

A strategic assessment of Huawei into the fast future

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A Strategic Assessment of Huawei into the Fast Future

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This chapter explores the impact of the Trump administration's sanction on the most controversial company in the world – Huawei. It first discusses the firm specific and country specific advantages underpinning the strengths and opportunities of Huawei. It then elaborates Huawei's business within the context of China's ascendancy in the new world order, followed by the liability of foreignness that has shaped Huawei's predicament. Huawei has been forced to stand to fight for its survival for the first time in its corporate history. But could a relatively smaller company prevail among the global technology giants? Tsang and Fuschi discusses Huawei's crisis management, which is a characteristic of Chinese business and suggests that the Plan B has enabled it to prepare for the worst-case trade related scenario.

1. The Making of Huawei

Huawei's recent research study has unveiled a Fast Future where humanity will reach an unprecedented level of integration with technology in daily lives, enabled by the Fifth Generation (5G) telecommunication technology. The 5G related technological innovations that are changing our ways of life are the Internet of Things (IOT), artificial intelligence (AI), augmented and virtual reality (AR/VR) as well as connected technologies. Despite Huawei's significant role in the 5G, it has risen as globally prominent and in the spotlight as a result of the trade-war occurring between the USA and China. The trade war traces back to President Donald Trump's campaign promise

for the Republican Party's presidential nomination concerning the Sino-American trade imbalance. The trade war officially began on 6 July 2018 when the USA implemented the first 25% tariff on 818 Chinese products under List 1. A month later, the US National Defense Authorization Act for Fiscal Year 2019 stopped the Federal government from procuring information and communication technology (ICT) equipment from Chinese companies such as Huawei on the ground of national security concerns (Young 2019). Since then the trade war progressed and deepened and on 16 May 2019, the US Department of Commerce's Bureau of Industry and Security placed Huawei on its Entity List, a list that relates to individuals or businesses that are barred from doing businesses in the USA; consequently, US companies could only sell high tech components and software to Huawei with prior state approval. The US government has further adopted a licensing scheme since 9 July 2019 to provide a formal approval process for firms selling to Huawei on the basis that the sales activities would not create a threat to US national security (Wong and Koty 2019).

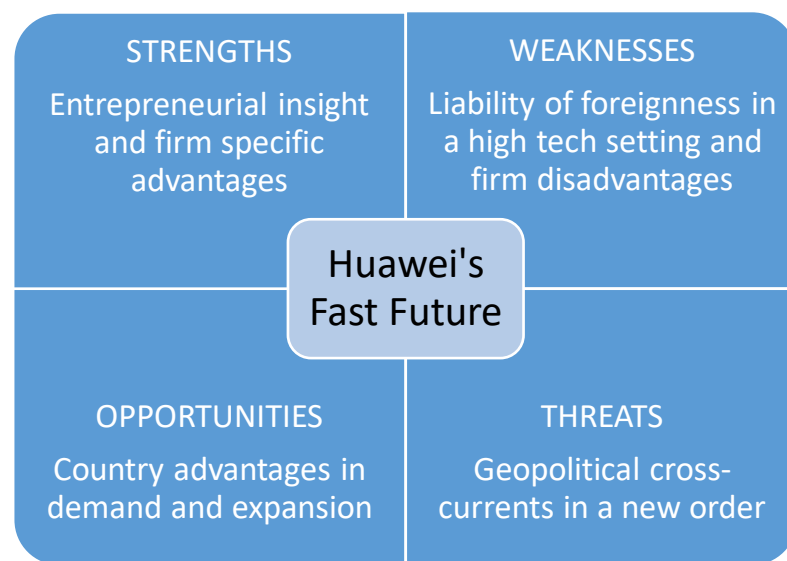
Huawei is a private ICT company founded by Ren Zhengfei. Ren graduated from Chongqing University in 1963 and joined the Chinese army in 1974, where job allocation under the planned economy was the official requirement (Wagstaff and Yee 2012). Nevertheless, Ren and the entire engineering brigade of the People's Liberation Army in Shenzhen was made redundant in 1983 as Deng Xiaoping embarked on economic reform making cuts on military expenditure (Tsang 2006). Shenzhen, which was in the early stage of transformation from a small fishing village to a global technological hub, provided Ren the opportunity for a new career. He found a managerial job in an electronic firm before establishing his entrepreneurial venture Huawei in 1987. During its early days, Ren took advantage of his former work network and tapped into the military telecommunications supply market, and established

Huawei as a sales agent for a Hong Kong company. He also pursued a strategy to invest heavily in research and development within the new company. Huawei grew in China over the 1990s. As Huawei built up its technological capability, it began to search during the 2000s for new opportunities abroad. In particular, it was able to transfer its practical experience within the emerging Chinese market and deployed its capability overseas with a similar technological requirement. Over the decades, it has gained competitive advantages from launching products and services meeting the needs of customers initially in emerging economies then successfully utilizing its experience and serving customers within advanced economies. Huawei tries to listen to its customers and examine their needs. For example, in early 2010s, Ren discussed the requirement with LG in relation to its LTE network in South Korea. Huawei provided LG the 300 Mbps LTE network requested specifically by the Chairman. This enabled a very successful experience during the visit of Pope Francis in 2014 with 300,000 users in a confined area taking and sending photo across the LG network without any technical issues (Huawei 2019c).

Huawei has been described recently by industry commentators as the world's No. 1 telecom supplier, No. 2 smartphone manufacturer (CNET 2019a) and the global leader in 5G telecommunication network business (Fortune 2019). With its focus on a better connected world, Huawei could be considered as one of the most important technology companies. It currently employs over 180,000 employees, operates in more than 170 countries and serves more than three billion people around the world (Huawei 2019b). Huawei is also a globally oriented company, with approximately half of its sales revenues generated from outside China; it derived 48% of its revenues from the consumer sector, 42% from telecommunication carrier network equipment and 10% from the business sector (Huawei 2019d).

