

The Challenges Behind Huawei's Mergers and Acquisitions Failure in The International Semiconductor Industry

Zengyi Lin *

College of Letters and Science, University of California Los Angeles, Los Angeles, 90024, The United States

* Corresponding Author Email: Zengyilin@g.ucla.edu

Abstract. Semiconductor industries, which involve the design and manufacturing processes that drive modern technology advancement in computing, communication, and electronics, are seeking greater profitability and market power through mergers and acquisitions. As one of the strongest global telecommunication suppliers, however, Huawei Technology finds it difficult to exercise M&A in semiconductor companies internationally, specifically in the United States. In this literature review research paper, the author identifies and explains four main challenges behind Huawei's failure: (1) understanding the vertical integration and horizontal expansion, (2) discovering the acquired companies' inherent hesitations, (3) exploring the impact of U.S. restrictions on foreign investment, and (4) navigating global dynamics under the hegemony of semiconductors market power. With an extended focus on challenges encompassing not only the examination of acquired companies but also the evaluation of international conflicts, this paper seeks to provide valuable insights and enlighten researchers and investors keen on gaining a deeper understanding of mergers and acquisitions (M&A) within the high-tech sector, particularly in areas such as semiconductor manufacturing.

Keywords: Mergers; acquisitions; semiconductors.

1. Introduction

Mergers and acquisitions have become prevalent in firms competing in research and development incentive industries. Through gaining the knowledge of workers from the target firm, the parent companies hope to obtain new technological competencies to increase their competitive advantage. Under successful mergers and acquisitions, the parent companies will be able to quickly introduce new products to the market while gaining the organizational talents to develop future iterations [1]. It is important to emphasize value creation, which can be categorized as expected value (benefits that the parent company expects) and serendipitous value (unanticipated expectations like new strategic ideas) throughout mergers and acquisitions [2]. When the value is created, the parent companies are likely to attain their objectives, including but not limited to the pursuit of resources, entry into a new market, expansion of scale economies, and an increase of market share. Such differentiation in incentives makes mergers and acquisitions activities sophisticated, with several variables producing aggregate results. Under the trend of increased mergers and acquisitions activities, each of them should be regulated and promoted to meet changes in market demand. Besides the extensive debates about how knowledge resources and firm economies of scale can influence competitive advantage, there is a growing recognition of two main approaches taken to conduct mergers and acquisitions: the knowledge-based approach that emphasizes the allocation of resources and employees' training and the incentive-based approach that emphasizes the effective encouragement to employees' incentive under different structural conditions in two parties [3]. Technology acquisitions will be a suitable context when examining the integration of knowledge-based and incentive-based perspectives. This is because mergers and acquisitions in technology involve not only a combination of two differentiated knowledge but also an alignment of motivations for acquired research and development employees. Specifically, the semiconductors industry assimilates and integrates external knowledge, revealing important means behind why parent companies are looking to acquire capabilities possessed by acquired firms both technologically and organizationally. Because of the driving force of technology advancement, the global semiconductor industry demonstrates continued growth

consistently [4]. M&A activity in the semiconductor industry has become the primary focus to expand market strategy and power. The developing countries such as Japan and Korea are seeking to revive their semiconductor industries through acquisitions despite the continuing international trade war over intellectual property [5]. China, which has a strong ambition of maintaining its position as the world's largest semiconductor consumption market, has been consistently seeking mergers and acquisitions in the international high-tech market. According to the Industrial Internet Innovation and Development Action Plan (2021-2023), the Chinese government considers few measures to the evaluate intelligent development of industries: (1) accelerate the network-based development of industrial equipment that helps to drive the upgrade of enterprise intranet and promote the integration of networks and technology and (2) explore the deployment of new technologies Huawei Technologies (hereinafter "Huawei") is a Chinese symbolic company in particular that has achieved rapid business growth in technology research and development, specifically following the ambitions established by the Chinese government when going intelligent. Knowing that the consequences of poor innovation can be extreme, Huawei has placed much stress on mergers and acquisitions on semiconductors so that its market demand can be more effectively fulfilled [6]. While Huawei prioritized prompt product supply just like most Chinese high-tech companies by imitating the technologies in developed countries, it lacks the innovation capabilities to develop new products favored by the market. In keeping with the trajectory of innovative development of its telecommunication systems, Huawei is looking to make investments directly in international high-tech companies, specifically through mergers and acquisitions of U.S. semiconductors. By knowing Chinese' active investment on technological advancement, the United States has excluded Huawei from entering the domestic semiconductor market. It is a high-tech development conflict between the US and China with one dominating the high-tech power and another one sharing significant dependence on foreign resources. For example, the U.S. once blocked chip equipment maker Xcerra's sale to Huawei, making the mergers and acquisitions fail for both Xcerra and Huawei's development and profitability. In this paper, the researcher analyzes four main variables for Huawei to successfully achieve M&A in semiconductors by briefly referring to the failed mergers and acquisitions between Huawei and Xcerra as the study case: (1) Understanding the vertical integration and horizontal expansion with emphasis on the influence of employees and cultural differences between parties, (2) discovering the inherent hesitation that makes acquired semiconductor companies anxious about M&A, (3) exploring the impact of U.S. restrictions on Huawei's incentive to expand semiconductors market, and (4) navigating global dynamics that reveal international hegemony with superior power in dominating semiconductor development. The purpose of this paper is to inform the audience with little knowledge on M&A about key factors for successful mergers and acquisitions and to illuminate high-tech companies or investors about necessary considerations if they are looking to merge and acquire semiconductor companies internationally.

