, M&A success does not rely solely on administrative procedures but more on the post-M&A integration of processes that influence new products (Chen & Lin, 2011).

Taking the perspective of Chinese EMNEs, some studies show a limited knowledge transfer effect for Chinese firms’ cross-border M&A (Gugler & Vanoli, 2015). In many cases, they neglect tacit knowledge, mostly due to the cultural differences and deficiencies of staff (Ai & Tan, 2018). An essential

factor for successful knowledge transfer is routine compatibility, which makes organisational unlearning a vital task (Wang et al., 2017). These processes tend to become even more complicated when Chinese EMNEs target firms from advanced economies (Zahra et al., 2011; Zhang & Stenning, 2014).

Many firms use M&A to acquire new knowledge and consequently increase their innovation output. Output quality depends on the sector (M&As in the technological sector are more likely to lead to high-quality innovation output) and the knowledge bases of both firms (Ahuja & Katila, 2001). Years after integration, the positive effect on innovation output fades as the value of knowledge depreciates (Cloudt et al., 2006). Thus, the goal should be the creation of organisational environments where joint development (co-creation) of new products and processes can take place.

We predict that such joint development of new products from the partners' regular processes can generate new knowledge and minimise the fading effect on innovation output. This outcome also enables interaction and learning from each other. Our definition of post-M&A co-creation as creating new products and processes through knowledge and resource sharing by acquired and acquiring firms draws on Ramaswamy and Ozcan's (2018, p. 196) conceptualisation of co-creation as the 'enactment of interactional creation across interactive system-environments (afforded by interactive platforms) entailing agencing engagements and structuring organizations'. However, despite the growing popularity and positive connotations of co-creation, it does not automatically increase market performance. Post-M&A challenges, such as organisational culture misfits, different approaches to innovation and different communication styles, could harm the process and result in weak market performance of new products (Chen et al., 2010).

Figure 1 presents the analytical framework of this study. The framework builds on the theoretical lenses of organisational learning and strategic integration (organisation-level explanations) as well as the role of employees and culture (employee-level explanations).

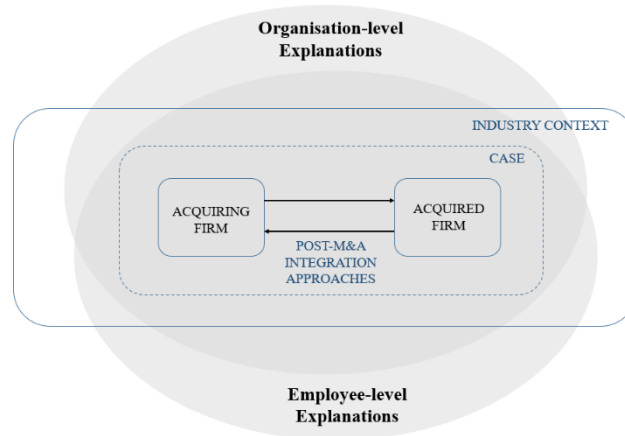


Figure 1. Analytical Framework of the Study

3. Methodology

3.1 Research Design

Our research is designed as a longitudinal single-case study of Geely's acquisition of Volvo Cars, with the post-acquisition process as the unit of analysis. Following Pettigrew's (1990) contextualism, we studied the target of change at the firm level of Volvo and Geely and at the higher level of the automobile industry. The latter is important to take into account because the differences between Chinese and Western markets influence the decision-making processes in the case. The newly established automobile brand Lynk&Co—the outcome of the co-creation process between Geely and Volvo Cars—was not planned at the outset of the transaction phase but emerged as a result of 'organic' development and a particular composition of integration approaches. Therefore, each interview was analysed as 'temporal interconnectedness'; that is, not how well it explains the outcome, but each separately as its own reality. The authors regarded the process that led to co-creation as a combination of the heterogeneous organisational processes and interfaces that Geely and Volvo developed over time. Thus, Van De Ven and Poole's (2005) 'process study of organizing' approach was adopted, and chronology was used as a way to organise the data, with interviews focusing on past, current and future events within one of the entities, as well as how these events were interconnected with the operations of the other entity.

In addition to a qualitative approach relying on interview data, we supported our investigation with a patent analysis to measure the similarity between the firms' portfolios in 2000–12 and 2013–20. The division point in the period marks two years after the acquisition to account for the time required to establish innovation processes. We predicted that collaboration between the two firms would increase their patent portfolio similarity, which can be measured by the similarity of the patents' international patent classification (IPC) codes. IPCs are unique features that sort patents into a hierarchical system of categories and sub-categories to determine patent technology. However, the IPC class of a patent does not entirely represent the knowledge involved in producing the patent. Thus, we also calculated the firms' technological bases, which could be used to evaluate the sector (Rosiello & Maleki, 2021) or knowledge (Han et al., 2018) of the firms. The success of M&As between similar technological firms depends on the technological base overlaps (i.e. target and acquirer overlaps). The firm's technological base is the knowledge that a firm is familiar with and uses to create new knowledge. It consists of a firm's patents and the patents cited by its patents (Sears & Hoetker, 2014). Given that knowledge relevancy decreases over time, we used only cited patents that were no older than six years from the first filing date of the patents. We compared both overlaps in the period prior to and after the transaction.

