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DURATION: 3 Hours	**MARKS:** 100

SECOND OPPORTUNITY EXAMINATION PAPER

EXAMINERS: Ms Esther Olivier

MODERATOR: Dr Chris van Zyl

THIS QUESTION PAPER CONSISTS OF TWO (2) PAGES
(INCLUDING THIS FRONT PAGE) AND A CASE STUDY)

INSTRUCTIONS TO CANDIDATES

1. The required length of the Report is between six (6) and eight pages (8), including the indent reference list.
2. Please ensure that your answers are written **clearly and legibly**. Avoid using cursive or illegible handwriting. Answers that are difficult to read will result in lost marks.
3. You are allowed to refer to your notes, textbooks, and the case study during the examination. However, all answers must be presented in your own words.
4. Ensure that you allocate sufficient time to each section of the report according to the percentage weightings provided. It is crucial to manage your time effectively to cover all sections comprehensively.
5. Where applicable, include references within your answers to support your analysis. Follow APA referencing style for in-text citations and the reference list at the end of the report.
6. All answers must be written in the examination book provided. Ensure that you number your answers correctly and follow the report structure as outlined.

QUESTION 1

Study the case study "Huawei smartphone business competition – fighting, surrendering, winning or losing?".
By Jarunee Wonglimpiyarat

Required: Present a report and consider the following variables:

1. **New European Union Regulations on 5G Security:** The European Union implements new stringent security regulations on 5G technology, requiring more rigorous certification and testing for equipment used in its 5G infrastructure, targeting companies like Huawei due to concerns about potential espionage.
2. **Emergence of a New Low-Cost Competitor from India:** A new competitor from India, specialising in low-cost smartphones and telecommunications equipment, emerges and quickly gains market share in regions like Africa and Southeast Asia, where Huawei has been trying to expand.
3. **Increased Demand for Green Technology and Sustainable Practices:** There is a rising global demand for technology companies to adhere to sustainable and environmentally friendly practices, with governments offering subsidies for green initiatives in the ICT sector.

The Report should cover the following:

Criteria	Weighting (%)
1.1. Executive Summary	10%
1.2. Organisational Goals & Objectives	5%
1.3. Comprehensive SWOT analysis giving due consideration to the additional variables	30%
1.4. Current strategic position	15%
1.5. Discussion and findings	15%
1.6. Recommendations	10%
1.7. Conclusion	5%
1.8. UK academic English, in-text references and the indent reference list	10%

Total for assessment=100%

END OF THE ASSESSMENT

Huawei smartphone business competition – fighting, surrendering, winning or losing?

Jarunee Wonglimpiyarat

Introduction

The case study explored Huawei smartphone business. The case presented a protagonist, Ren Zhengfei, CEO of Huawei, who built the business from a small company to a leading global information and communications technology (ICT) company. It discussed how Huawei built its strategic capabilities and became a leader in the global smartphone market. Huawei faced difficulties as a result of US ban causing its smartphone shipments plummeted by 70% in 2021. The growth of Huawei was struck by the US sanction with the supply chain being disrupted by a shortage of advanced chip technology to run the smartphone business. The dilemma addressed in this case study was concerned with how Ren Zhengfei would make a decision to steer the company out of the crisis. Under the storm of difficulties, the company needed the strategies to help it regain a leading position and remain competitive in the global smartphone industry. With the pressures still growing on Huawei, what would be the next step for the company – fighting, surrendering, winning or losing? The case invited readers to evaluate Huawei positioning in the smartphone market and recommend the best way forward for the company:

> Huawei is dangerous. We're not going to do business with Huawei [1].

The former US President Donald Trump declared in 2019, banning Huawei from US communications networks. Huawei was added to the entity list under US restrictions [2]. The Trump administration issued an executive order forbidding US companies from supplying Huawei with components and restricting domestic networks from using Huawei equipment. Huawei was banned for its fifth-generation (5G) technology [3] as the Western countries saw that Huawei was too close to the Chinese Government (Kwan, 2020).

In 2018, the US Department of Justice charged Huawei's Chief Financial Officer (CFO) Meng Wanzhou with bank fraud, wire fraud, money laundering and accused her of conspiring to violate American sanctions on Iran. She was detained by Canadian authorities at the request of the US Government for allegedly violating US trade sanctions. The USA and China began an escalating trade war. The US indictment charged Meng Wanzhou and accused Huawei of stealing trade secrets. Without trust in the Chinese Government, the former President Trump banned Huawei 5 G business (Alfayad, 2019; Kwan, 2020).

