

I The Management Transformation of Huawei

An Overview

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I. I INTRODUCTION

Huawei is now China's most prominent multinational company. In 2018, Huawei achieved sales of USD 105.2 billion and operated in over 170 countries around the world, employing around 188,000 people. Forty-five percent of all employees are focused on R&D (Huawei, 2019), giving the firm strong technological capabilities. Huawei has now even surpassed Ericsson and Nokia to become the largest telecommunication infrastructure equipment company in the world. It is also the second largest maker of smart phones.

Not surprisingly, academics, business leaders, and policy makers have become very interested in understanding how Huawei has been able to rise from its humble beginnings in Shenzhen as an importer of analog telephone switches to a globally operating information technology manufacturing and service firm. Huawei is now frequently featured on the cover of international business magazines (Economist, 2012) or as a case study in Western business schools (Hitt, Ireland, and Hoskisson, 2008; Peng, 2010) because it has accomplished something that is still rare for a Chinese company: turning itself into a world-leading company and R&D powerhouse.

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To date, writing an academic-quality book on Huawei has almost been impossible given that it has been a secretive private company. Until 2010, Huawei did not even publish its governance structure, let alone any information that would make it possible to get deeper insights into how the company operates. Realizing that this secrecy was hurting Huawei's ability to further expand in key international markets, the firm began to open itself up more. Ren Zhengfei, the founder and key leader, started to give interviews to Western journalists (Economist, 2014a; Pullar-Strecker, 2013).

More importantly, the firm granted Tian Tao, a Chinese business journalist and long-time advisor to Huawei, along with Chunbo Wu, an academic from Renmin University of China, access to internal company documents. Huawei also gave them permission to interview hundreds of current and former Huawei managers. Based on their research, Tian and Wu published *The Huawei Story* (2015), first in Chinese and a few years later in English. The book provides the most comprehensive account of the development of Huawei since its founding in 1987. It lays out in detail the management philosophy and values that have guided the firm's development as it struggled to overcome its weak financial and organizational capabilities and become an international leader in the information and communication technology industries (ICT). An expanded version of the book was published recently (Tian, De Cremer, and Wu, 2017).

With the help of Tian Tao, Zhejiang University School of Management has set up the Ruihua Institute for Innovation Management to further academic research and teaching on how and why Huawei has been able to outcompete so many domestic and international rivals. Earlier explanations for the success of Huawei emphasize Chinese cost advantages, stronger customer centricity, a strategy of first entering peripheral markets before competing in core markets, and the gradual buildup of ever more sophisticated technological capabilities that made Huawei a leader in the next-generation technology of 5G mobile telephony (Fu, 2015; Z.-X. Zhang and Zhong, 2016). As the research at the Ruihua Institute progressed, however, it became

clear that at the center of Huawei's success lies an organizational capability to continuously transform itself.

For this reason, we made the decision to write a book entirely focused on Huawei's transformation since its beginning in 1987. We believe that scholars interested in organizational change or more specifically change in Chinese firms will benefit the most from learning about Huawei's transformation capabilities. Because we realized that the development of new and the breaking of old routines is central to Huawei's transformation, we decided to use as our overarching analytic lens the theory of routines-based organizational capabilities (Becker, Lazaric, Nelson, and Winter, 2005; Murmann, 2003; Nelson and Winter, 1982; Nigam, Huising, and Golden, 2016; Parmigiani and Howard-Grenville, 2011; Szulanski and Jensen, 2008; Winter, 2003).¹ We follow here in the tradition of Robert Burgelman, whose studies of Intel have helped advance our understanding the evolutionary processes underpinning corporate transformations (Burgelman, 1991, 2002; Burgelman and Grove, 2007). To be sure, there is a large literature on organizational change, and our book is not novel in terms of focusing on organizational change. What makes Huawei interesting is its rate of growth and the level of detail in which we can observe not only the creating of routines but also the breaking of routines across most of the major functions of the firm. This makes Huawei an ideal case to advance the theory of routines and dynamic capabilities to change routines (Pisano, 2017; Teece, 2007; Teece, Pisano, and Shuen, 1997). Our book will be particularly appealing to academics in the field of strategy, management, and business history.

In December 2018, Huawei was in the headlines all over Western world when its chief financial officer was arrested in Canada on the request of the US government for allegedly violating US trade sanctions. This event is taking place against the larger backdrop of

¹ For an excellent review of the routines literature see Parmigiani and Howard-Grenville (2011). For a more recent review, see the special issue in *Organization Science* on routine dynamics (Feldman et al., 2016).