Finally, as the innovation output on its own may not be enough to judge whether the M&A is a success or failure, we also analysed the business performance of the firms after the transaction. For this purpose, revenue, number of employees and sales numbers were taken into consideration when performing the market performance analysis.

3.2 Data Collection

To develop the case narrative, five in-depth semi-structured interviews were conducted between 2014 and 2022. The first interview, which was complemented with observations at the site visit, took place at Geely Group HQ in Hangzhou, China, with the vice president and senior manager of Zhejiang Geely Holding Group. The first part of the interview focused retrospectively on the transformation of Geely from a family business to a modern corporation, followed by the acquisition process and the relationship between

both entities. The second part of the interview targeted the processes within each firm and how they interconnected.

The second interview was conducted in 2016 with the senior director from Geely Group at Geely Group HQ in Hangzhou, China. The narratives concentrated on the interconnected processes, culture and market differences that influenced the processes and captured knowledge, learning and market values. The third interview was held in Shanghai, China, with Volvo's design operation director in 2017. The questions in this interview focused on Volvo's view on the ownership transition from Ford to Geely, with a focus on the period after the transaction. The emphasis was on the differences in how Volvo is operating in Western markets compared to Chinese markets, the role of Geely in the daily processes and how new trends in the automobile market would change their business.

The final two interviews (one with the business developer and one with the team manager, product owner and head of business ownership) and the site visit took place in Gothenburg, Sweden in 2022. Based at Volvo Cars in Gothenburg, all of them had previously been stationed in China and worked with Volvo's operations there. The main objective of this round was to retrospectively revisit the key milestones of the process after the acquisition and triangulate the information from the previous interviews, as well as to gain insights into the latest developments in the case.

The secondary data used in the quantitative part of the study consisted of patents granted from 2000 to 2020. Data were collected from the Lens patent corpus (Lens, n.d.). For Geely, we searched for all patents for which the applicant was one of Geely Group's firms. In 2010, Geely acquired only one part of the Volvo Group (i.e. Volvo Car Corporation). Thus, we selected only patents with Volvo Car as an applicant. The query on Lens searched for patents in more than 90 patent jurisdictions worldwide and then grouped them according to their patent family. Aside from the collected patents, different secondary data (e.g. popular business press, companies media materials) were used for the pre-interview preparation and chronological summary of the critical events.

3.3 Data Analysis

Primary data were analysed inductively using Burnard's (1991) 14-stage method¹ of analysing interview transcripts. The use of data analysis software allowed us to modify some of the steps. First, we went through the interview notes and conducted open coding (stages 1–3). Next, the categories from the previous step were collapsed into higher-order headings, and sub-headings were rearranged to create the final version used for coding in the eighth stage. The sixth and seventh steps were integrated into the previous steps because the software allowed us to work together. Similarly, the software simplified stages 9–12. The produced visualisations were analysed in the same way.

The similarity between patent portfolios was measured using cosine similarity and Jaccard's coefficient. Each patent application contains at least one IPC class, which classifies patents according to the technology areas they relate to. Each IPC is up to eight symbols long and comprises the combined symbols representing the section, class, subclass and main group or subgroup (WIPO, n.d.). If compared firms operate in a random industry, the first four digits of the IPC class would adequately demonstrate their similarity; however, for firms in the same sector—like our case study—the code would require the whole IPC class. Besides analysing the patent portfolios, we analysed the technological bases of the firms and their overlaps.

Cosine similarity is a metric that finds the angle between two vectors by calculating the inner product of the vectors divided by the product of their lengths. Its advantage is that the compared objects do not need to be the same size, and in contrast to Euclidean distance, it is not based on counting the number of shared values. In our case, a vector with frequencies of unique IPC classes was generated for each firm, separated into two periods from the collected patent data (Appendix A).

$$\cos(\theta) = \frac{\vec{a}\vec{b}}{\|\vec{a}\| \|\vec{b}\|} = \frac{\sum_1^n a_i b_i}{\sqrt{\sum_1^n a_i^2} \sqrt{\sum_1^n b_i^2}}$$

¹ The original steps are 1. Taking notes, 2. Immersion in data, 3. Open coding, 4. Reduction, 5. Refinement of categories, 6. Collaborative checking, 7. Re-reading, 8. Re-coding with new categories, 9. Re-arrangement of text according to categories, 10. Re-arrangement according to sub-headings, 11. Informant checking, 12–14. Writing preparations and linking to existing literature.

The Jaccard similarity index (coefficient) compares the similarity of two vectors by looking at their shared and distinct values. Specifically, it is the division between the number of common elements and the number of all distinct elements. In contrast to cosine similarity, it disregards the frequencies but looks at the binary option—in our case, if a specific IPC subclass was used or not.

