

How Far Do Patents Obtained Through Mergers and Acquisitions Create Innovative Capabilities? -- A Case Study of Evergrande Electric Vehicle Company

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Abstract. The quantity of a company's patents has long been seen as a reliable indicator of its innovative capability, which to a large extent determines its success in the market. Firms often (through direct merger and acquisitions) purchase patents from other firms in the hope of achieving greater innovation. However, the experience of China's electric vehicle firm Evergrande Electric Vehicle Company may provide us more insights into the dynamics between number of patents and innovation. Through a thorough analysis of why Evergrande EV failed to transform purchased patents into innovative capacities, this article proposes that the Absorptive Capacity, defined by Cohen and Levinthal (1989, 1990) as a firm's ability to value, assimilate, and utilize new external knowledge, is a more accurate gauge of a firm's innovativeness than merely the number of purchased patents. The case study of Evergrande EV also echoes previous studies that prior knowledge in a given field is crucial to a firm's ability to absorb and profitably exploit purchased patents. In addition, a strong technological leadership team is also important, according to exclusive interview of a former Vice President of Evergrande EV.

Keywords: Innovative Capability, Purchase Patents, Absorptive Capacity, Profitably Exploit, Evergrande EV, China's Electric Vehicle Firm.

1. Introduction

According to World Intellectual Property Organization (WIPO), both patents and copyrights allow their owners the legal right to exclude others from making, using, or selling an invention for a limited period of time (2019), thus they are viewed as a type of intellectual property (Potts, Harold E, 1944). Technology and IP portfolios are becoming an important confederation in companies' merger or acquisition decisions (Zhao, 2009). Studies also find that purchased patents tend to positively correlate to a firm's value (Lerner, 1994) and boost a company's ability to innovate (Zhou et al., 2019). When evaluating innovativeness, the number of patent purchases are treated as an indicator for innovation (Nagaoka et al., 2010). By this standard, Evergrande EV, which purchased a large number of automobile making patents through frequent mergers and acquisitions, would have excelled in innovation. The reality, however, is just the opposite. The company has failed to produce a model that would survive in the Chinese auto market, with only around 100 Model Hengchi 5—the only model the company managed to see through production on a scale—having been delivered to customers. The model has not done what Model 3 has done for Tesla or what Li Auto One has done for Li Auto, evincing a lack of innovation in the product. On the other hand, the importance of innovation is becoming more important as China becomes the world's largest EV market. International brands like Tesla play a major role in the market but domestic brands like BYD, NIO, Xpeng, and Li Auto have also grown fast. Competition in this market is bound to get intense, thereby further boosting the need for innovation in the EV market (Daxue Consulting, 2022).

After a detailed investigation into Evergrande EV, including an exclusive interview of its former Vice President, this paper proposes that absorptive capacity is a more important indicator of a firm's innovativeness than the number of patents obtained through merger and acquisition. Without sufficient absorptive capacity, a firm would not be able to leverage their Intellectual Property to increase its capability. This is the case in point with Evergrande.

2. Organization of the Text

2.1. Evergrande Electrical Vehicle Company

The Evergrande Group, headquartered in Guangzhou, is one of the world's most valuable construction companies and has created a subsidiary company, Evergrande Automotive, to enter the auto market. While the company has been extremely successful in property development, its efforts in the EV market is struggling at best. The EV automotive market both in Asia and globally is becoming fiercely competitive within each vehicle segment.

In late 2018, Evergrande first started in the electric vehicle industry by buying EV startup Faraday Future, a key developer of the FF91 car. This car model, also known as the luxurious part-estate-part-SUV, has a 200mph top speed, autonomous function and can offer 1000hp from its electric drivetrain. At that time, it was considered a competitive product for the Tesla Model S, but problems grew when its finalization costs mounted.

Evergrande offered its help with a \$2 billion investment over the span of 3 years and buying a 45% stake of Faraday Future. These investments allowed the production and sales of its electric vehicles in China and North America. However, due to contractual failures, the relationship between the two firms eventually collapsed. As their agreements couldn't continue, Evergrande reduced its stake of Faraday Future to 32% yet also simultaneously completed control of the business in China. In July 2022, as Faraday Future was preparing to produce its FF91 car model, its deliveries were hampered by a short-seller's report, which accused them of falsifying its electric vehicle storage.