Being banned by the US sanction and Western countries, Huawei suffered severely from chip supply chain disruption. Huawei's revenue fell by 29% with the smartphone shipments plummeted by 70% in 2021 [4]. Huawei struggled to compete in the 5G business under US sanctions. Ren Zhengfei, Chief Executive Officer (CEO) and Founder of Huawei, declared a battle to survive the company. He stated:

> There is no way the US can crush us [5].

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The author acknowledges the contributions by Maurizio Zollo and Livio Scalvini. Since acceptance of this article, the following author has updated their affiliations: Professor Jarunee Wonglimpiyarat also undertakes the research projects for Imperial College London, London, UK and Massachusetts Institute of Technology, Cambridge, USA.

Disclaimer. This case is written solely for educational purposes and is not intended to represent successful or unsuccessful managerial decision-making. The authors may have disguised names; financial and other recognizable information to protect confidentiality.

The structure of the case study was as follows. The first section provided a big picture of China's policy in moving the country from imitation to innovation with a focus on developing high-tech industries including the ICT sector. The second section laid out the background of Huawei with regard to its origins and growth. The third section discussed the start of difficulties took place at Huawei as the company was charged by the USA as a security threat to the national security. The fourth section presented the storm attacking Huawei smartphone business. The fifth section highlighted Huawei financial performance and market share. The last section explored the next stage of Huawei's competition.

China – from imitation to innovation under "Made in China 2025" policy

China had seen rapid economic growth in the past 30 years with an average growth rate of 10% per annum [6]. In 2022, China was placed in 17th position according to the International Institute for Management Development (IMD) world competitiveness ranking. After joining the World Trade Organisation (WTO) in 2001, China had adopted trade the liberalisation policies and various government policies to drive its innovation system (Wonglimpiyarat & Khaemasunun, 2017). Table 1 provides an overview of economic and innovation performance of China.

China attempted to make a transition from imitation to innovation through "Made in China 2025" policy. It was a state-led industrial policy launched by Prime Minister Li Keqiang in 2015 to transform the nation to the next level on the global stage. The policy was focused on developing 10 high-tech industries including the ICT sector. The policy initiative aimed to make China stronger and independent in terms of technology. China planned to become a science and technology innovation superpower by the year 2049 (Fu, 2015; Sutter, 2020; Babel, 2022).

President Xi Jinping introduced the industrial policy aimed at achieving China's technology self-sufficiency. The 14th Five-Year Plan 2021–2025 had emphasised self-reliance in R&D as a path for the nation to become a self-sufficient "technology superpower". The plan was focused on foundational technologies such as next-generation information technology, biotechnology, new energy, new materials, high-end equipment, new-energy vehicles, green and environmental protection technology, aeronautics and astronautics and marine equipment. The Chinese Government had placed importance on developing advanced industrial sectors to reduce China's reliance on foreign technology and promote self-sufficiency. At the conference on cyber security in 2016, Xi Jinping stated:

Table 1 Overview of economic and innovation performance of China

Indicator	*Year*	*China*
Population (million)	2022	1,412
Gross domestic product (GDP)	2021	US$17.7tn
GDP growth (%)	2021	8.1
International Institute for Management Development (IMD) world competitiveness ranking	2022	17
	2021	16
	2020	20
% of research and development (R&D) expenditure to GDP	2021	2.44
No. of patent applications		
– Residents	2021	1,426,644
– Non-residents	2021	159,019
Total researchers in full time equivalency (FTE) (million)	2020	5.092
Number of scientific publications	2020	744,042

Sources: The author's design, based on the World Competitiveness Scoreboard (various years) by International Institute for Management Development (IMD), World Bank, United Nations Conference on Trade and Development (UNCTAD), OECD Main Science and Technology Indicators, World Intellectual Property Organisation

> Our dependence on core technology is the biggest hidden trouble for us [...] Heavy dependence on imported core technology is like building our house on top of someone else's walls; no matter how big and how beautiful it is, it won't remain standing during a storm [...] [7].