Jaccard's coefficient is:

$$J(a, b) = \frac{|A \cap B|}{|A \cup B|} = \frac{\sum_1^n a_i b_i}{\sum_1^n a_i + \sum_1^n b_i - \sum_1^n a_i b_i}$$

The vectors used in the similarity coefficients were transformed into binary values, in particular whether the firm patented in a specific IPC subclass (1) or not (0) (Appendix A).

4. Case Description

The studied acquisition of the Western automotive brand Volvo Cars by an emerging country's multinational (Geely) was not a traditional financial or basic synergy-looking transaction (economies of scale and market price-earnings ratio) but rather a strategic M&A (Zhou & Zhang, 2011). The firms produced the same type of products but for different customer segments and had a technological overlap with minimal benefit on innovation capabilities (Ibrahim & El Katsha, 2017). Prior to the acquisition transaction in 2010, the companies had different development paths. Geely was founded in 1986 as a refrigerator manufacturer. While slowly expanding its production to inexpensive products and high-grade decorative materials, it entered the motorcycle industry in 1994. By the year 2000, it had reached a production of 600,000 units and was exporting to several countries, including the USA and European markets (Wang, 2008). Geely entered the automotive industry in 1997, and in the first decade, almost all of its models were a result of reverse engineering. In the mid-2000s, Geely started its active catching-up process in the Chinese automotive industry (Balcer et al., 2012). As part of this process, a few foreign companies, including London Taxi, DSI, Volvo and Lotus, were acquired by Geely. In the years preceding the acquisition of Volvo, Geely operated in several industries besides the automotive industry. These

included tourism, trading, decoration materials and educational training facilities. With more than 30,000 trainees, the purpose of the latter was to produce human resources for different operations (Wang, 2008).

In contrast to Geely, Volvo had a long tradition in the automotive industry dating back to 1927 and played an essential role in the development of the industry. Its main activity was the production of cars, trucks, buses and construction equipment. In 1999, Ford acquired a part of Volvo that produced cars (Volvo Car Corporation) and formed the Premier Automobile Group, which includes Aston Martin, Jaguar and Land Rover. The goal was to rationalise costs via modularisation but keep the brand from overlapping through separate promotions (Donnelly & Morris, 2003). The integration of Volvo and Ford's R&D had problems due to the differences in their decision-making process (Lundbäck & Hörte, 2005). Owing to the world financial crisis in 2008, Ford had to sell Volvo, and in 2010, the transaction with Geely was completed. The acquisition gave Geely several tangible and intangible assets from Volvo (Intv. SVP&SM, 2014):

- Brand ownership and the right to use it on a global scale;
- Sustainable production platforms and upgrade strategies, including all cars, commercial vehicles and SUVs;
- A brand-new scalable product architecture platform for mass production;
- Four factories producing complete vehicles;
- Manufacturing plants for engine, parts and transmissions;
- R&D system with 83 years of tradition (3800 engineers at the time of transaction); and
- IPRs involving engines, vehicle platforms, safety and electronic technology (worth USD 1.6 billion as intangible assets on the balance sheet of Ford).

Although the synergies of the two automotive producers seem apparent at first glance, their obvious differences made the cross-border M&A a big challenge. For example, it was three years after the transaction before the negative coverage in the Swedish media became more positive. The turning point was the increase in local jobs, boost in sales and the ability to retain the 'spirit of innovation' (Fang & Chimenson, 2017; Ward & Waldmeir, 2011). Notwithstanding these challenges, in February 2013, Geely announced the establishment of the China Euro Vehicle Technology (CEVT) R&D centre in Gothenburg,

integrating Volvo's and Geely's resources. The aim was to create a new state-of-the-art modular vehicle platform called Compact Modular Architecture (CMA) (Yakob et al., 2018).

Table 1 shows the distribution of patents and unique IPC classes for both firms. The collected patent data were divided into two periods: before and after 2013 (i.e. before and after the establishment of CEVT).

Table 1: Distribution of Patents and Unique IPC Classes

	Geely		Volvo	
	Period 1	Period 2	Period 1	Period 2
Number of patents	155	635	165	545
Unique IPC classes	218 (70)	910 (157)	385 (66)	956 (121)

(Numbers in brackets indicate unique four-digit IPC classes.)

Similar to the general public, the markets did not perceive Geely's move positively at the beginning. In the first months after the acquisition announcement, Geely's stock prices decreased, while Volvo's increased (Chandera & Widjojo, 2012). Over the next six years, the stock price ranged from HKD 1.5 to 4 with an exponential increase after 2016 (Figure 2). In that year, the new brand Lynk&Co was announced, and a year later, the first car model was offered across China (Lynk&Co, n.d.). In 2019, Lynk&Co became the fastest-growing automotive brand in the world.