The chapter examines the impact of the Trump administration’s recent sanction on Huawei using the Strengths, Weaknesses, Opportunities and Threats (SWOT) framework shown in Figure 6.1. We will first discuss the firm specific and country specific advantages underpinning the strengths and opportunities of Huawei from the international business strategy perspective. We will then elaborate Huawei’s business within the context of China’s rise and the geopolitical cross-currents, which will be followed by the discussion of the liability of foreignness that has shaped Huawei’s predicament. Finally, we will evaluate the path Huawei can pursue to reconfigure its business model and the potential implications.

Figure 6.1: A Strategic Analysis Framework on Huawei



Source: Authors.

1. Entrepreneurial Insight and Firm Specific Advantages

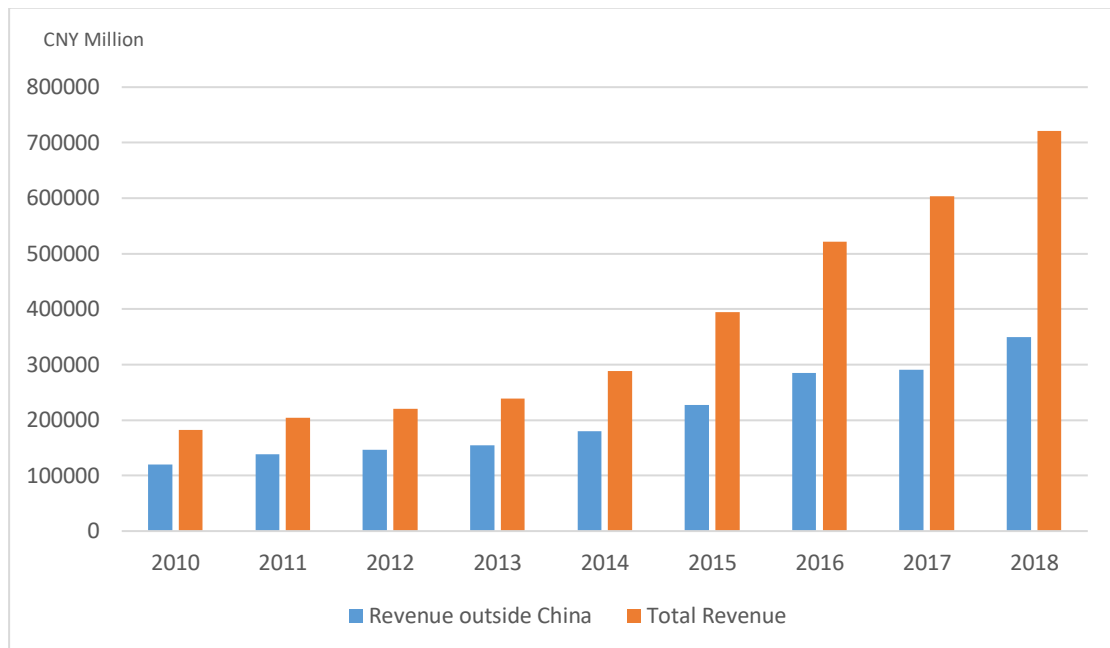
By the end of the global financial crisis in 2009, Huawei achieved worldwide revenues of approximately US\$20 billion. It has grown at a phenomenal rate in the past five years with its command of the 4G and the 5G telecommunication infrastructure; its revenues grew to US\$110 billion by 2018 (Huawei 2019d). Figure 6.2 shows the growth of sales

revenues in Huawei, which has risen rapidly since the mid-2010s with its globalization. As in 2018, Huawei obtained approximately half of its sales revenues outside China and over one-third of its sales outside its home region of Asia Pacific (Huawei 2019d).

Huawei's ability to become a successful global leader in ICT, to a great extent, is shaped by its technology capability as fostered by historical investment in research and development, which has generated leading edge firm specific advantage over time (Rugman 1981). By consistently investing approximately 10% of its total sales in research and development, Huawei has over the decades accumulated technology capability as a leading provider of ICT infrastructure and related smart devices. It launched its first proprietary technology in 1993, which was a digital telecommunication switching system called the C&C08. This switching system was reliable and much cheaper than competing products and consequently enabled the company to expand quickly and gained commercial use in China. Huawei built on its domestic strength and since 2000 expanded further to other emerging economies. It was able to serve customers in the emerging economies with the knowledge and experience from working with similar customers at home. Apart from the core telecommunication technology, it has also developed cables in China that are resistant to rodents chewing through them; such products are popular in countries with pest control problems. It should also be noted that Huawei's R&D employees, consisting of over 40% the workforce, are also required to undertake marketing functions as Ren did in the early days of Huawei. By doing so, Huawei engineers have first-hand knowledge of the customers and fully understand their requirements and the most appropriate technical solution. As its founder Ren explicitly states Huawei's mission is to "stay customer-centric and create value for customers. This is because our money comes from our customers pockets" (Huawei 2019c). Ren therefore has shown significant

entrepreneurial insight regarding the drivers of growth within high tech sector, which is a critical firm specific advantage (Rugman 1981). The consistency of R&D investment enables Huawei to capture market opportunity with the fast evolving telecommunication market.