The origins and growth of Huawei

Huawei was founded in 1987 by Ren Zhengfei with a capital investment of CNY 21,000 (or approximately US$3,019 [8] pooled by himself and five other individual investors) in Shenzhen (Sun, 2009; Yi, 2021). Ren Zhengfei had set the vision of building a global company that could rival the best in the world. The mission of Huawei was to bring digital to every person, home and organisation for a fully connected, intelligent world. The company was headquartered in Shenzhen, Guangdong, China. Huawei was an employee-owned company. The founder, Ren Zhengfei, owns only 1.4% of the company shares where the rest (98.6%) was owned by its employees [9]. Huawei was one of the ICT solutions providers attempting to restructure the global ICT infrastructure network system. In line with China's 14th Five-Year Plan 2021–2025, Huawei aimed to compete in the global technology and innovation sector.

Huawei was initially a small company focused on manufacturing phone switches. Three decades later, Huawei expanded its business to include the construction of telecommunications networks, operational and consulting services, and equipment for enterprises inside and outside of China, and manufacturing communications devices for the consumer market. Huawei had three business segments: Carrier Network Business Group, Enterprise Business Group and Consumer Business Group. In the consumer business, the smartphone was an important business of Huawei. Huawei sold smartphones under its own brand since 2009 where its smartphone business had been the fastest growing segment. Huawei was a global provider of ICT infrastructure and smart devices. It was the world leader in the telecommunication industry with more than 197,000 employees in over 170 countries and regions. The company was ranked 44th on the Fortune Global 500 in 2021 [10].

Huawei had placed importance on R&D investments. The company had invested in R&D for approximately 20% of revenue each year, leading Huawei to one of the top five companies for such investments in the world (Cui & Liu, 2019). In 2021, Huawei spent CNY 142.7bn (or approximately US$20.52bn) [11] on R&D or 22.4% of its total revenue according to Huawei 2021 Annual Report. Figure 1 shows Huawei R&D spending during the years 2012–2021. According to the 2021 EU Industrial R&D Investment Scoreboard, Huawei was ranked the World second-highest investor in R&D (No. 1 ranking was Alphabet – Google's parent company). The company was also recognised as a leading brand in the international market. According to Brand Finance Global 500 2022 report, Huawei was ranked among top 10 most valuable brands.

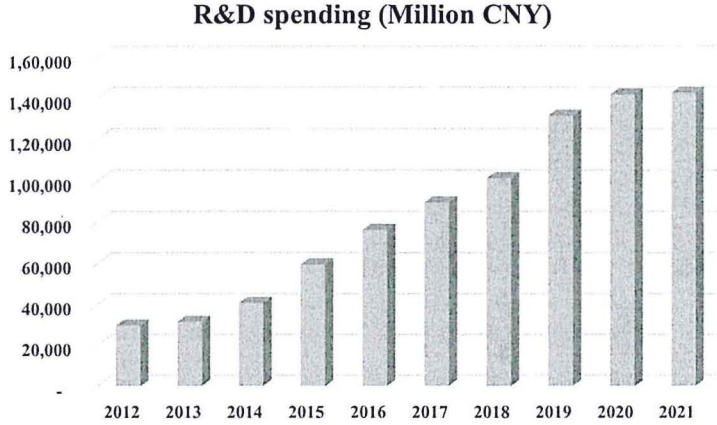
Figure 2 charts out companies with the highest shares of global 5G technology patents in 2021. Huawei had the highest share of global 5G technology patents (15.4%), overtaking Samsung (13.3%), Nokia (13.2%) and Qualcomm (12.9%).

Huawei competed in the world market by using the benefits of low wages and getting low interest loans from state banks. Huawei pursued the low price strategy in market competition. Its equipment was 20%–30% cheaper than other competitors [12]. The competitive pricing strategy and its focus on R&D investments enabled Huawei to get a greater share in a global smartphone market.

The start of difficulties – Huawei as a security threat?

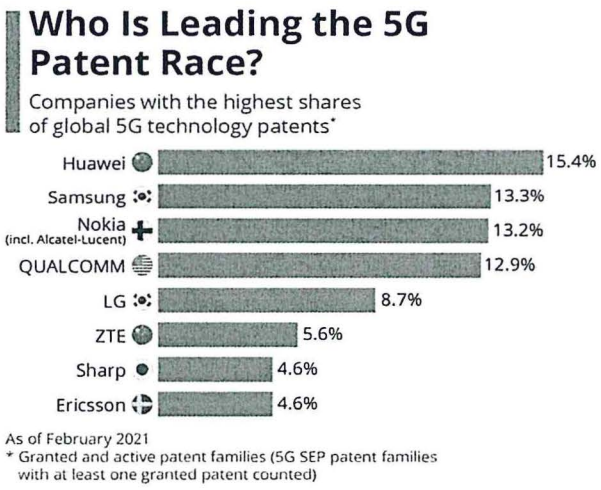
Huawei began to face difficulties in 2018 as former US President Donald Trump started the US–China trade war. In 2018, the USA ran a trade deficit with China amounting US $412.9bn, resulting in a surge of unemployment rate and debt in the USA. Thus, the US