2. Understanding the Vertical Integration and Horizontal Expansion

Semiconductor companies have been consistently growing because of mergers and acquisitions. Such an increasing trend of transactional activities demonstrates both substantial business and organizational implications that can lead to either success or failure [6]. While considering return on investment (ROI) or maximizing the value of transactions, Huawei undertakes different perspectives to meet its objectives, including strategic intervention on manufacturing performance as a vertical integration or direct integration on specific new services or product portfolio as a horizontal expansion. Throughout a complete process of integration activities, Huawei needs to clearly identify the target companies, precisely examine the strategic fit to the main organization, and strategically finalize the deal when making mergers and acquisitions on semiconductors successful and valuable for the company in the long term [7].

2.1. Interpreting Employees' Influence on Market Competitiveness

For Huawei, the competitiveness value can be improved with the better employment of technology resources under the structural organizing process. This has strong implications behind system dynamics in mergers and acquisitions in semiconductor industries, in which producing and selling the latest and the greatest can extensively fulfill the market demand [7]. Such an objective to increase competitiveness is directly related to employee performance during the examination of the manufacturing process. On their way to improve competency in semiconductor companies, companies like Huawei find it difficult to replace employees whose existing skills and talents might be outdated after the mergers and acquisitions [8]. Moreover, employees who will be staying in semiconductor companies after mergers and acquisitions could be easily confused and frustrated if there is not a clear definition of their roles. These uncertainties count as the nature of change, in which a fear of the unknown and insecurity will lead to employees' lack of confidence in managing their skills and talents [9]. By leading the devaluation of vertical integration, the nature of change negatively impacts the manufacturing performance after M&A in semiconductor companies. To successfully address employees' concerns at semiconductor companies such as Xcerra that Huawei yearns to merge and acquire, Huawei should be responsible for carrying out mergers and acquisitions activities smoothly rather than focusing on daily routine activities. This will require Huawei to communicate with employees in semiconductor companies early and immediately so that they can be best informed with less potential for misinformation dissemination [6]. Beside introducing more information of changes in M&A to employees for eliminating their concern, it is significant for companies like Huawei to discuss the aforementioned issues with employees appropriately. This will involve Huawei taking effort and time to effectively manage the training, counseling, and other professional help employees. The process of maintaining and retaining competent employees will create a sense of commitment to the changes in mergers and acquisitions.

2.2. Synergizing Cultural Differences as Part of Social Interaction

The process of mergers and acquisitions in the semiconductor market serves as an opportunity that allows different parties to interact with each other. Though sharing knowledge about their respective processes, systems, and operations can be invaluable, two sides are unlikely to reach ultimate agreement or trust each other if cultural conflict exists [10]. When working on a horizontal expansion that engages with different approaches toward life, including travel expenses and pay scale, cultural integration is largely responsible for determining the new structure, specifically under cross-border mergers and acquisitions [9]. For example, the working style of two parties might vary with one focusing on a more freewheeling style and another emphasizing the formality of operation. The parent companies don't want the talent to leave a few months after the deal has closed. To inspire employees to embrace new challenges and get accustomed to new regulations, leaders in two parties need to constantly spend more time knowing about what irritates and excites them.