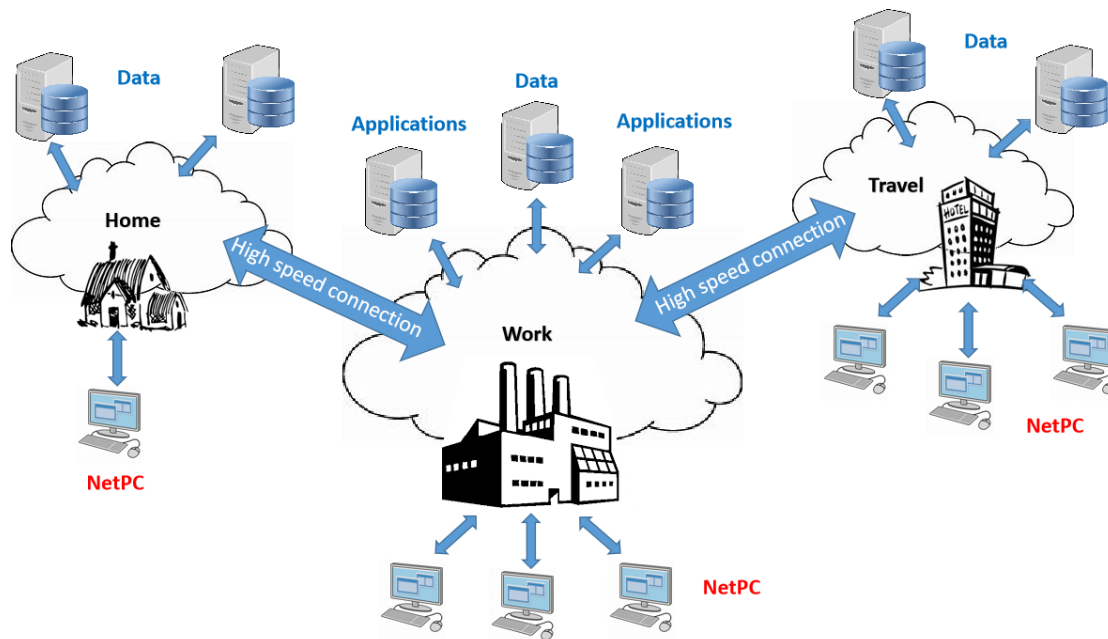
Figure 6.2: Globalization and the Rise of Huawei



Source: Huawei (2012, 2014, 2016 and 2019d).

The scale and scope of Huawei's upgrade of its technology and product quality is consistently high; its current technological development and achievement means Huawei is the only company that could soon possibly start deploying the vision of Oracle CEO Larry Ellison in terms of global connectivity. In 1996, Ellison envisioned a world where users would only need a network personal computer to authenticate and connect anywhere to the Internet in order to access the data and software needed at their work place; this is now a realistic vision (Yarow 2011; Bajarin 2011). Figure 6.3 illustrates the future of computing as depicted by Oracle that was not achieved for over two decades.

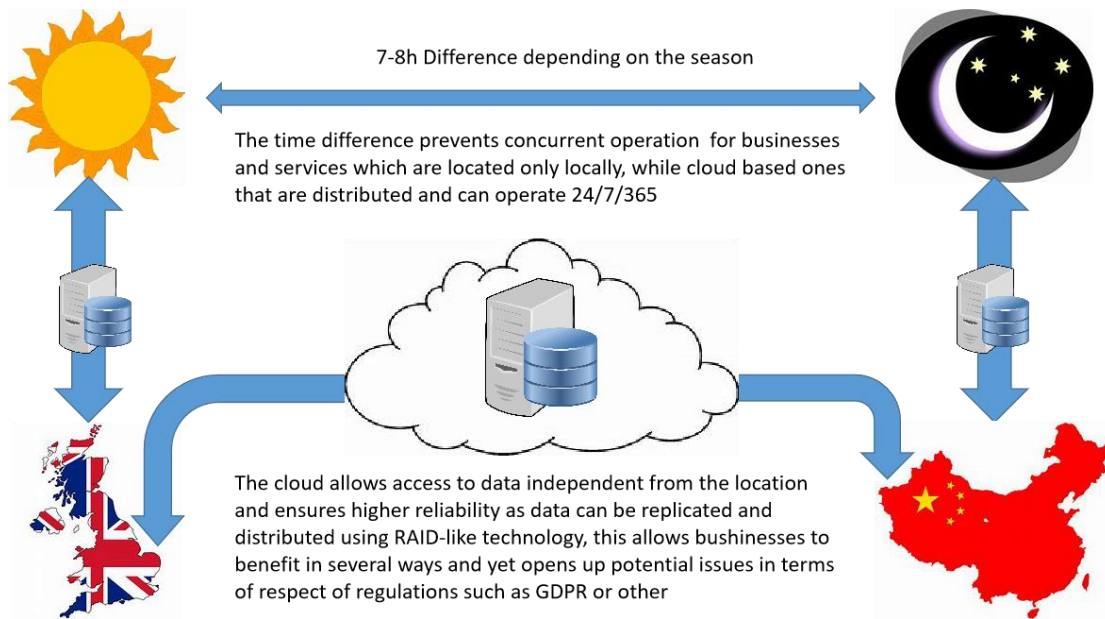
Figure 6.3: Oracle's Network Era



Source: Authors.

Oracle's vision preceded the advent of cloud computing and was conceived in an era of inadequate capability within the telecommunication infrastructure. Additionally, users were rather reluctant to trust a system where software would be provided as a service and the data would not be stored locally but located in servers out of their direct control. At present, Huawei is the only industry actor building the 5G as well providing the associated hardware devices such as notebook computers and smartphones that could finally enable the Oracle model. Huawei is vertically integrated; it offers cloud services, produces core infrastructure components, designs and manufactures Internet-of-things appliances and integrates the complete system into a simple, interoperable solution with a single operating system - the Hongmeng operating system (Harmony OS). Huawei's involvement in different aspects of the technology eco-system suggests that it is the only company that have a holistic perspective on the future of connectivity. Figure 6.4 illustrates the transfer of data with Huawei technology.

Figure 6.4: Huawei as a Facilitator in Connection



Source: Authors.