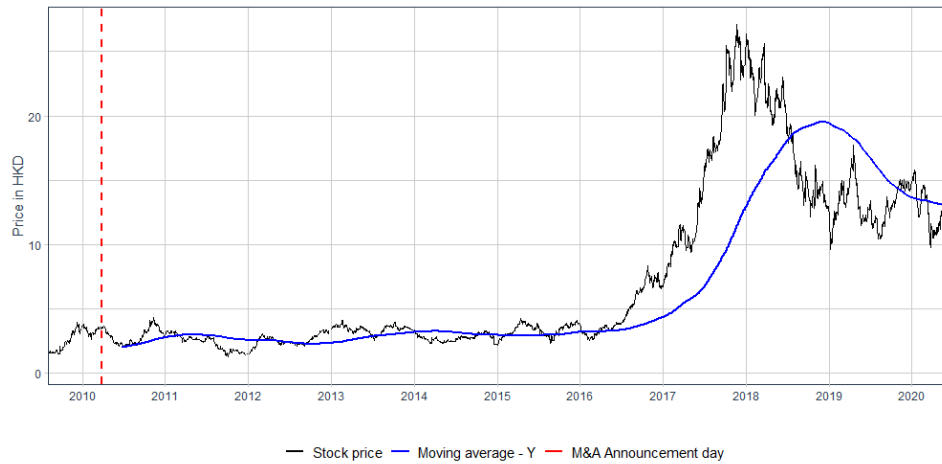


Figure 2. Geely's Stock Market Performance

5. Analysis

The post-M&A period analysis, based on interviews and statements obtained from publicly available sources, is structured following the analytical framework of our study (Figure 1). It divides post-M&A integration into organisation- and employee-level explanations of the drivers and inhibitors of integration. In the second part of the analysis, we used secondary data to find traces of their actions and potentially evaluate the results.

5.1 Organisation-level Explanations

In the decade before the acquisition transaction, Volvo had a turbulent time with increasing uncertainty. The financial crisis of 2008 hit Ford, Volvo's owner at the time, and prompted the need to sell Volvo. The lack of investment over the years had resulted in lower sales numbers and harmed innovation processes. Volvo needed a change, but there were significant concerns about its future and new ownership. Despite fear about the new owner (i.e. Geely), Volvo's manager described the post-acquisition development as follows:

It was completely the opposite, and it still is. I mean, they came in, and we gave them a strategy and goals for the next 10 to 20 years. Basically, Geely said, 'OK, we will support you financially. We will make it easy for you to come into the Chinese market; the rest is up to you'. For the first time in many years, the Volvo management went, 'Hey, what do we do? We are free! We can do our own thing!' Of course, it took a little bit of adjustment. (Intv. DOD, 2017)

However, there were still dilemmas that needed to be resolved at the organisational level. First, how to maintain Volvo as a Western brand while utilising the specific advantages of the Chinese market was a challenge. Soon after the transaction, Geely started planning new production plants in China, which allowed the export of China-made Volvo cars into the US market. The concern was that Volvo would lose its Scandinavian identity (Norihiko, 2011).

The second dilemma was caused by a different view of the future of the brand in Gothenburg and Hangzhou. Geely's owner intended Volvo to compete with Mercedes's and BMW's high-level models with stronger engines (Yang, 2011). Volvo's CEO disagreed, arguing that this would be too early and would result in losing 'distinguishing points in its products', and they should 'stop copying the Germans' (Autocar, 2010).

Despite operating in the same industry, at the time of the transaction, the firms had very different approaches to developing cars. As Volvo's managers recalled:

We were for sure more process driven company than Geely is. In 2010 when they did a new car they would put a new project team in place. They did not have a clearly defined organization nor the functions needed. (Intv. TM, 2022).

It had a very chaotic edge to it. It was just business and lots of drive. Yes, they were building some foundations of planning, but they still had that edge that I think gave them competitiveness. (Intv. HBO, 2022)

Geely's managers were aware of Volvo's advanced technology, but they struggled with introducing it to their brand through the use of traditional integration approaches.

The first big issue was customers' perceptions of the brand. Geely started as a low-end brand, and in the eyes of many, it was a car for low-income populations. The manager described this as follows: 'With that, we should be very careful. Volvo is a luxury brand, and in Geely, we want to go up, but at the same time, we are not Volvo...; currently, we have different customers' (Intv. SD, 2016). The second issue was how to capture the value of the added technology and the increasing costs of R&D. The transaction occurred over a long period of transformation, from using reverse engineering to relying on in-house innovation. The

value captured in the market could not cover the costs. As the manager put it, ‘Incremental innovation in brand pricing power is not an easy question for us. It is hard to communicate to customers that I did something new and consequently increased the price and assume that the customer will accept it’ (Intv. SD, 2016).

According to the interviews, Geely was aware of Volvo’s development capabilities and adaptation to changing circumstances. Thus, the primary strategy in the first period after the transaction was to give Volvo time and space to develop and provide financial capital to make this possible. The sales numbers began to increase in all markets and slowly grew over Volvo’s production capacities. To cover the demands from the US market, Volvo began to export China-made cars. Instead of a strategic decision at the transaction, organic growth caused this to go largely unnoticed and did not harm the brand.