3. Discovering the Acquired Companies' Inherent Hesitations

After having most deals being restrained by either government policy or market instability, semiconductors are yearning to address their dilemmas of slow revenue growth and replaceable solutions. That is, customers increasingly demonstrate their preference to purchase integrated solutions from one company rather than approaching a few high-tech companies to solve their technology issues [5]. To consistently gain scale and remain competitive, semiconductor companies are merging and acquiring with other enterprises. While mergers and acquisitions may help to successfully integrate semiconductors' talents and skills into new areas of the value chain, semiconductor companies illustrate resistance and reluctance to engage in M&A. For semiconductor companies, it is believed that such M&A will not result in higher value creation and more efficient execution when organizing specific products or services to the marketplace.

3.1. Recognizing Business Opportunities Behind High Price Premiums

Sometimes semiconductor deals might involve high price premiums, the pricing strategies that involve setting higher prices than your competitors to create a perception of superior value and boost profitability. For semiconductor companies who struggle to engage in mergers and acquisitions, they worry that the value captured will not exceed their high price premiums. Such concern can be explained by semiconductor companies' estimation of potential synergies. When evaluating the return on investment, or profitability, in their possible integration of knowledge and skills if mergers and acquisitions are achieved, semiconductor companies undergo a high-level data review process, specifically the general and administrative costs for each partner [10]. Such quantitative assessments of business opportunities might be rewarding, but they tend to neglect other qualitative variables, including human resources and finance. Moreover, semiconductor companies' underestimation of marketplace analysis restrained them from considering sales and operations. In two parties, both supplier and customer bases should be considered and examined since they help to identify some redundancies that might impede the general development of mergers and acquisitions.

3.2. Incorporating Diversity to Improve Market Attractiveness

It is understood that there will be an increased workload required for successful mergers and acquisitions, but semiconductor companies are not completely ready for integrations, both before and after deal tasks. When considering mergers and acquisitions, semiconductor companies look for targets in their own segment. Such conventional alliances could result in consistent and constant gains but less variation in profitability as well as customers. For semiconductor companies, aligning with dissimilar companies, or companies not within their segments, provides more flexibility to offer comprehensive and diversified products, creating a customized customer base that the market perceives favorably [6]. Consider a semiconductor company that was highly dependent on a major group of customers. When the major customer concentration drops, there can be an expected decrease in revenue. In this case, the merger allows the semiconductor company to have a more diversified customer base that can positively influence the market development.

4. Exploring the Impact

As a member of the World Trade Organization, Huawei attains great importance to growing technology and innovation. In 2019, Huawei collaborated with 170 countries to supply its communication products and services, making it competitive in high technology and research and development (R&D) in numerous countries and regions [4]. In its efforts to succeed in cross-border M&A in semiconductor companies, however, Huawei was challenged by the United States' political resistance. With its semiconductor industry mainly relying on technological innovation and technological leadership, the United States is responsible for approximately 50% of the total target countries in high technologies such as the semiconductor industry [3]. To effectively supervise all transactions related to technologies, the United States has triggered different types of resistance that implicitly exclude Huawei and other Chinese technology companies from entering its high technologies market.

4.1. Safeguarding the National Economy Security

The International political economy, consisting of both economic security and political economy, plays an important part when considering national security. Since there is an interdependence between a country's economic development strategy and national security, the host government in the United States maintains its national security by political means. To monitor the continuous opening of the economy and the influx of foreign capital in the high technologies, the US Foreign Investment Commission (CFIUS) undergoes a national security review in cross-border transactions [2]. In its review, CFIUS has become responsible for addressing "Does it harm the national security of the United States?", a domestic high technologies development concern. Though most review standards

are generalized and include lots of uncertainty, they provide significant discretion and management power for CFIUS, such as how it established 22 cases of blocked cross-border M&A when examining Huawei and other Chinese semiconductor companies [3]. Under this case, the CFIUS' restriction simplicity, which is different from explicit restrictions such as prohibiting investment in specific industries and introducing bills, successively prevented Huawei from acquiring equity from Xcerra.