Figure 1 Huawei R&D spending during the years 2012–2021



Source: Statista

Figure 2 Companies with the highest shares of global 5G technology patents



Source: IPlytics

Government imposed tariffs and quotas to decrease US imports from China (Alfayad, 2019; Kwan, 2020). In the same year, Huawei rose as the second-largest global seller of smartphones, surpassing Apple – an American company – for the first time.

Back in 2012, the USA claimed that Huawei posed a national security threat and that American companies should not conduct business with the company. Former US President Trump issued an executive order barring all US companies from using ICT from any party considered a national security threat. In the escalating trade dispute between the USA and China, Trump signed an executive order banning communication devices of Huawei [13].

Attorney General William P. Barr delivered his speech at the Department of Justice's China Initiative Conference in 2020:

> China has established a leadership position in 5G, capturing 40% of the global infrastructure market. For the first time in history, the United States is not leading the next technological era [...].
>
> From a national security perspective, if the industrial Internet relies on Chinese technology, China will have the ability to cut off the link between countries and the technologies and devices their consumers and industries depend on. The power of economic sanctions used by the United States today will pale in comparison to the unprecedented leveraging influence we will succumb to with Chinese dominance [...] [14].

The USA accused Huawei of lying about its ties to the Chinese Government. The former President Trump banned Huawei charging that the company was the Chinese Government tool to spy on its competitors and enemies (Yan & Huang, 2020). According to the USA, Huawei's close ties with the Chinese Government would pose a threat to the national security of countries that use its technology in their next-generation mobile networks.

In China, loyalty to the state was enshrined in China's National Intelligence Law. Article 7 stipulated that "Any organisation or citizen shall support, assist, and cooperate with state intelligence work according to law". In 2017, the Chinese Government introduced the regulations on security, requiring the Chinese companies to send all information to the government. The laws compelled companies and individuals to assist in intelligence efforts and they had to comply, they had no choice [15].

Concerning the background of Huawei CEO, Ren Zhengfei began his career in the Chinese military and he was a member of Chinese Communist Party (Sun, 2009). This caused worries for many countries that Huawei would be forced to help the Chinese Government conduct espionage. There was a fear that Huawei would build a backdoor into its 5G technology allowing the Chinese state access to private data. Many countries expressed concerns that using Huawei equipment would risk leaking information to the Chinese Government. However, Ren Zhengfei, CEO of Huawei stated:

> We never participate in espionage, and we do not allow any of our employees to do any act like that. And we absolutely never install backdoors. Even if we were required by Chinese law, we would firmly reject that [...] [16].

Huawei was charged of engaging in corporate espionage to steal the competitors' intellectual property [17]. The US Department of Justice charged Huawei with intellectual property theft alleging that it stole trade secrets from American firm T-mobile deliberately. Cisco, Nortel, Motorola accused Huawei as stealing their ideas and technology. The US Department of Commerce listed Huawei and its subsidiaries in the entity list. Ren Zhengfei stated:

> In actual fact, many of our technologies are already far ahead of those – the Western companies – not just in 5G or optical switching or chipsets. The number of technologies in which we're leading is huge and these are complex technologies. The charges that the US has made against Huawei are fairly marginal. They are not enough to say that Huawei has become what it is today by stealing from the US. Today we have many things that the US doesn't. How can we steal what they don't have? [18]

Banning Huawei – the storm attacking Huawei smartphone business

Huawei consumer business suffered severely from the US chip ban. As the smartphone business relies on the supply chain operations and 40% of Huawei total manufacturing parts are imported, the ban from the USA had disrupted Huawei supply chain causing difficulties in the product development. The US Government blocked chip makers from supplying HiSilicon Kirin chipsets to Huawei [19]. As a result, the company lost its ability to

work with industry-leading chipmakers like Taiwan Semiconductor Manufacturing Company (TSMC) and Samsung Electronics.