Similarly, the decision to change the model for the Chinese market was not imposed on Volvo. After a few media statements between both parties, Geely’s owner took another approach. Geely’s manager described it as follows:

For instance, Chinese customers prefer larger and luxurious cars. So we suggested enlarging the Volvo cars by lengthening them by 10–20 cm in the China market, but Volvo engineers refused... Hence, Mr. Li (the owner) invited these engineers to come to China and experience the market. (Intv. SVP&SM, 2014)

As a result, they developed Model S60L, which was in short supply. The manager ended, ‘The conflict in culture is solved by having respect and enforcing understanding’.

If Volvo’s transformation was mostly related to the transition to different environment settings, then Geely’s brand-improving path was more complex and required more time. Manufacturers cannot improve a brand’s position on current products but can on future vehicle models. If the change is too radical, then the current targeted customers may not be able to afford the new model, and the manufacturer cannot instantly reach higher-level customers. Hence, Geely gradually improved its cars by introducing more innovative technologies and better design, both based on its collaboration with Volvo. Aside from many joint activities, in 2013, they announced a new R&D centre (i.e. the CEVT) in Gothenburg to build the

CMA that would be used by both firms. Consequently, the new brand Lynk&Co was established, and the first cars came on roads in 2017. The first years working together at CEVT were demanding and 'the processes were a huge pain. How we take decisions, how they take decisions, how we meet in between... It took time to sort out. We had to sit down and work out the processes and agree on how to handle gaps between multiple parties involved' (Intv. PO, 2022).

5.2 Employee-level Explanations

In terms of employee-level tensions, the uncertainty of Volvo's employees evolved from their fear of bankruptcy due to Ford's poor financial condition into a fear of a new owner from a different cultural environment. With offshoring proliferation in the late 1990s-early 2000s, the prospect of moving blue-collar jobs and some engineering positions in the R&D department to China appeared real. This scenario would have had damaging consequences for them and the local community at large. These concerns came from various directions, including media, politicians and labour unions (Billing, 2010; Radio Sweden, 2010).

The tension among Geely's employees emerged due to high expectations regarding how much they could gain from the acquisition. The aim was not solely to capture Volvo's technology but more to learn how to organise the processes that provide innovative technology. Therefore, the tension was felt not only by engineers but also by management. As the interviewee put it, 'I think that our leadership, the management, is aware of learning possibilities from our partners, Volvo, for example. I think some challenges are organising this learning and [knowing] how to implement the new processes into our system' (Intv. SD, 2016).

He added:

Geely is currently in the process of learning from other partners, especially in-house partners, about the organisation and developing processes. So in the new product development system, we are trying to implement things we are learning. For example, the stage-gate process. (Intv. SD, 2016)

According to interviewees from both firms, the main actions that helped reduce the concerns and fear among the employees were avoiding radical changes for Volvo after the transaction, ample time and independence

at the management level and positive sales trends. One of the new owners' main goals was to maintain the innovative processes and not lose tacit knowledge; thus, a lot of the focus was on engineers. Looking outside the firm, it took three years for the sentiment of media coverage to change from negative to positive, and the turning point was the increasing head count at Volvo's plants in Sweden.

The tension felt by people in Geely mainly concerned engineers and management. Engineers had to absorb technological knowledge from Volvo and transform it into their product, and management had to learn, organise and integrate innovation processes. These complex operations, involving various stakeholders, are spread among different hierarchical levels and are difficult to copy, as they involve dynamic and ever-changing tasks. Thus, the firms decided to develop the China Europe Vehicle Technology (CEVT) centre as a space for joint development efforts and learning from each other.

As Volvo's manager recalled:

I would say when we set up CEVT together to develop the platform for two customers, Volvo Cars and Geely Auto, it became the ultimate form of collaboration and building something together. So that was a multi-year, multi-billion project, but it gave the employees a lot of insight and I know for a fact that we use this learning and continue developing on it. (Intv. HBO, 2022)

By working together on most tasks, people could learn from one another and use their accumulated knowledge and experiences in their primary brands.

5.3 Learning and Innovation Process

Retrospectively, managers looked at the period after the transaction as successful, but it required significant effort to establish good practices. As Volvo's manager pointed out.

Collaboration is crucial, but it is definitely not easy. So it is a lot of hard work and a lot of people having different opinions, different business needs and trying to align all that was tough... It was really chaotic for a couple of years in 2012-2014 when we were starting up CEVT. Geely had no processes in the beginning and you know there is a creative sense in that because you create a lot but to merge that and to come to a common understanding was difficult. (Intv. HBO, 2022)

Through collaboration and human interaction, Geely eventually gained organisational and technological skills, and Volvo gained important cultural insights (Intv. DS, 2022).

However, this interactive process of integrating also highlighted that the style of innovating could not be simply copy-pasted from Volvo to the Chinese context and vice versa. As one interviewee put it, referring to the features of the market environment, ‘In China today, people are willing to accept new things, people are willing to test new things, and they are willing to give much feedback’ (Intv. BD, 2022). Such conditions allow for faster innovation processes and more rapid introduction of novel solutions. In contrast, European customers are less willing to try new products and wait longer, so solutions introduced to the market need to be more mature. This requires a slower approach to launching new solutions and more time for in-house optimisation (Intv. BD, 2022).