4.2. Managing the Domestic Critical Infrastructure

In semiconductor supply chain, U.S. imposes restrictive export controls despite how Huawei has become one of the top global suppliers for important sources of demand for semiconductors. For the implementation of semiconductors in high technology, Huawei was a major smartphone and telecommunications infrastructure equipment supplier. According to the study of smartphone and telecommunication market share, Huawei was responsible for almost 20% of the global smartphone market and many countries' 5G networks [4]. While Huawei's equipment significantly supports remote surgery, autonomous vehicles, and the Internet, governments in the United States share concerns about potential spying and network vulnerabilities. While collecting foreign data, including corporate and military information, to improve algorithm efficiency in its systems, Huawei follows China's national security law that could compel companies to transform these data into network equipment. For example, Huawei equipment was once accused for spying on the African Union headquarters in Ethiopia [7]. Such management of collected data could facilitate spying, resulting in obtaining information without the permission and knowledge of the owners. Moreover, Huawei's low-cost equipment poses long-term security risk management as suggested by a report from the UK government, which keeps demonstrating that Huawei has no confidence in addressing such concerns [1]. Following many other justifications, the US Department of Justice had made on Huawei, including Huawei's stealing of US technology and laundering of money, the United States has joined forces to secure domestic infrastructure development.

5. Navigating Global Dynamics

M&A activity in semiconductors is becoming the most desired after emerging verticals. Developing countries such as Japan and Korea have been consistently seeking to re-flourish their semiconductor industries via collaborations and acquisitions of mid-sized companies in developed countries, including the US and Europe. China is part of the developing countries that makes significant outbound investments in semiconductors from international high-technology companies. With semiconductors always on the lookout for potential targets to create higher market share and profit, the US and Europe have tightened regulatory reviews over China's yearning expansion on semiconductors. To ensure their industrial competitiveness and maintain sustainable developments on semiconductors, developed countries who share dominant power and markets in high-tech have constrained China and Huawei's mergers and acquisitions.

5.1. Ensuring Industrial Competitiveness and Secrets

Aiming to improve its innovation capabilities by adopting imported technologies with licenses and reversing them into radical innovation progressively, Huawei is attempting to collaborate with a wide range of global semiconductor industries. Despite how Huawei's slogan "Achieving a win-win through collaboration" can facilitate more opportunities for M&A in semiconductor industries, these social members who share the common interests of political, ruling, and social goals might struggle to collaborate with Huawei [6]. According to "International Trade Theory", an increase in international specific capital flow will likely affect trade distribution and cause participants seeking protection. With high technology groups, specifically, the semiconductor industry, yearning to shape their favorable internal and external development environment through policy demand and political opinions, Huawei's investment may harm the semiconductor's industrial structure and other related enterprises. To avoid industrial competition from Chinese economic strengths and Huawei, Xcerra

ensures its main competitiveness by attaching great importance to intellectual property while promoting the opening of the information to the semiconductor industries in the United States and developing countries.

5.2. Protecting the Strategic Industry Development

Strategic industries refer to business entities that occupy dominant power and management over the national economic system, including people's livelihood and military security. Semiconductors, which are core components in telecommunication, artificial intelligence, and other high-tech goods, are part of international strategic industries that deserve protection. Despite how globalization is promoted to encourage social and technological integration among different countries, international semiconductors have become increasingly rigorous in controlling foreign investment such as cross-border M&A [1]. As part of their protectionism implementation, international semiconductors exercise anti-globalization that reaggregates the markets through different forms of conditionalization, including explicit or implicit restrictions on funds, labor, and commodities. Such increasing protectionism directly forces Chinese semiconductor companies to encounter counter-globalization, which imposes many "invisible hands" behind China's cross-border mergers and acquisitions. With the increasing foreign investment in high-tech such as semiconductors, the traditional argument of "protectionism", which signifies foreign competitors' possession of some unfair competitive advantage, takes different countries to examine and justify their investment restrictions in strategic industries. Besides how Huawei gains its advantage in the semiconductor market by obtaining intellectual property rights while simultaneously providing complementary services, the United States, Australia, Germany, and the European Union have clearly imposed obstacles on the merger and acquisition of companies in developing countries like China by adopting various measures to interface [4]. To overcome Huawei's expanding standardization activities, including close to 60,000 standardization proposals submissions to enlarge its semiconductor emerging market while spreading technologies, these countries impose fees from China to avoid the issue of "free ride" [2]. Such fees are collected to enable developed countries to exploit other high technology in developing countries, thereby successfully conducting unequal transitions to technological progress as their competitive advantages. With the power and capability to supervise semiconductors globally, these developed countries demonstrate their manifestation of technological hegemony - the overwhelming power to dominate the international technology market. Such hegemony brings passive relations to Chinese companies like Huawei, making mergers and acquisitions its only way to address the relationship between dependence and dominance on semiconductors despite how M&A is frequently opposed by the interests of developed countries.