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the US government stepping up its campaign to limit Chinese telecom participation in building 5G networks in Western countries because of national security considerations (Woo, 2018). To avoid false expectations, we would like to be explicit at the outset that the geopolitical struggles over who builds, runs, and effectively controls national telecommunications infrastructures is a topic we will not be dealing with in this book. We are focused solely on the management transformation of Huawei. This transformation by itself is worthy of a scholarly investigation. In the conclusion chapter we offer, however, a short appraisal of Huawei's future growth challenges, and in this context we will briefly detail the geopolitical challenges Huawei currently faces as it tries to commercialize its leading technological position in 5G mobile technology.

Our book should not be seen as an official history of Huawei or a mouthpiece for current and former executives. The research team has been entirely independent of Huawei. The views expressed in this book are ours alone. We benefited immensely, however, from our interviews with many former Huawei executives, access to the firm's internal newspapers, and the presentations of many former executives at the quarterly Huawei forum of the Ruihua Institute for Innovation Management. In Appendix B, we list the names of the presenters and the title of the presentations at Ruihua Institute. In Appendix C we provide a list of the interviews we conducted, the persons interviewed, and the various positions they had held within Huawei. But we have also drawn extensively on external information, as will become evident in each of the chapters. All information sources are referenced throughout the book.

1.2 A BRIEF HISTORY OF HUAWEI

Huawei was founded in 1987 by Ren Zhengfei in Shenzhen, where the Chinese government had set up the first special economic zone in May 1980 to experiment with private initiative and foreign investment in what was otherwise a centrally controlled and collectively owned economy (For a sympathetic biography of Ren, see Li, 2017). It

is not a coincidence that the first special enterprise zone was set up right across the border from Hong Kong. Deng Xiaoping, the key political leader in China at the time, became eager to reform the Chinese economy partly because he noticed how much better capitalist Hong Kong had developed than communist mainland China in the previous three decades (Vogel, 2013).

The rise of Huawei parallels in large part the development of Shenzhen as a commercial hub in China. Shenzhen's population increased from around 300,000 inhabitants in 1980 to over 15 million today, making it the most densely populated city in China (Shenzhen Standard, 2014). Ren Zhengfei, who previously had worked as a civil engineer in the Chinese military corps of engineers, started Huawei just as the Chinese government started a strong push to upgrade the telecommunications infrastructure across the country. In 1978, China had only 2 million telephone subscribers and a total capacity of 4 million lines (Tian and Wu, 2015, p. xviii). In 2015, there were over 1.3 billion mobile phone users (Statista, 2016a). In one generation, having a telephone went from a luxury to what is perceived as a necessity of daily life. Visit any large Chinese city today and you will notice that all people have smart phones in their hands. To get the entire Chinese population connected with mobile phones, the investments that had to be made in telecommunications infrastructure were massive.

A key element of Huawei's history is that it faced fierce competition from the beginning both from domestic and international players. In light of how successful Huawei has become, it is easy to fall into the trap of thinking that the firm's success was foreordained and that the rise to the top was easy and smooth. When Huawei entered the Chinese market in 1987 as a mere importer of telephone switches, the technologically sophisticated Western firms – Ericsson, Alcatel, Siemens, AT&T (later called Lucent Technologies), Northern Telecom (later called Nortel), Fujitsu, and NEC from Japan – were all competing for orders in China (Tian and Wu, 2015, p. xxiv). What is more, in the mid-1980s there were many Chinese entrepreneurs and

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managers of state-owned local companies who regarded the growth prospects of the telecommunications equipment market as attractive. According to Tian and Wu (2015, p. xxv) at least 400 firms entered the market in this period, creating strong competition also at the lower technological end of the market.

For anyone who has studied the development of industries in other countries, the magnitude of entries into Chinese markets that were opened to new entrants is typically by an order of magnitude larger than in other countries. Klepper (2015) provides extensive data on US industries and Murmann (2013) for other countries, demonstrating this fact. As part of their research on the textile color industry in China, Jiang and Murmann (2012), for example, encountered at least 800 Chinese start-ups in the 1980s and 1990s. Turning to a more contemporary example, in addition to the well-known Chinese smart phone brands Huawei, Lenovo, HTC, and Xiaomi, at least 445 other firms manufactured smart phones in China in 2015 (Ibisworld, 2015). No other country comes anywhere close to this large a number of firms competing in the same market. One reason for this is clearly that the Chinese population of 1.3 billion people is four times larger than that of the United States, which is the largest market among the Western countries.