Ramamurti and Singh (2019) discusses the global first-mover strategy of Huawei, which combines China's country specific advantages and Huawei's firm specific advantages. We will discuss the notion of country specific advantages in the next section. The strategy relates to Huawei operating at the global technology frontier or a trailblazer in a new segment such as the 5G wireless network, supported by a substantial number of important patents. Huawei holds the largest number of leading patents concerning 5G technology (IPytics 2019). Table 6.1 shows Huawei's emphasis on R&D investment as compared to its counterparts. Huawei has also a strong emphasis on academic collaboration. The Huawei Innovation Research Program funded research projects around the world, which includes basic scientific projects in Mathematics and core disciplines such as Physics and Chemistry.

Table 6.1: Huawei R&D Investments in the High Technology Context, 2018

	US\$ (billions)
Google	21.4
Samsung	16.7
Huawei	15.3
Microsoft	14.7
Apple	14.2
Intel	13.5
Cisco	6.3
Nokia	5.5
Ericsson	4.5

Source: Hooker and Palumbo (2019).

Unlike most US companies that simply focus on design and branding, Chinese competitors such as Huawei emulate their Korean counterparts' backward integration into final assembly and component manufacturing. Huawei excels in efficient and effective production processes, employing leading technological standards and practices. Ren also abides by economic logic concerning the extent of Huawei's backward integration and points out the importance of transaction cost (Williamson 1979): "We can buy things that we are not good at making ourselves. Why bother making things we are not good at?" (Huawei 2019c). Huawei diversifies its risk of disruption in the supply chain with a combination of internal and external sourcing. Ren recalls that "We are open to parts from outside the company. Half of our parts are produced by other companies. I once said in an article that we should buy at least 50 million chipsets from Qualcomm every year" (Huawei 2019c).

Huawei also understands the importance of industry collaboration in the fast changing telecommunication industry. Ren emphasizes that "we must understand that we need to stand on the shoulders of our predecessors to promote scientific and

technological innovation.... Our innovations are intertwined with others, and we have produced our own innovations building on those of others” (Huawei 2019c). Using the example of its wholly owned HiSilicon, he elaborates that the subsidiary has paid substantial fees involving cross-licensing in order to access critical intellectual property concerning production (Huawei 2019c). Huawei have also pursued alliances with technology leaders over other core components to provide the best experience to its customers. Just as an example, its joint effort with the German camera producer Leica has added new dimensions to digital photography through the use of smart-phones; as a result, the quality of the camera in smart-phones has gone beyond purely amateur photographic standard into the world of professional photography under knowledgeable and skilful users (Cipriani 2019; Cuthbertson 2019). The fact that companies like Leica (a name in photography along with Hasselblad) have partnered with Huawei could be understood in terms of Huawei’s innovation and market share, which enables the setting of a new standard in consumer-photography that is close to the standard of professional photography.

How did Huawei catch up with the legendary US company Apple? As mentioned in the earlier Table 6.1, Huawei invested substantially in R&D which resulted in innovative products. Indeed, Huawei’s R&D expenditure was higher than Microsoft, Apple, Intel, Cisco, Nokia and Ericsson in 2018. It might be argued that Apple has been far less innovative in the recent years with just marginal improvements to the previous line of smartphones; its iPhone 8 is seen as marginally improving on the iPhone 7 model (McCann 2019). Against this background, Huawei along with Samsung, Oppo, Xiaomi, and One+ have come up with a series of effective devices and a range of cost that have exceeded buyers’ expectations and hence is able to gain market shares in low-income and middle-income economies. Table 6.2 shows among the top eight

smartphone players, Huawei is the second and behind the leader Samsung in terms of sales volume. Some has even concluded that Apple’s vision to be the leading smartphone producer in the world has now been crushed by Samsung and Huawei, relegating Apple to the third place (Kingsley-Hughes 2019). To a great extent, the success of Huawei’s P20 and P30 families smartphones (which launched 6 months apart from each other), has illustrated its technology capability relative to Apple.

Table 6.2: Global Smartphones Competition

	3 rd quarter 2018 market share (by volume)	3 rd quarter 2017 market share (by volume)
Samsung	20.3%	22.1%
Huawei	14.6%	10.4%
Apple	13.2%	12.4%
Xiaomi	9.7%	7.5%
Oppo	8.4%	8.1%
Others	33.8%	39.6%

Source: *Forbes* (2018).

Nevertheless, one might argue that the ultimate firm specific advantage of Huawei is its human capital. To begin with, Huawei has a reflective, entrepreneurial founder with long term vision. On the trade war and Huawei’s relationship with US technology companies, Ren remarks during an interview with the Chinese media: “I would like to take this opportunity to express my gratitude to the US companies that we work with. Over these 30 years, they have helped us to grow into what we are today. They have made many contributions to us. They have taught us how to get on the right track and run the company. As you know, most of the companies that provide consulting services to Huawei are based in the US, including dozens of companies like IBM and Accenture” (Huawei 2019c).

Second, born in an adverse environment, Ren has exhibited the personal characteristics of resilience, which is associated with successful entrepreneurship (Ayala and Manzano 2014; Hayward et al. 2010). Ren’s resilience is probably shaped by his upbringing where Vaswani (2019) states: “Ren was born in 1944 in Southern

China - a tumultuous, chaotic place, one of the poorest regions in an already destitute country. For a long time, hardship was all he ever knew. He was from a family of seven children.” As for Ren’s entrepreneurial venture, Ren states that: “Suddenly, I began to work in a market economy. I was at a total loss. So I too suffered losses, I too was deceived, and I was cheated.” (Vaswani 2019). Despite the initial setback, Ren began to travel outside China and offered Huawei’s product and service to new users, which drove Huawei’s expansion and its foundation as a truly global company (Rugman and Verbeke 2004).