6. Conclusion

In this paper, the author analyzed essential criteria that potentially exclude Huawei from successfully exercising mergers and acquisitions on U.S. semiconductors. Since M&A is an integration process that involves high strategic importance but low familiarity between two parties, it is significant to eliminate employees' concerns about acquired companies and support their cultural preferences through effective communication and management. Huawei failed to pay attention to synergy between the two parties, thereby unsuccessfully maintaining and strengthening its market competitiveness. Besides the need to help acquired semiconductor companies realize different business opportunities and profitability behind M&A, Huawei was challenged by U.S. restrictions on its corporate expansion strategy. With different implicit reviews and concerns towards network vulnerability, the U.S. demonstrates resistance to many of Huawei's M&A incentives as it approaches to protect national economy security and critical infrastructure. Such reluctance from the U.S. to engage with Huawei for M&A in semiconductors was extended to international semiconductor markets. The developed countries in Europe that dominate power and management in high-tech seek to protect their semiconductors competitiveness by placing political means to impede

Huawei from making improvements and innovation. It is always the passive relationship in which Huawei's reliance on skills and talents from acquired semiconductor companies goes against the interests of foreign semiconductor markets. In future research related to the assessment of variables that influence the success of M&A in semiconductors, it is important to incorporate more numerical figures as evidence to explain the nature of change in such marriages. Moreover, more variables can be further examined to consider the effectiveness of M&A in semiconductors, including profitability issues, person-focused change, and structure-focused change. With more variables being considered, future researchers and scholars could examine more parent companies and acquired companies from their interests and perspectives.

References

- [1] Graebner, Melissa E. "Momentum and Serendipity: How Acquired Leaders Create Value in the Integration of Technology Firms." *Strategic Management Journal*, 2009, 11(25): 8–9.
- [2] Rahul Insead., Kwanghui Lim. "The Impact of Acquisitions on the Productivity of Inventors At Semiconductor Firms: A Synthesis of Knowledge-Based and Incentive-Based Perspectives." *Academy of Management Journal*, 2007, 50(05): 1133-1155.
- [3] Deloitte. Semiconductor - the Next Wave Opportunities and Winning Strategies for Semiconductor Companies. [EB/OL]. (2019-04-12) [2023-08--29]. <https://www2.deloitte.com/content/dam/Deloitte/tw/Documents/technology-media-telecommunications/tw-semiconductor-report-EN.pdf>
- [4] Huawei. Communications Network 2030. [EB/OL]. (2022-12-22) [2023-08--29]. https://www-file.huawei.com/-/media/corp2020/pdf/giv/industry-reports/communications_network_2030_en.pdf
- [5] Ambashi Masahito. "Innovative Chinese Firms: A Case Study of Huawei's Corporate Strategies and the Impact of US–China High-Tech War." *Innovation in East Asia (BRC Research Report)* [EB/OL]. (2022-03-08) [2023-08--29]. https://www.ide.go.jp/library/English/Publish/Reports/Brc/pdf/28_03.pdf
- [6] Accenture. M&A in the Semiconductor Industry. video transcript. [EB/OL]. (2022-05-06) [2023-08--29]. <https://www.accenture.com/content/dam/accenture/final/industry/high-tech/document/Accenture-Semi-MA-Video-Transcript.pdf>
- [7] Sugandh Kansal., Arti Chandani. "Effective Management of Change During Merger and Acquisition." *Procedia Economics and Finance*, 2014, 11(01): 208-217.
- [8] Helen Chen., Vineet Gupta., Mark Patel., Maggie Stringfellow. "Winning Through M&A? Deal Making in the Semiconductor Sector." [EB/OL]. (2016-08-09) [2023-08--29]. <https://www.mckinsey.com/~media/mckinsey/industries/semiconductors/our%20insights/winning%20through%20m%20and%20a%20deal%20making%20in%20the%20semiconductor%20sector/winning%20through%20m%20and%20a%20final.pdf>
- [9] Jill Gallagher. "U.S. Restrictions on Huawei Technologies: National Security, Foreign Policy, and Economic Interests." *Congressional Research Service*. [EB/OL]. (2022-11-12) [2023-08--29]. https://www.everycrsreport.com/files/2022-01-05_R47012_65c5c54827b8fef912a19079f10e144b3b88d009.pdf
- [10] Xinfang Zhang. "Analysis of Chinese Semiconductors Companies' Cross-border Mergers and Acquisitions Encountering Political Resistance." [EB/OL]. (2022-03-02) [2023-08--29]. <https://www.clausiuspress.com/conferences/LNEMSS/WTED%202020/20WTED002.pdf>