The difference also comes from the decision-making process, in which Volvo’s engineers took much longer to discuss and collect opinions, and in Geely, the decisions often came from leaders. Despite these differences, many patents come from Chinese R&D centres (Intv. TM, 2022).

Figure 3 summarises the results of the qualitative analysis connecting the dilemmas faced in the post-M&A period and their responses. Following the analytical model of the study, the dilemmas and approaches are divided into organisation and employee levels. Furthermore, the post-M&A process is divided into two distinct phases (transition and operation) the temporal boundary between which occurred with the establishment of CEVT centre which can be seen as a space for interactional engagement of employees and processes from both Geely and Volvo sides.

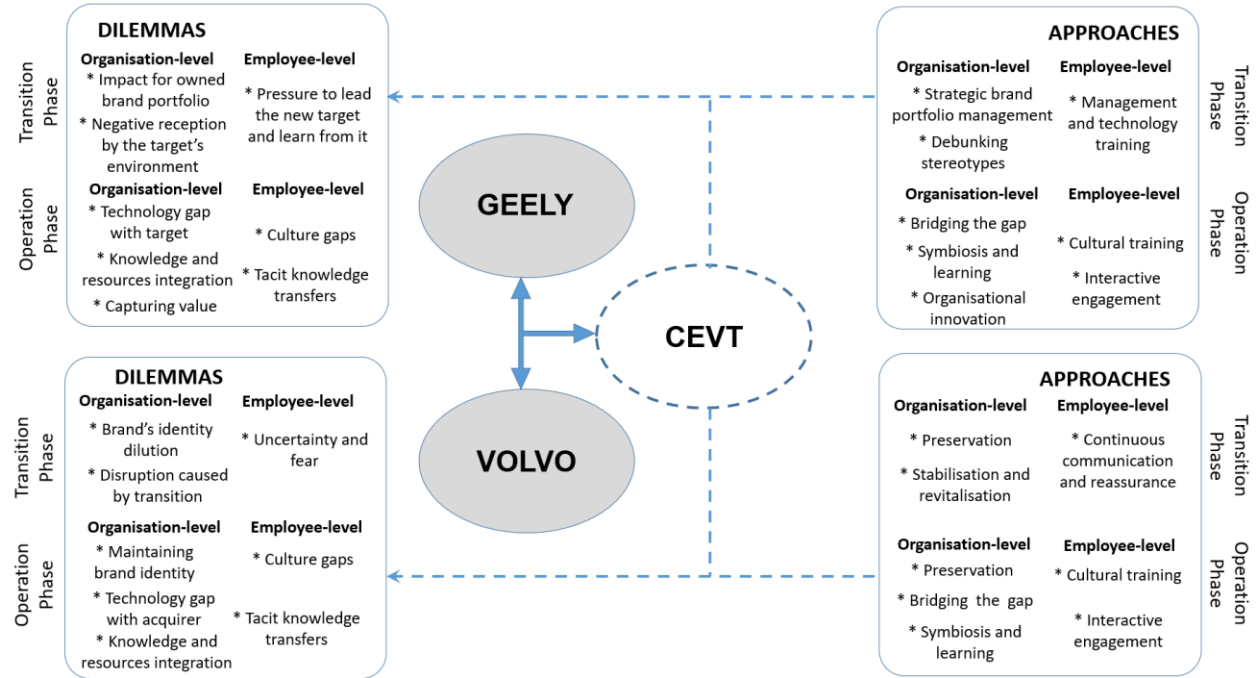


Figure 3. Dilemmas and Approaches in the Geely–Volvo Case

5.4 Patent Portfolio Similarity

To analyse the similarity between patent portfolios, we used cosine similarity and Jaccard's coefficient. The firms' portfolios, divided into two periods, enabled a comparison and showed whether they became more similar after the transaction.

Table 2: Similarity between Patent Portfolios

	Cosine Similarity	Jaccard Coefficient
Period 1	0.178 (0.675)	0.081 (0.346)
Period 2	0.286 (0.778)	0.150 (0.463)

(Numbers in brackets are the results for the four-digit IPC class.)

Both coefficients show an increase in the second period. Cosine similarity increased by 61%, and the Jaccard coefficient increased by 85%. Looking at the four-digit level (subclass), the increases were 15% and 34%, respectively. The results show that after the acquisition, the patenting activity of both companies became more alike. This outcome could indicate that the collaboration in innovation processes and gradual integration described in the interviews widened the research focus to areas where either firm was not present before the transaction.

The similarity coefficients show a relatively high increase in the second period, but the measured effect is bidirectional. Thus, in the next step, we look at which firm ‘entered’ newer technological areas (IPC) in the second period, in which the opposite firm was already present in the first period. The results show that in the second period, Geely patented in 62 new IPC classes in which Volvo was already patented in the first period. The same measurement for Volvo was 21.