Schein (1983) discusses the founders’ role in creating the cultures of organizations. Ren indeed cultivated an organizational culture embodying his vision of the company, which is referred to as the “wolf culture,” encompassing innovation, entrepreneurship and team spirit. Since its early days, Ren has stipulated a customer-centric vision in Huawei’s Basic Law Article 3: “On the basis of independent effort, we will develop leading core technology systems with open cooperation, we will become the top information and communication technology company with our excellent products.” The innovation is clearly spelt out in Article 10: “Our goal is to develop a world leading electronic and technology support system with independent intellectual property rights.” Huawei then selects candidates that fit into its culture; Tang (2019: 52) reports that its employees are among those with the strong work ethic in China where they typically finishing work in Huawei facility at 20:21 as an average. Ren acknowledges the efforts of the employees and states that R&D employees should purchase luxuries for their spouses since the conspicuous consumption will provide incentives for their wealth accumulation. The work ethic echoed Ren’s own sacrifice in Huawei where he missed the opportunity to see his children at young age due to work commitment at home and abroad. He recalls: “Life wasn't very easy for my young

daughter either. The company was struggling to survive at that time, so I had to spend over 10 hours at the company every day or go on business trips for months (Huawei 2019c). Huawei reinforces its strong culture through frequent communication, ranging from Ren's letters in Huawei People to technical updates in ICT Insights. His recent letter to the employees advised them to "prepare for the worst" with the ongoing trade war (Associated Press 2019).

2. Country Specific Advantages in Demand and Expansion

Lu (2000) reports that in 1989 there was one telephone terminal per 100 people in China, and this could compare with recent World Bank data of 13 fixed telephone line subscription per 100 people by the 2010s. To a great extent, Huawei's growth leveraged on China's country specific advantages in terms of the size of domestic market, the rapid modernization of its telecommunication infrastructure and the Belt and Road Initiative. The three factors provided Huawei and its indigenous state-owned and privately-owned competitors opportunity in a rapidly expanding sector.

China has continuously targeted the building and upgrading of its telecommunication infrastructure since the Sixth Five-Year Plan in 1981. Consequently, the country has leapfrogged to mobile technology and attracted 1.3 billion mobile-phone subscribers by the end of 2015 (EIU 2016). The scale of digital development within market reform means that the industry environment was considerably favourable for companies such as Huawei competing in the fast changing market during the 1990s and the 2000s. Deloitte (2018: 80) further reports China as the world's largest base of fixed and mobile internet users, with 802 million internet users in June 2018; it states that "with a population of 1.4 billion, China still has scope to connect hundreds of millions of more users." This is especially the case where the provincial governments

have encouraged electronic devices in relation to the provision of services such as taxation within its functional departments.

By 2018, China's geographical expanse and huge population formed the basis of demand for telecommunication; furthermore, there is also a high degree of IT literacy where all age groups and socio-economic classes have a good grasp of high tech usage. The extent of IT usage has enabled Chinese cities such as Beijing and Shenzhen to transform into smart cities. The IT policy in China also enables Huawei to build a vast network that includes not only indigenous suppliers but also international leaders such as IBM, Accenture, GE and Honeywell. Finally, the underlying sentiment of consumer nationalism also benefits Chinese companies such as Huawei. Indeed, the entrenched position of Huawei in its home market could be seen in the plight of foreign players' market entry. Despite it being the most powerful technology company in the world, Google's Pixel 2 did not generate the success it expected in China in 2017 due to design issues including "a bluish tint" on the screen, "periodic clicking sounds and occasionally unresponsive touch commands" (SCMP 2017).

The official Chinese policy concerning the Belt and Road Initiative that was launched in 2013, which complements the "Going Global" strategy since 1999, has facilitated Huawei's expansion into new markets. The data collected by the China Investment Global Tracker indicates that among the US\$662.3 billion CMNEs' investment of at least US\$100 million in value, 57% were along the BRI countries between 2014 and 2019. The Chinese state has a comprehensive policy to assist high profile state-owned firms as well as leading private firms to exploit emerging markets such as the Africa continent. Indeed, Huawei's foreign market entry has been benefitted from the centrally orchestrated policy through the state-owned and state-funded Export-Import Bank of China (EXIM Bank). As a policy bank, the EXIM Bank's mandate is

to implement the “Going Global” strategy. It has lent, since 2015, US\$338 million to Huawei buyers in Cameroon, US\$107 million in Kenya and US\$98 million in Zimbabwe to undertake the second stage of their fibre optic network (ICA 2020).

3. Geopolitical Cross-Currents in the New World Order

The Huawei ban mentioned earlier relates to the sanction concerning US companies selling technological components that are critical in Huawei’s production chain as well as Huawei conducting business activities with US telecommunication providers or government agency. A precedent parallel to this case is the British intelligence’s suspicion of Siemens spying on behalf of Nazi Germany during the 1930s (Rath 2010). It also mirrors the tension during the Cold War where Huawei like the special agents of East Germany may be spying for a Communist regime and is therefore the enemy of Western Capitalism (Adams 2014). The intention of the Trump administration is to stop the economic exchange with companies that are perceived to be within the enemy camp. At this point of conjecture, it is useful to point out that despite all its critics, the Chinese one-party communist state has managed to conjure an economic miracle since the 1980s, arguably unprecedented in human history, lifting its population out of poverty. Its model of governance combining parental benevolence and authoritarianism within a powerful state, however, has been subjected to scrutiny (Beeson and Li 2015). Its political ideology of democratic centralism, which it adopted from the Soviet Communist, is the contesting point with the liberal ideology of the USA.