The US ban had restricted Huawei from accessing any chip built on US technology. As a result, the company was cut off from critical components for building 5G smartphones (Table 2). Moreover, Google stopped providing Huawei with access, technical support and collaboration. Thus, Huawei could no longer license Google's Android operating system.

Huawei suffered from semiconductor supply shortage, as Ren Zhengfei stated:

> We cannot get components supply, cannot participate in many international organisations, cannot work closely with many universities, cannot use anything with US components, and cannot even establish connection with networks that use such components [20].

Following the Trump's administration banning Huawei, many European countries decided against Huawei 5G products. The UK removed all Huawei components from their national systems. Figure 3 depicts the countries banning Huawei.

Figure 4 portrays the global smartphone shipments reflecting the effects of US ban on Huawei smartphone business. While other competitors could sell more smartphones in the

Table 2 Supplier response to the US sanctions

Company	*Google*	*ARM*	*TSMC*	*Microsoft*	*Intel*	*AMD*	*Nvidia*
Product	Software	Core architecture	Micro-processors	Software	Processors	Semi-conductors	Figure processing
Country	USA	Japan, UK	Taiwan	USA	USA	USA	USA
Licensing	No	Not needed (Non-US)	Not needed (Non-US)	Yes	Yes	Yes	Yes
Maintain service	No	No Own decision	No Own decision	Yes	No	Yes	Yes

Source: TechAltar34

Figure 3 Countries banning Huawei products

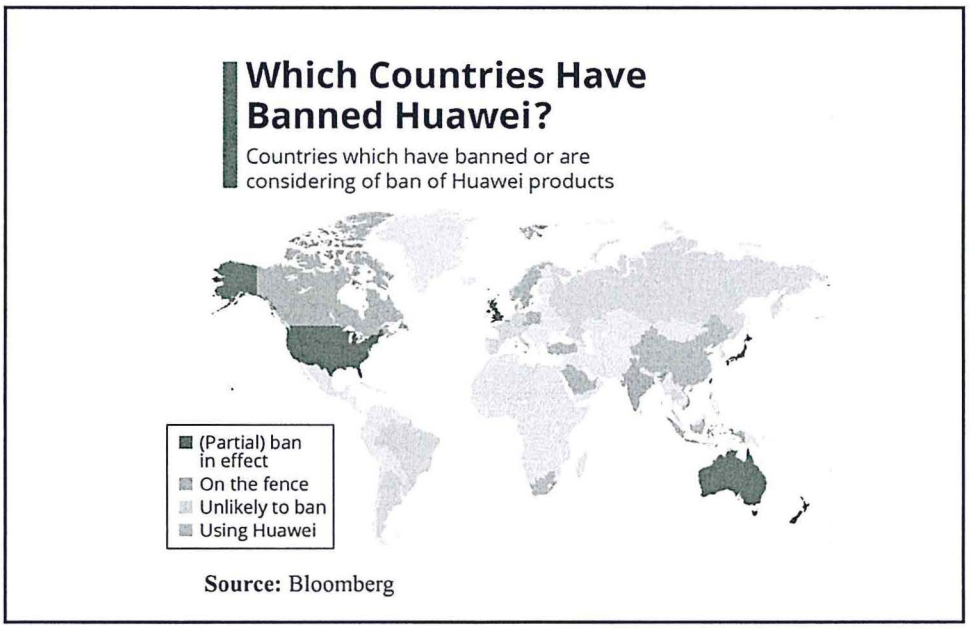
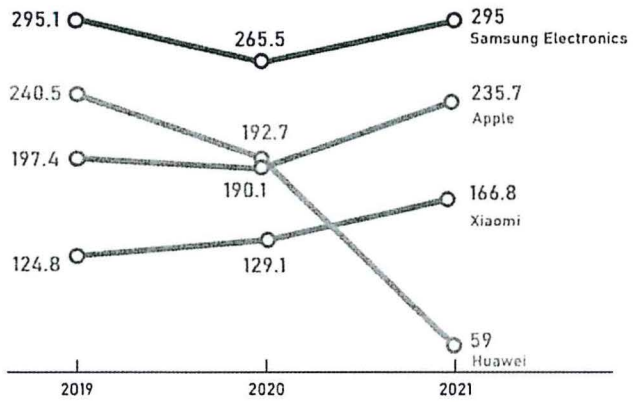


Figure 4 Global smartphone shipments (million units)