Huawei faced strong competition from the beginning, and competition in the industry continued to be fierce over the next three decades even though the global telecommunications equipment market increased from 119 billion USD in 1993 (U.S. International Trade Commission, 1998) to 354 billion USD in 2011 (Statista, 2016b). Especially when the internet bubble burst in 2001, many ICT firms struggled with overcapacities. Since then, many of the key players have merged because they could no longer compete successfully as standalone companies. Between 2006 and 2016, the telephone equipment businesses of Nokia, Siemens, Alcatel, and Lucent successively merged in the hopes of being able to better compete with Huawei and now operate under the Nokia name (Nokia, 2016). By 2013, Huawei became the largest telephone network equipment supplier in the

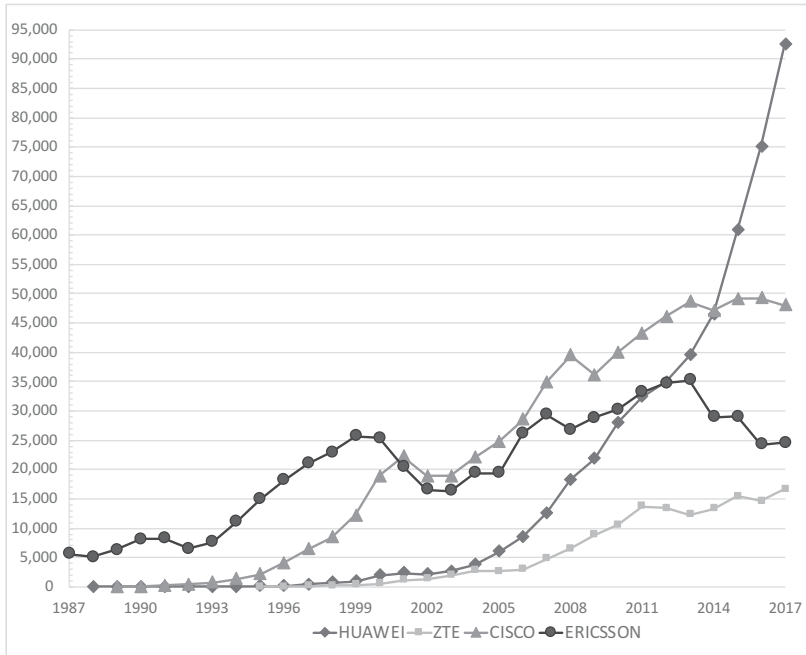


FIGURE 1.1 Sales growth of Huawei, ZTE, Cisco, and Ericsson since 1987 (in million USD)

Source: Company Annual Reports

world and over the years moved from simply making equipment to offering turnkey solutions.

To make sense of the rise of Huawei graphically, we have created Figure 1.1. It compares the growth of Huawei since its foundation in 1987 to three other firms: Ericsson, its chief international competitor in the telecommunication industry, ZTE, its chief domestic rival in that industry, and finally Cisco, a chief rival in the networking and switching business.

Figure 1.1 nicely illustrates how Huawei's higher growth rates have left all competitors behind. Huawei's sales surpassed those of Ericsson in 2012 and those of Cisco in 2015.

As Huawei overtook Western rivals, taking further market share away from these players became strategically unviable. Governments

across the world would not have allowed Huawei to become a monopolist. This is one reason why Huawei sought further growth in related industries. In 2002, it started to make handsets and related consumer goods as a contract white goods manufacturer, and since 2009 Huawei has sold smart phones under its own brand using the market leading Android OS (Gedda, 2009). The smart phone business has been Huawei's fastest-growing segment since 2009, turning Huawei into the second best-known Chinese consumer brand in the Western countries behind Lenovo. In 2015, Huawei became the third largest manufacturer of smart phones in the world after Samsung and Apple, shipping 76 million units and gaining 8.7 percent market share (IDC, 2016). Huawei also entered the enterprise ICT equipment sector, producing everything from corporate networks, storage and security system, routers, IP telephony and video conferencing systems, to cloud solutions and other ICT services (Huawei, 2016b). Here, Cisco is one of the main competitors (Reckoner, 2013). In terms of the relative sizes, consumer sales (largely smart phones) is Huawei's largest segment with 48.4 percent of sales, followed telecommunication network equipment and services sales to operators (carriers) with 40.8 percent, and the enterprise sector accounting for 10.3 percent of sales (Huawei, 2019).