However, the Huawei ban could be seen as a way to divert attention concerning the progressive erosion of US country advantages within technological superiority (Karatasli and Kumral 2017). The USA is a historic leader in telecommunications, where firms such as the Bell Telephone Company and AT&T have monopolized the

industry for a century. After its formation in 1987, Huawei has grown steadily in China. It further globally expanded with competitive products and services across the following decade, allowing the company to reap the high economies of scale in the industry. Huawei has been developing and producing equipment for different telecommunication carriers and became the largest manufacturer in 2012 (The Economist 2012). Though US based Verizon's CEO states that his company does not use Huawei product, patent disputes in the summer of 2019 involved 230 Huawei patents, worth billions of US dollars, highlighting that the world's largest telecommunication network was to an extent reliant on Huawei technology (Klein 2019; CNBC 2019). Huawei began its research in 5G telecommunication in the 2000s, enabling it to become the first company that could commercially deploy the new standard in large scale based on proprietary patented technology. At the end of 2018, Huawei was granted 87,805 patents, 44,434 of them granted outside China (Huawei 2019d: 42). Additionally, one-third of these patents were critical for 5G development (Huawei 2019c). A 5G patent analysis conducted by the European IT consultancy IPlytics confirmed Huawei' leading position relative to its competitors (IPlytics 2019).

In term of smart devices that function within the fast evolving telecommunication environment, the earlier Table 6.2 shows that Huawei has surpassed Apple in terms of global smartphone market share in total units shipped since 2018. Huawei's success in branding is not a stand-alone case; other Chinese brands that successfully established in the smart device and mobile computing segment in the past decade include Lenovo, Vivo, Oppo and Xiaomi (Jones 2019). Though Apple sustained its leadership in high-end smartphones, it had to reconsider a catch-up strategy in its global position by launching a new low-cost iPhone in early 2020; the new model will succeed its last low-cost model iPhone SE in 2016 (Li 2019). Overall, the globalization

of Chinese MNEs coupled with the relative decline of US MNEs and the challenge from the Chinese state in the new global order, have been seen as unfavourable by the Republicans. President Trump indeed states that “Huawei is something that's very dangerous. You look at what they've done from a security standpoint, from a military standpoint, it's very dangerous” (Al Jazeera 2019). The perception of the national security threat, however, builds on the assumption that clashes and wars among the powerful global players are inevitable. It follows that as China has become a global economic power and has built up its military capability, it will clash with the USA and hence engage in cyber warfare to undermine the democratic world. Hence, Huawei could contribute to the military operation. By expounding an agenda concerning China's intention to threaten and challenge the American hegemony (e.g. Maersheimer 2006; Layne 2008), US policy makers elaborate their legitimate attempts to consolidate America's historical positions by all means.

It is true that China has moved away from Deng Xiaoping's “bide and hide” policy and is pursuing a “strike for achievement” policy under Xi Jinping in the 2010s accompanied by its growing economic power (Huang 2016; Yan 2014). Within the new foreign policy focus, China has continued its peaceful rise and sustainable development as one of its national goals. Against the proclamation of peaceful rise by Hu Jintao and Xi Jinping (Callahan 2016), existing literature has continued to discuss the prospect of China's ascendancy in the global world order (Ciccantell and Bunder 2004; Gulick 2011; Hung 2015). Karatasli and Kumral (2017: 7) argue that the continuous nationalist/secessionist movements within China including Tibet, Taiwan, Xinjiang and Hong Kong mean that “China has emerged as a global power, which does not attempt to alter the geopolitical configuration of the inter-state system but one, which attempts to preserve the status quo”. This centrifugal force underpinning the Chinese defined

territory supports the notion of peaceful rise from a different political perspective. Nevertheless, the emphasis on American hegemony and the subsequent security concern has placed Huawei in a Catch 22 situation.

4. Liability of Foreignness in a High Tech Setting

Zaheer (1995: 342) conceptualizes the liability of foreignness as “the costs of doing business abroad that result in a competitive disadvantage for an MNE subunit.” Though the USA and China share the belief in the functioning of the capitalist economic system, they differ to the extent they intervene with the market. The USA advocates the Washington Consensus while China proposes the Beijing Consensus. The case of Huawei illustrates the divergent political ideology mentioned in the preceding section as the underlying cause of its predicament. On the one hand, the USA is concerned with limiting the power of government and securing the liberty of its citizens and those in the free world. This diametrically contrasts with the one-party state in China operating under the communist model. Indeed, the Worldwide Governance Indicators show that the two countries differ substantially in terms of voice and accountability, the rule of law, control of corruption, regulatory quality and government effectiveness (The World Bank 2019). As Beaulieu (2019) points out, the European technological leaders Nokia and Ericsson have led the previous telecommunication breakthroughs and have kick-started product and service innovation utilizing smartphone technology and infrastructure in the Silicon Valley, and the only reason Huawei is considered not a legitimate company to lead the 5G is because it is headquartered in Shenzhen, China. The liability of foreignness, in this sense, means that despite its technological superiority, Huawei suffers competitive disadvantage associated with its country of origin. The implication is that the Chinese model of economic freedom does not entail

political freedom, and thus departs from the US economic and political governance, which is the source of Huawei's liability of foreignness that has led to it being placed on the Entity List.

Additionally, Huawei's liability of foreignness (which South Korea does not suffer from) derives from the US hegemony and alliance in post-Second World War East Asia, which the Chinese Communist Party did not take part. Ikenberry (2004: 357) states that the export-oriented development path of the East Asian tigers was fostered along the presence of their close security ties to the USA. In other words, the economic success of South Korea, Taiwan, Singapore and Hong Kong were critical as they serve "as a security asset to America". Though Sino-American relationship have been on functional diplomatic terms since the 1980s, the lack of Chinese participation in the US-led regional security network in East Asia since the 1950s means that Chinese MNEs such as Huawei are portrayed as outsiders rather than insiders compared to its Taiwanese or Korean counterparts. Additionally, the two countries transition to democracy in the past two decades have reinforced their positions in the Free World as the USA and the UK.