5.5 Technological Overlap

The difference in the innovation capabilities of the firms can be seen in the asymmetries in the acquirer and target technological overlap. The intercept of unique IPC classes between firms’ technological bases shows the common technological knowledge. Its share in each firm’s base demonstrates the overlap. Geely’s and Volvo’s bases consisted of 781 and 1584 unique IPC classes, respectively, in the first period, with 324 IPC classes together. At the time of the transaction, Volvo had 41.48% of Geely’s technological base, while Geely had only 20.45% of Volvo’s.

The same comparison for the second period shows that Volvo decreased the overlap to 32.27% and, more interestingly, Geely managed to surpass the target firm, with an overlap of 42.73%. Geely’s base consisted of 2451 and Volvo’s was 1851, with 791 unique IPC classes in common.

The similarity comparison of the firms’ technological bases shows a similar trend to the comparison of patent portfolios. Both coefficients—cosine and Jaccard—show an increase in similarity in the second period at 63% and 41%, respectively.

Table 3: Similarity of Firms’ Technological Bases

Cosine Similarity	Jaccard Coefficient
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Period 1	0.346	0.159
Period 2	0.564	0.225

5.6 Trends After the Transaction

The qualitative part of the analysis showed that the acquisition was successful for both firms. Geely managed to boost its capabilities and learn and adopt innovation processes from Volvo. Volvo received the necessary guidance and information about the Chinese market to improve its sales there. Furthermore, with financial support and operating freedom, Volvo managed to re-set its business globally. The patent portfolio analysis confirmed that joint R&D activities influenced the firms' patenting activities.

In the third step of the study, data from the annual reports and financial statements of both firms were analysed to test claims about the firms' operating performance after the acquisition. The data consisted of employee numbers, revenue and total sales for both firms. We added sales in China for Volvo and exports for Geely. Sales numbers, including exports, represent the number of vehicles sold and not the sales in monetary value. All values were indexed to the year of the transaction (2010). Figure 4 shows the variables' dynamics.

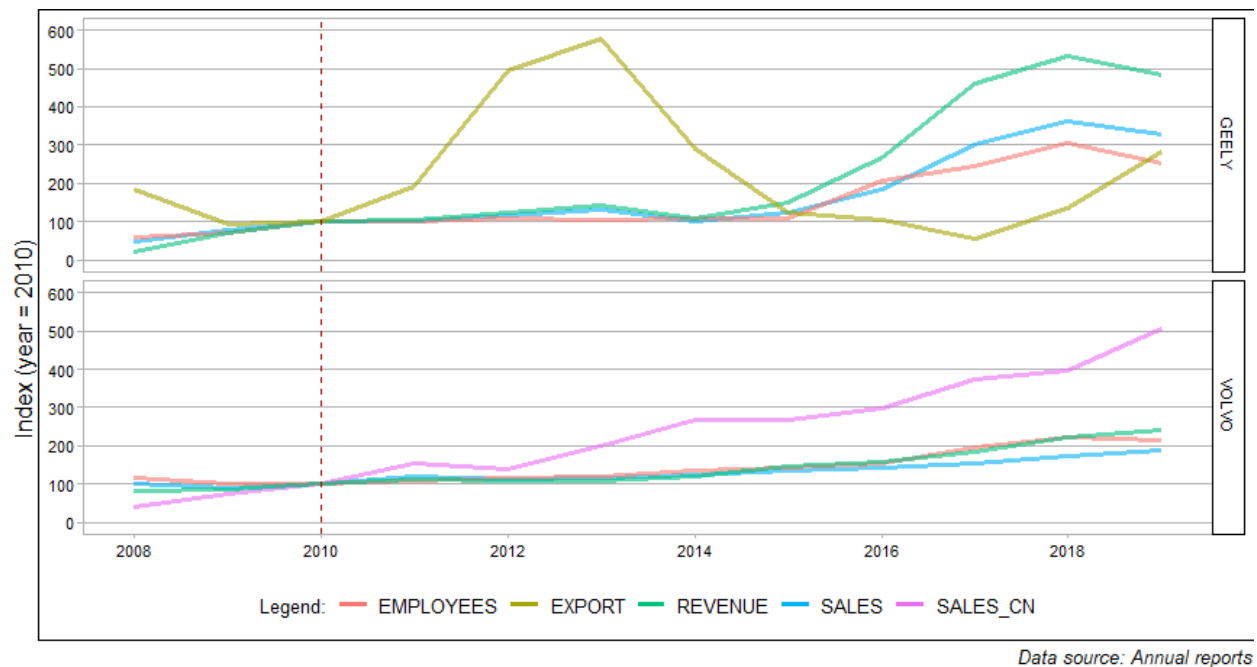


Figure 4. Business Performance of Volvo and Geely

Apart from exports, which represents a small margin in total sales and is therefore more sensitive to yearly changes, Geely's performance was relatively steady until 2014, and later, all three variables began to increase along a similar path. The trend increased after the new brand was introduced in 2016. The only variation was the number of vehicles sold abroad. In 2019, employee numbers had increased by 150, sales by 220 and revenue by 400% from 2010. Exports represent a minor part of Geely's sales (4.2% in 2019). Thus, its fluctuation over the years is not relevant. Sales numbers for the Lynk&Co brand are included in Geely's numbers, and they represent 0.5%, 8.0% and 9.4% of Geely's total sales in 2017, 2018 and 2019, respectively.