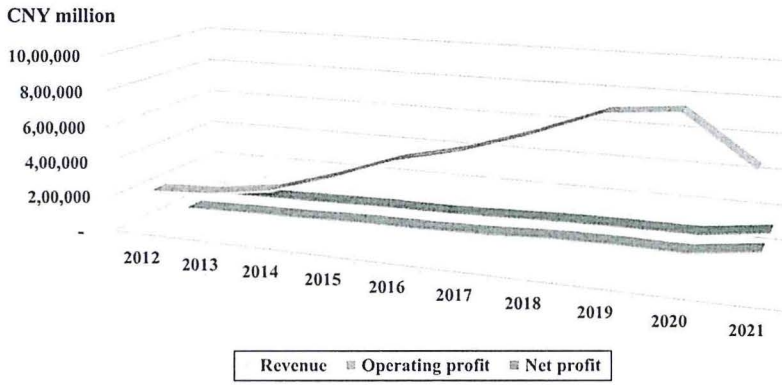
Source: Canalys smartphone analysis

global market, Huawei smartphone shipments plunged from 192.7 million units in 2020 to 59 million units in 2021, a fall by 70%.

Huawei financial performance and market share

Figure 5 shows the financial performance of Huawei in the past 10 years. Huawei sales revenue increased steadily and surged to CNY 891,368m (or approximately US$128,151m) [21] in 2020. The decreasing sales revenue in 2021 (29% decrease) was a result of US sanctions, semiconductor shortage and lowering demand of smartphones in the global market.

Figure 5 Huawei's financial performance, 2012–2021



Notes: (1) The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96; (2) In 2021, the operating profit and net profit increased by 67% and 76%, respectively. The high increase in net profits despite the falling revenue was a result of one-off gains from selling the budget smartphone unit, Honor, and the server business

Source: The author's design (compiled from Huawei Annual Reports)

Figure 6 shows Huawei's revenue in 2021. The revenue from the consumer business (smartphones and other products) decreased by 49.6% as a result of US clampdown pressuring the company's smartphone and personal computer (PC) businesses [22].

In the smartphone market competition, Huawei faced fierce competition both from domestic and international players like Samsung, Apple, Xiaomi, Oppo and Vivo [23]. Figure 7 shows the global smartphone market share of Huawei in the first quarter of 2021. Huawei market share was seized away by its competitors. Huawei's global smartphone market share decreased from 14.6% in 2018 to only 4% in 2021.

Meng Wanzhou, the company's CFO of Huawei, said:

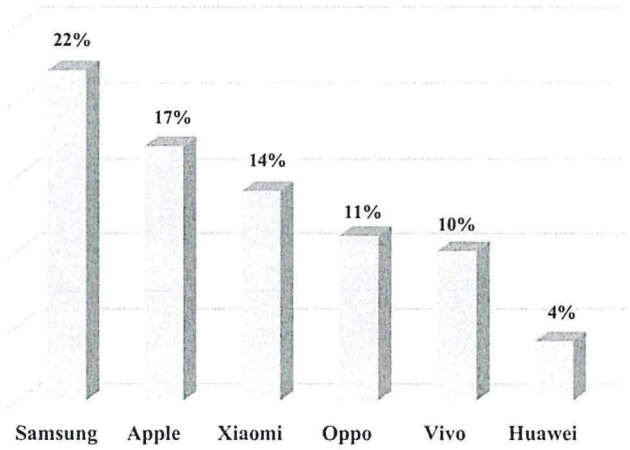
> The multiple rounds of sanctions imposed by the US have significantly affected our business, especially smartphones [. . .] [24].

Without the supply of 5G chipsets, the launch of Huawei's smartphones in 2021 was based only on 4G technology. Being pressurised by the US sanctions which cut off supplies to key

Figure 6 Revenue of Huawei, 2021

Note: The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96
Source: Huawei Annual Report, 2021

Figure 7 Huawei smartphone market share in Quarter 1, 2021



Source: Counterpoint

components of Huawei smartphone business, Huawei sold the Honor smartphone brand in 2021 to a consortium of companies to ensure that Honor could survive. Huawei hoped the sale of Honor would help the company get access to vital components and supplies like semiconductors again [25].