Huawei is specifically penalized under two much debated rationales – perceived state control and alleged spying activities. Davies (2018) stresses the fact that it is the profile, standing and connection within the Communist Party and the suspicion of espionage that create the basis for Huawei's lack of legitimacy under the Trump administration. We have pointed out Huawei's founder was assigned to serve in the Chinese army prior to his redundancy during the economic reform. It should also be highlighted that Ren was not invited to join the army for some ten years since his father fought for the Nationalist Party (which fled to Taiwan in 1949); furthermore, similar to those in his generation, Ren's father was sent for exile during the Cultural Revolution.

Ren was eventually enlisted in 1974 due to a severe shortage of engineers in China, as the education system had been disrupted for nearly a decade. After he left the army, Ren grasped the opportunity to become an entrepreneur in Shenzhen. To a great extent, Ren's connection with the army was unplanned and was a result of the political events beyond his control.

Another commonly discussed link between Huawei and the Chinese state was through the employee ownership system via the form of the union committee. Huawei explains that the company is 99% owned by its employees globally through an Employee Shareholding Scheme involving 96,768 employee shareholders; "this scheme is limited to employees and no government agency or outside organization holds shares in Huawei" (Huawei 2019d). Huawei has elaborated the origin of the scheme on the ground that "Chinese banks wouldn't lend to a private start-up company, so it had no choice but to distribute shares to employees as a way to attract talent and generate capital" (Coleman 2019). Its Chief Secretary elaborates the ownership systems as "while Huawei employees are not registered shareholders as defined by law, they are the actual owners of the company. Their shares generate dividends, give employees a voting interest in the company's governance and would translate to a share of the company's assets if it were liquidated" (Coleman 2019). The employee ownership scheme as exercised through the union committee fulfils the requirement of Chinese Law and has been adopted by other private companies in the growing Chinese economy, characterized with institutional voids. In other words, the union committee has managed to by-pass the maximum number of 50 shareholders among private companies under the Company Law as well as fulfilling the requirement of Labor Law to set up a government-led trade union. Peng and Hoffmire (2015) suggest that the unique scheme has raised the productivity of Huawei employees. However, the view is not shared by

all. Blading and Clarke (2019) consider the existence of the union committee, overseen by the governmental organization All Chinese Federation of Trade Union, as evidence that Huawei is controlled by the Chinese state. Building on this link, Garsd (2018) also suggests that companies like Huawei that are embedded in the Chinese system would be unlikely to the option to refuse working with the Chinese intelligence agencies in the current autocratic regime.

The interest in spying is probably as old as the human race, the Caesar cryptography algorithm takes its name by the method used by Julius Caesar for enciphering his messages (Savarese and Hart 2010). The claim concerning the US National Security Agency collaboration with IBM to deliberately weaken the Data Encryption Standard during the 1970s is a modern version of spying via technology trapdoor (Kelly 2006; Schiller 2014; Chalmers 2019). More recent high-profile technology spying includes US's Central Intelligence Agency's hacking into CISCO as leaked by Assange (Menn 2017). It is speculated Huawei spied for the Chinese government for nearly a decade. Adopting an impartial view concerning Huawei spying for the Chinese state, BBC (2019), Vaswani (2019) and others point out that there is a lack of a smoking gun. Haridy (2019) also writes that "Over the last decade these spying allegations have consistently hounded Huawei, however, no clear evidence has ever been presented to prove there are backdoors or surveillance spyware installed on any Huawei devices. An expansive 18-month security review from US government agencies was reported to have concluded in 2012 that there was no evidence that Huawei worked with the Chinese government to spy on US citizens." O'Shea (2019) adds that "The reality is that there is zero evidence of hacking, and the intelligence agencies in the US and other countries are coming back and saying 'well there's no

evidence now but there could in the future’... Back doors are difficult to detect but there are investments in R&D that detect backdoors.”

5. Huawei’s Possible Paths: *pò fǔ chén zhōu*

Our strategic assessment concerning Huawei in the digital future seems to suggest that its growth is predominantly imposed by the external political economy (De Wit and Meyer 2010). The unfolding of events since the summer of 2018 was beyond the control of the company, which left Huawei with limited feasible strategic options. Its response could be compared to the Chinese proverb story of *pò fǔ chén zhōu* (*i.e.* Smashing the cauldrons and sinking the boat) where the only way to survive is to fight against the enemy with all your capability. Huawei has been forced to stand to fight for its survival for the first time in its corporate history; it will have to try its best, with little room for manoeuvre or error. But could a relatively smaller company prevail among the cash rich US technology giants?

Huawei has actively planned for crisis management, which is a characteristic of Chinese management (Redding 1993). Its Plan B has enabled Huawei to prepare for the worst case scenario. In terms of its smartphone device, Huawei has found some alternatives that have ranged from internal suppliers (Tao 2019; Mott 2019; Udin 2019) to external suppliers (Doffman 2019; Padla 2019; RT 2019). As to semiconductors, Huawei has increased the volume procured from Mainland Chinese and Taiwanese companies, including TSMC, Win Semiconductors, Semiconductor Manufacturing International, Jiangsu Changjiang Electronics Technology etc. (Ting-Fang and Li 2019). Some have even speculated that Huawei could switch from Android to the Russian version of Sailfish operating system (RT 2019); this could, however, pose concerns

given the Russian influence over global politics and the friction between the West and Russia's state capitalism (Torres, 2019).

However, Huawei's Silicon Valley suppliers such as Micron, Qualcomm, Seagate, Google, Microsoft and Intel are specialist suppliers at the forefront of their technological niches. The question arises whether Huawei's replacement of these suppliers would impact on the design and quality of its products. For instance, Huawei launched its first 5G chipset in 2018 whereas Qualcomm has accumulated rich expertise over the decades. As Contreras and Hildenbrand (2019) state "nearly all 5G products are currently powered by a Qualcomm modem" and its new X55 modem "is truly global" since it supports all three frequency bands for mmWave communications as used in different continents. Having said that, Samsung and Media Tek unveiled competitive products to catch up with Qualcomm and are expecting to gain market shares (Horwitz 2019). The intense competition among these suppliers also pose the question whether Huawei could internalize key components successfully in the long run due to the extremely high level of research intensity.