Volvo's development path, apart from sales in China, began to increase continuously after 2012, and in a decade, sales had increased by 95, employee numbers by 105 and revenue by 150%. Sales in China continued its trend from the year prior to acquisition and, in 10 years, increased by 400%, reaching a 22% share in total sales in 2019.

6. Conclusions and Implications

Some studies have analysed Geely's acquisition of Volvo (Alvstam et al., 2019; Chandera & Widjojo, 2012; Guo, 2013; Yakob et al., 2018; Zhou & Zhang, 2011) but have mostly analysed it from a single methodological perspective. We attempted to build on these studies, and with the use of methodological techniques triangulation—semi-structured interviews, patent portfolio analysis and business analysis—answered the question, *How can EMNEs transition from a fragmented and transactional relationship with the acquired firm to integration and co-creation?* The use of multiple methodological techniques allowed for overcoming the limitations of single method approach and provided a more complete view of the case.

While the studied M&A is often used as a positive example of an EMNE's acquisition of a Western brand, our investigation revealed many dilemmas and obstacles that managers from both firms had to resolve and overcome. Many of these issues were associated with cross-border interactions, where cultural differences could be a deal-breaker. The study identified the most critical issues at the organisational and employee levels, together with approaches for managing them. From the practice perspective the results of

the study carry learnings and implications for managers dealing with post-M&A integration challenges. The findings of the study suggest that the post-M&A integration should be approached as a multidimensional and multiphase process.

In the first (transition) phase, the acquirer must deal with the uncertainty and fear derived from prejudices and stereotypes. The uncertainty could be addressed with actions that do not change the target's business but still normalise its operation; that is, revitalise the innovation processes. In the studied case, Geely asked Volvo's managers to prepare a short- and long-term plan, provided the finances and kept Volvo going with minimal intervention. The acquirer should not take prejudices 'personally', as they are not based on their actions but on general perceptions and stereotypes. Therefore, this situation can change gradually over time, with cautious actions and awareness that any negative action can break down the process. In Geely's case, it took almost three years to change the negative perceptions of the general public to positive ones.

In the second (operation) phase, both firms have to learn from each other and integrate acquired knowledge within their operations. Firms most likely have different technological bases, so it is essential to understand the gap. Filling the gap too quickly might increase costs, which cannot be directly added to the price of products due to specific demand. The innovation process is complex, involving engineers and management, and is thus hard to replicate. While it is not difficult to transfer codified knowledge, tacit knowledge must be transferred through interactions between the employees of both firms. Creating spaces where such interactive creation could take place is essential and offers a viable alternative to the traditional integration approaches based on assimilation or preservation. In the studied case, both firms opened a new joint R&D centre in Sweden to develop a new platform for their future models. Later, in 2016, the project resulted in the new car brand Lynk&Co.

The chosen integration approach can best be described as a hybrid approach. Although extant literature describes the use of hybrid approaches allowing for linking of non-core activities while preserving strategic capabilities (e.g. Haspeslagh and Jemison, 1991; Rouzies et al., 2019), this study seems to indicate

a new type of hybridisation, with co-creating around core technologies while preserving a high level of brand autonomy.

Although both phases are essential, the operational phase dictates the long-term dynamics between firms. The approach to learning from each other and co-creation should influence the knowledge output. Therefore, we addressed *how the transaction influenced the similarity between the patent portfolios and the technological bases of firms*. The patent portfolio similarity analysis showed that after the transaction, the firms' portfolios became more alike. The same trend was observed in the technological base, which is required to produce knowledge. Interestingly, although Volvo's base was larger in the period before the transaction, Geely managed to increase its base in the second period. Likewise, they managed to overtake Volvo in the variety of knowledge they used to create patents. It is worth mentioning that in our analysis, we did not measure the quality of the output but only the quantity. We can conclude that Geely managed to capture established knowledge and learn and integrate innovation processes. Aside from technological knowledge, it is crucial in cross-border M&A to share information and experiences about markets not known to partners. Volvo's managers emphasised vital information about the Chinese market gained from Geely. These include knowledge about customers, car parts distributors, marketing and human resources.

Finally, knowledge output does not automatically determine the success of a business. In the final part of our investigation, we analysed the firms' performance between 2008 and 2019 to determine *how knowledge co-creation influenced the market performance of actors*. The results show that Volvo's performance was steady until 2013 and later began to increase at the same pace. The only variable that grew faster was the number of vehicles sold in China, which demonstrates that Geely's information helped establish a successful strategy. It took Geely five years for their figures to start showing a positive trend. However, this delay does not undermine the success of the hybrid approach to post-M&A integration strategy used in the case. In the automobile industry, new solutions can only be introduced in the next generation of vehicles, so it takes some time for new knowledge to affect business performance.

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