Huawei's next stage of competition

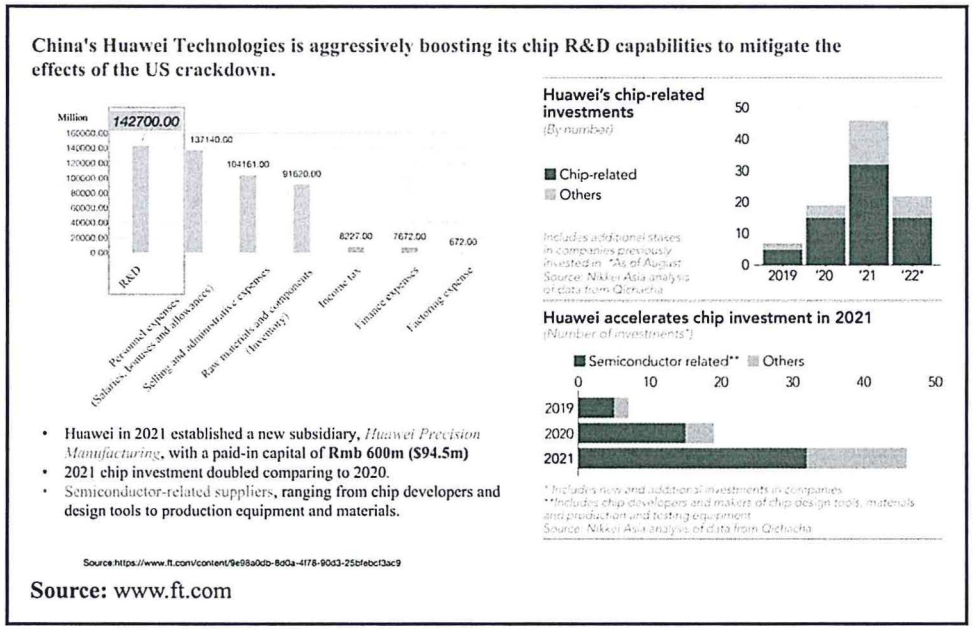
Despite huge difficulties, Huawei CEO, Ren Zhengfei was fighting for his business. He denied the US claim that Huawei spied for the Chinese government and was optimistic about the future of Huawei business. Ren Zhengfei stated:

> Our company will never undertake any spying activities. If we have any such actions, then I will shut the company down [...]. If the lights go out in the West, the East will still shine. And if the North goes dark, there is still the South. America doesn't represent the world. America only represents a portion of the world [26].

To achieve Huawei's vision of the future and stay ahead in the ICT sector, the company kept investing heavily in R&D (Figure 1). Figure 8 shows the attempt of Huawei in solving the problem of supply chain disruption. Huawei made heavy investments in chip technology (CNY 142.7bn (or approximately US$20.52bn) [27] or 22.4% of its total revenue in 2021). The company further expanded into the semiconductor industry chain mainly through Hubble Technology Investment, a subsidiary of Huawei, to solve the problems of chip shortage. Huawei also established Precision Manufacturing Company focused on the design and development of modules and components for its wireless and digital energy products [28]. Huawei also developed its own operating system called HarmonyOS (HMOS or Hongmeng OS) in 2021.

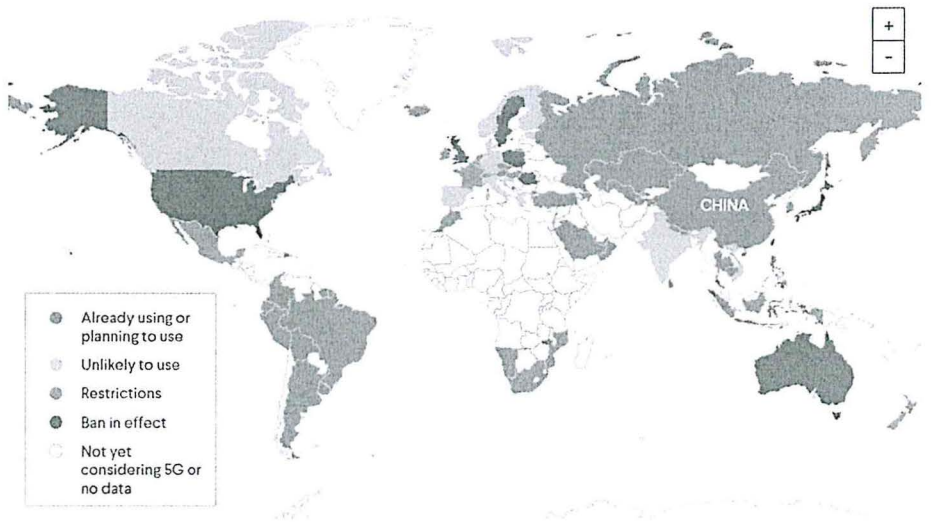
Figure 9 depicts the use of Huawei 5G technology worldwide. Despite the ban (shown in red color), there were 5G market opportunities in Asia, Latin America, Middle East and Africa [29] (shown in green and white color) that Huawei could secure.