As this investment in Faraday Future slowly went into failure, Evergrande next purchased a stake in Sweden's NEVS (National Electric Vehicle Sweden). Although NEVS went out of business in 2012, Evergrande still bought a 51% stake in 2019 and purchased all remaining shares in 2020. Evergrande saw more value in NEVS's EV technologies, R&D resources and patents compared to its old Saab 9-3 electric vehicle which was almost ready for production. With the complete purchase of NEVS, Evergrande canceled its former plan to build the model 9-3 EV and turned its focus on building the autonomous shuttle, the Sango.

Finally, in November 2019, under the Hengchi marque, Evergrande announced its own brand of electric vehicles. Between the years 2019 to 2021, nine concept cars (numbered 1 through 9) were designed, all battery-powered barring one MPV-shaped vehicle.

2.2. The Fiercely Competitive Chinese Auto EV Market

China has by far become the world's largest EV market, and is predicted to remain so in the foreseeable future. McKinsey (Dabelstein et al., 2021) projected that BEV sales will reach about nine million in China by 2030, representing an annual growth rate of 24 percent. Several factors would explain this fast growth, first of which is favorable government policy, as China has pledged to peak carbon emissions before 2030 and strive to achieve carbon neutrality before 2060. State subsidies have been in place for a long time to push for EV adoption. In many cities, the government has mandated that taxis must be EVs, and new license plates are handed out to EVs more generously than petroleum cars (Dabelstein et al., 2021). On the production end, besides the rising Chinese EV brands, global brands such as Volkswagen, BMW, Mercedes and General Motors have also ramped up local capacity and production, further intensifying competition in the market (Leggett, 2022). While there are many factors at play in this playground, innovation is one the most important. NIO, for example, achieved a special edge in this competition with its adoption of battery-swapping technology which allows EV drivers to swap fully charged batteries in 5 minutes (Baldwin, 2020). BYD, on the other hand, rolls out blade battery which is considered to be superior to lithium-ion packs in most EVs, gaining an advantage (Pundir, 2022).

2.3. Hengchi 5

In October of 2022, Evergrande's Hengchi 5 was handed to the first 100 customers (Reuters, 2022). However, this model failed to spark enthusiasm or recommendations from its customers or car

reviewers, unlike the success story of the Tesla Model 3 whose production and mass delivery reversed Tesla's liquidity crisis. Li Auto, another Chinese auto maker, also achieved positive cashflow with just one model—the Li Auto One, which became the best-selling vehicle in China in 2020 and in the first quarter of 2021 was among those plug-in vehicles that retained an internal combustion engine. (Humayun, 2021) As of 1 April 2021, the vehicle had sold over 45,000 units in China since its market debut in early 2020. NIO, another Chinese auto maker and theoretically a competitor to Evergrande EV, also achieved 20,565 cumulative deliveries of its ES8 and ES6 models (the two are extremely similar with differences only in size and can therefore be seen as one model from a product design perspective), an 81.2% increase from 2018, the year of its debut. (Greimel, 2019)

Compared with these theoretical competitors, Hengchi 5 by Evergrande EV is in many ways a failed product. Not only did the model register only around 100 deliveries, but also received many negative reviews. According to car reviewers, the model has “no discernible comparative advantage” with a design that “might as well be 3 years old at least” (Car Perspective, 2022). It has no such innovative technologies as NIO's battery-swapping or BYD's blade battery, which would create differentiation to consumers. One car review writes that the only advantage of this model seems to be “interesting purchase benefits”, which include a 15-day refund, lifetime vehicle warranty (including the battery pack) and lifetime maintenance twice a year. Apparently, Hengchi 5 has no discernible advantage over its competitors (Bobylev, 2022). What is more, even the 100 deliveries could have been sold to Evergrande's own employees, as the group Evergrande used to employ the same strategy in property sales—assigning sales tasks to every employee (including non-sales capacity) and some had to buy the property (Wind Gap Finance, 2022).