The ongoing Chinese Belt and Road Initiative in the expanding African market might also be able to compensate Huawei's loss in terms of its business in countries such as the USA and the UK. Indeed, Huawei has been undertaking corporate social responsibility activities in Africa for over a decade and is a well-known brand. For example, it donated US\$13,000 worth of ICT equipment to Ghanaian schools and provided scholarship for talented but underprivileged students to attend universities in China in 2010 (Huawei 2011). Huawei also donated KES9.4 million to support the Red Cross for humanitarian relief when Kenya was hit by the worst drought in 2011 in six decades, affecting 3.5 million people (Huawei 2012). In 2013, Huawei supported the ICT training of 1,000 girls in Nigeria in addition to providing funding to Christmas

celebration organized by the Nungtso Charity Foundation in Nigeria (Huawei 2014). The ICT training program was also offered to 2,000 unemployed young people in 2017 in practical skills such as website design, computer repair, and the Huawei Certified Datacom Associate (HCDA) program enhancing employability (Huawei 2018).

Perhaps what we have observed in terms of Huawei's firm specific advantage is the tip of the iceberg. The branding and the trust it has built up in the African continent is invaluable. The trajectory of Huawei's growth in the emerging world might suggest the damage inflicted by the trade war could be short-term, and might propel the company to pursue opportunity beyond the USA at a faster pace. Overall, the trade war means that we might be seeing diversification in terms of 5G infrastructure, where the American and the Chinese standard diverge. Worstall (2019), however, considers a technology standard competition as inefficient; he states that "Economic nationalism has serious problems in competing in a world in which the efficient size of a supplier – or technology – is the entire globe."

6. Discussion and Conclusion

According to Rockman (2019), the present trade-war that escalates between USA and China has created a situation where companies including Ericsson, Nokia, MediaTek, Samsung, and Cisco are gaining while others such as Qualcomm, Google, Apple, and Vodafone are losing. More specifically Ericsson, Nokia, and Cisco are able to provide infrastructure equipment in the USA, without the key competitor Huawei. Samsung can regain market share in the smart device domain (albeit this is no more than their core target market) intensifying activities in components (memories and other semiconductors), infotainment and life-care as explained in Vision 2020 (Samsung 2017). MediaTek as a semiconductor producer will also benefit from supplying

components to furnish QUALCOMM's requirement in the supply chain. On the other end, Qualcomm will lose Huawei as one of its main customers; Google will have to face the threat of the Harmony operating system and the build-up of a Chinese App ecosystem that could grow fast and quickly expanding to neighbouring India and other part of the world on the basis of the huge installed user base. Apple has suffered from Chinese consumer boycott whereas Vodafone is highly dependent on Huawei equipment and could find it difficult to switch to another provider after having substantially planned all 5G roll-out on equipment that now may not be available. Overall, we might just be witnessing the beginning of the end of an American/European-led technology century in telecommunication.

For youthful companies, the current crisis as faced by Huawei will pose severe challenges. But the discussion in this chapter suggests that Huawei is not in a dire situation, based on its lead in telecommunication innovation, its strong home base and its pre-empting of the current crisis. Huawei has responded strategically. All in all, Huawei may utilize the present situation as a commercial challenge and fully exploit its internal know-how and skills, developing its own operating system for smartphones, mobile computing and the Internet of Things as they have done for their smartwatches and fitness trackers. Huawei should also further invest in the brain of smart devices, the central processing unit, as to tailor design and optimize hardware performance.

Like Africa, China has built a digital ecosystem where the mobile smartphone device is the key pillar. The extremely extensive and pervasive use of WeChat for services such as economic transaction, telecommunication, learning, services and social media, would not be possible unless advanced connectivity existed with multi-media capacities. The constantly growing demand for services and the adoption of an almost cashless economy have been pushing the expectations and the almost unaffordability

of Apple products for the mid-low-income consumers, which in turn has been a major driver for Chinese smart device producers to develop devices that are aesthetically pleasant, functionally capable and economically affordable. Similarly, the surge of Oppo, OnePlus, Huawei and their penetration in other medium-low-income countries is a testimony of their success in fulfilling the needs of the customers in this niche with quality, performance and appealing devices. Having said that, the growing economic challenge facing Huawei that originated from China is the global pandemic of COVID-19 and should not be under-estimated; the economic shock of the COVID-19 could devastate the emerging economies where Huawei aims to achieve business growth.

The biggest threat that could be posed for Huawei outside its home market is however the enemy within. We have highlighted the divergent of ideology in the USA and China as underlying cause of the trade war that has placed Huawei under severe strain. Globalization implies that consumers in liberal democracy might oppose Huawei as a result of political challenges within China, be it in Xinjiang, Taiwan or in Hong Kong, China's political risk has therefore been somewhat intertwined with Huawei's business risk due to the one party political system and its negative connotation on the company. The shareholder perspective in business has been increasingly replaced by the stakeholder perspective and contemporary customers in advanced economies which have questioned companies and governments from their prevailing standard of justice. Examples include campaigns concerning fair trade, sustainability, labour exploitation, living wages...; indeed, non-governmental organizations have successfully mobilized large number of consumers using unconventional means and direct actions. Hence, the threat to Huawei could be from the ideological differences of users from other advanced economies or the globally connected middle class in emerging economies; therefore, Huawei's threat ultimately relates back to the differences in the polity within liberal

democracy and democratic centralism. For better or worse, Huawei has become truly a global brand with a sensational controversy embedded within the Sino-US trade war. Huawei's growth in China and other emerging economies could be strengthened despite the trade war as the company focused more intensely on this market. The pace and speed of ICT development in these countries will therefore serve as the engine for the growth of Huawei within the next decade.

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