Figure 8 Huawei investments in chip technology



Source: www.ft.com

Figure 9 The use of Huawei 5G technology worldwide



Source: CFR Research

After Trump administration, President Joe Biden continued to ban approvals of new telecommunications equipment from Huawei [30]. Zhao Lijian, a spokesperson at China's Foreign Ministry, stated:

> The United States, without any evidence, still abuses national security and state power to suppress Chinese companies [. . .] [31].

Given the continuing ban under Trump and Biden administrations, Huawei could not wait to push itself ahead in the world 5G technology [32]. According to a *Financial Times* report, Huawei was planning to redesign its smartphone without using restricted chipset technologies to bypass US sanctions. The company attempted to use phone cases with built-in eSIM module and chips that support 5G connection [33]. Given the technology advancements in artificial intelligence (AI) and Internet of Things (IoT), these were opportunities for future innovations for Huawei to build synergy-based ecosystems in driving the ICT industry further.

The dilemma addressed in this case study was concerned with how a protagonist, Ren Zhengfei, CEO of Huawei, could steer the company out of the crisis. It was interesting to see if Huawei could regain a leading position and remain competitive in the global smartphone market under a storm of difficulties. What would be the next step of Huawei – fighting, surrendering, winning or losing?

Keywords:
Strategy,
Innovation management,
Competitive advantage,
Strategic capability,
Competition,
Collaboration,
Competitive strategy,
Innovation,
Management theory

Notes

1. www.cnbc.com
2. The Bureau of Industry and Security (BIS), the United States Department of Commerce, added Huawei to the entity list on the basis of information that provided a reasonable basis to conclude that Huawei was engaged in activities that were contrary to US national security or foreign policy interests. Huawei was charged with posing risks of national security threats to the USA (www.federalregister.gov).
3. 5G was the fifth-generation technology standard for cellular communication networks. It was up to 100 times faster than 4G in terms of speed and could reduce latency as well as improve flexibility of

wireless services. 5G technology could improve the performance of business applications as well as other digital experiences such as online gaming, videoconferencing and self-driving car performance (www.cisco.com).

4. Huawei Annual Report
5. www.bbc.com
6. www.worldbank.org
7. www.thediplomat.com
8. The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96
9. Huawei Annual Report, 2021
10. www.huaweicentral.com
11. The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96
12. It was claimed that Huawei could undercut its price by 70% when competing with its competitors because the company received annual subsidies from the Chinese Government (washingtonpost.com, www.businessinsider.com). According to the Washington Post, Huawei got US$222m as the grants from the Chinese Government in 2018 (www.washingtonpost.com).
13. www.theguardian.com
14. The United States Department of Justice
15. www.cnbc.com
16. www.cnbc.com
17. www.justice.gov
18. Ren Zhengfei's interview with BBC (www.huawei.com)
19. Prior to US ban, Huawei used US-based technology to produce HiSilicon Kirin chips – application processor – for its smartphone (www.hisilicon.com).
20. www.reuters.com
21. The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96
22. Huawei Annual Report, 2021
23. Huawei's competitors in the high-end smartphone market were Apple and Samsung. Its competitors in the low-end smartphone market were Xiaomi, Oppo, Vivo, Samsung and Realme.
24. www.theguardian.com
25. www.cnbc.com
26. www.bbc.co.uk
27. The exchange rate of US$ to CNY in 2022: US$1.00 ≈ CNY6.96
28. www.huaweicentral.com
29. It was forecasted that the growth of smartphones market in the Middle East and Africa will be 9% during 2021–2026 (www.mordorintelligence.com).
30. www.nytimes.com
31. www.reuters.com
32. Apart from Huawei, the other major players operating in the global 5G network industry were Samsung (South Korea), Intel (USA), Nokia (Finland), Ericsson (Sweden), Cisco (USA), LG (South Korea), Qualcomm (USA), AT&T (USA) and NEC (Japan).
33. www.ft.com

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