Evergrande EV also suffers from a lack of production capacity and supply chain issues. Before halting production at the end of 2022, it delayed production multiple times and when it finally started producing—it had to halt again. The company production strategy is also questioned—before ever mass producing even one model, the company rolled out the design of 9 models. This is in direct contrast with its competitors Li Auto, NIO, and Tesla, which took a few years' gap in launching new models so that later models were built on the success of previous ones. Yet Evergrande spread out its efforts and resources to 9 models at a very early stage—even before mass production of any single one of those 9 models (Loh, 2021). Lastly, the parent of Evergrande EV, Evergrande itself, was deep in trouble as the world's most indebted developer with more than \$300 billion worth of liabilities, affected by the Chinese property market crunch. The EV unit, tasked with transforming the company, lost the consistent support from the Parent company it once expected (Wen & Carr, 2023).

Even if we leave behind the above negative factors affecting the Hengchi 5, the model itself is still far from being innovative and this motivated our study into Evergrande's inability to utilize purchased patents to build a competitive product.

2.4. Patents of Evergrande EV and Absorptive Capacity

Evergrande EV once boosted the number and variety of patents it obtained through frequent merger and acquisitions. Evergrande EV reached out to Faraday Future and NEVS, as well as many others to accumulate over 3000 patents. Evergrande is also the majority investor in Swedish super car brand Koenigsegg, holding 65% of its stock while Koenigsegg retains 35%. Evergrande has access to the patents and brands of Koenigsegg through a joint venture (Reuters, 2019). Evergrande also increased its stake in battery manufacturer Shanghai Cenat New Energy to 79.8%, accessing its battery technology. Co-founded by the China Automotive Technology and Research Centre and Japanese battery company Enax, Cenat is a producer of lithium-ion ternary pouch type power batteries (Argus, 2019). Evergrande did not stop there, it has acquired chassis architecture for electric vehicles jointly developed by the German supplier Benteler and engineering firm FEV (Yang, 2019). Also in 2019, Evergrande Group formed a joint venture with German automotive powertrain specialist Hofer to develop electric-vehicle powertrains. Other EV-related acquisitions by Evergrande include U.K. electric motor maker Protean Holdings and Dutch electric motor manufacturer e-Traction. (Yang,

2019a). After these mergers or acquisitions, Evergrande applied for a total of 3012 patents in which 1355 have been granted.

However, Evergrande has not been able to integrate them into an innovative and competitive product, as evinced by the Hengchi 5 failure. After a thorough analysis, this paper proposes that the company is lacking Absorptive Capacity, which is further exacerbated by poor technological leadership.

The concept of absorptive capacity (AC) was introduced and defined in an influential article by Cohen and Levinthal (1989, 1990) as the ability of a firm to identify, value, assimilate, and exploit knowledge from the environment. AC is an important factor that impacts a firm's ability to learn and innovate. It explains why some companies can successfully utilize external knowledge while others cannot (Ferrerías-Méndez et al., 2016).

Absorptive Capacity is a function of a firm's level of prior related knowledge (Cohen & Levinthal, 1990). It is the result of the cumulative knowledge of a firm (Kim, 1997). Evergrande EV, being relatively new to the EV industry and obtaining patents mostly through merger and acquisition, is clearly lacking in prior knowledge. The company's strategy of focusing on buying instead of relying on its own R&D exemplifies a simplistic way of looking at innovation.

BYD, another Chinese EV maker, adopted an alternative plan. Instead of contacting other start-up firms, BYD relied mostly on its own R&D. Founded by Wang Chuanfu in 1995, BYD Co. Ltd carried the vision to be a world leader in energy generation and storage. Chuanfu examined patent data and battery technologies regarding electrical vehicles and used sustainability as the basis for his car models. A key strength of BYD is its diversification in the technology industry, producing multifarious products like cellular phones, laptops, electronics and designs in new energy and rail transit. This strategy ultimately allowed a successful launch in the electrical vehicle market, with its rechargeable batteries being great competition for other battery manufacturers. In 2008, Warren Buffet with a 10% stake, invested in BYD Auto with an optimistic tone, claiming that "one day it will become the largest player in a global automobile market that was inevitably going electric". With this huge investment from Buffet, it soon spurred interest from various other firms such as Daimler. Together with Daimler, a partnership to produce an electrified version of the B-Class MPV was undertaken. In 2015, BYD Auto formed a new subsidiary, Fudi. Its main objective was to allow competitors to purchase BYD components without conflicts in branding. At the same time, BYD used its second-generation models to step into independent vehicle design and by 2016 appointed designer Wolfgang Egger and Alfa Romeo as lead design directors. Later in 2020, a mid-large luxury sedan flagship model was released, named after Chinese dynasties: Qin, Tang, Yuan, Song and the latest, Han. The Han design is said to be best compared to the Tesla S model, with the incorporation of the PHEV powertrain.