Huawei's remarkable growth history is visible in Figure 1.2, which tracks the number of employees and total sales over time. The figure makes it plain that looking back over the past three decades, Huawei grew at moderate rates before 1995, subsequently growth rates accelerated until around 2003, and then there was another dramatic jump in growth rates. (Appendix A presents the exact numbers for each year.) These growth rates cannot simply be explained pointing to favorable market conditions that would have allowed all competitors to grow. Many Western competitors mentioned earlier declined over the past fifteen years, and Huawei undoubtedly became stronger as an organization at the expense of its Western competitors.

The chapters that follow analyze in detail aspects of Huawei's transformation. To set the stage, it is useful to discuss a number of

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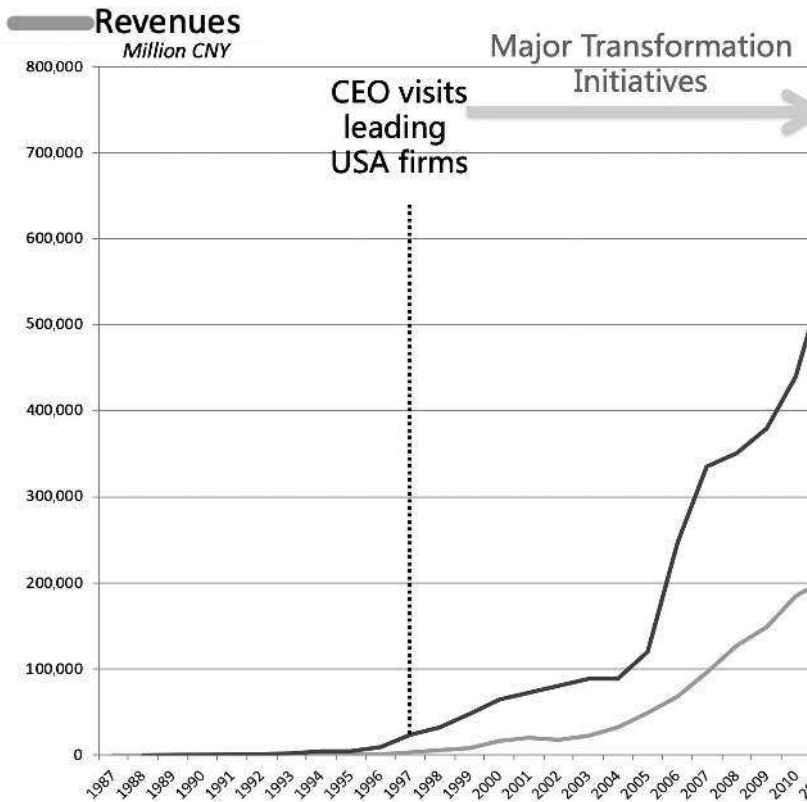


FIGURE I.2 Huawei's revenues and employees, 1987–2018, and the timing of major

key features of Huawei that are in the background of all these transformation initiatives.

1.3 KEY FEATURES OF HUAWEI'S MANAGEMENT PHILOSOPHY AND CULTURE

When a company becomes as successful as Huawei and when it seems to have as strong a culture as Huawei has today, it is easy to fall into the trap of concluding that the firm possessed the values underpinning the culture from day one. Even if one can show that the founders already possessed these values at the beginning of the venture, it is a mistake to conclude that all employees who joined the firm would automatically embrace the same values. Huawei experienced significant organizational problems as the firm grew from 20 employees in 1991 to 6,000 employees in 1997 precisely because this 100-fold increase in staff numbers undermined the shared culture and philosophy that the founding team may have had. Our book details many initiatives whose clear aim was to create and then maintain a shared culture and esprit de corps as so many new employees were joining the firm every year.

Peter Williamson is one of the best-informed Western scholars of Chinese firms (Wan, Williamson, and Yin, 2015; Williamson, 2010). When asked to characterize strategy formulation at internationally known Chinese firms such as Alibaba and Tencent, Williamson explains: "Leaders of private Chinese firms simply made it up as they went along" (Williamson, 2015). Unlike firms in the West, a blueprint that the first private companies in China could follow in the high uncertainties in the Chinese environment did not exist. While China recognized the legitimacy of the private sector already in the 1988 revision of its constitution, property rights in the Western sense of the word were not as secure as they are in the West from interference from the state (M. Zhang, 2008). Legally speaking, the Chinese constitution did not formally recognize the legality of private property until 2004 (Nee and Opper, 2012; M. Zhang, 2008) and its institutional environment makes it more difficult than in the West to predict what