With this diversification strategy, BYD was able to produce vehicle parts in-house, including the construction of microchips. In April 2022, BYD Auto officially announced its exclusive commitment to electric vehicles, no longer manufacturing gasoline-powered cars. All these developments occurred with one quote in mind - "Creating a sustainable future with smart and electric innovations is what we commit and dedicate ourselves to". With a 10-year developmental process, the BYD Model Han design is the first to be able to incorporate BYD vehicle's blade battery, a new and safe battery design that has made a lasting impression on the automobile industry. Industry insiders hail the blade battery as "energy dense, extremely safe, remarkably long-lived, and astonishingly cheap" (Lockett, 2022). By relying on its own R&D sector, BYD has more prior knowledge and therefore higher AC.

2.5. Technological Leadership

Besides low AC, the Evergrande EV also suffered from poor technological leadership team, according to its former VP. For one thing, most of Evergrande's patents are based on ICE (internal combustion engines) cars even though their end products were electric vehicles. Therefore, most of Evergrande EV's patents were useless, not licensable and added very little to its innovation capabilities or value to the company itself. On the other hand, although Evergrande also encouraged

its engineers to apply patents through its individual R&D sector, most of them were mere mild adaptations to similar existing designs on the market, therefore adding little innovative value. Its power distribution method, for example, was issued in 2020 when it was still setting benchmarks for the car model. However, this patent, although issued successfully, added little value to the firm due to it being not licensable.

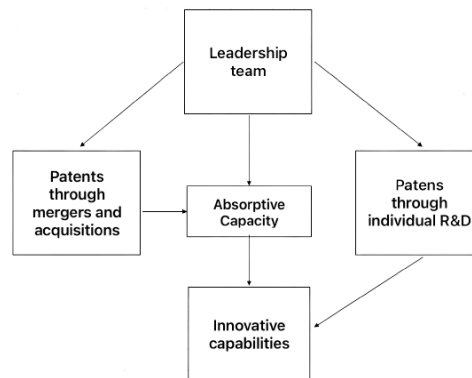


Figure 1. The Best Innovative Environment

The above figure illustrate the relationship between technological leadership, purchased patents, absorptive capacity and own R&D. First, a leadership team that can chart the course of ethnological leadership is vitally important as it both dictates in-house R&D as well as which patents to buy. While in-house R&D can directly translate into innovation, purchased patents cannot be directly applied. The firm has to absorb those purchased patents in order to use them commercially. Lastly, the higher the R&D level, the higher a firm's absorptive capacity, because higher R&D leads to higher accumulated knowledge which will also foster absorption.

In the interview with former Evergrande former EV VP, he pointed out that an excellent patent strategy is to create a greenfield framework with foundational patents and encourage engineers in brainstorm sessions to create new patents during the development process, in order to bring new ideas and concepts to life. Evergrande EV, however, has taken on an overly simplistic view on how to achieve innovation--through "buying" only. The failure of Evergrande EV so far, despite all the patents it has bought and all the impressive automakers it has partnered with, proves that there is more to consider than just the number of purchased patents, in evaluating a company's ability to innovate.

2.6. Conclusion

With the comparative study of Evergrande EV and its competitors Li Auto, NIO and BYD, it can be concluded that purchased patents acquired through mergers and acquisitions do not necessarily form innovative capabilities. As with the case of Evergrande, even though over 1000 patents were purchased from NEVS and other startups, few of them were licensable and innovative as demonstrated in its poorly reviewed Model Henngchi-5. Compared to Evergrande, BYD's patents, obtained through its own R&D sector, played a more significant role in rolling out competitive electrical vehicles. Absorptive Capacity, as a factor that influences a firm's innovativeness, is far more important than merely the number of patents. A strong and adequate technological leadership team is also important. Low Absorptive Capacity and a poor leadership team limit a company's innovativeness, especially for a new company entering the market, as in the case with Evergrande EV.

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