China's Huawei in the Us-China Trade War in the Communications Sector Game

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ABSTRACT
In recent years, Huawei has provided communications operators and professional network owners all over the world with hardware, software, services, and solutions as the world's largest telecommunications equipment supplier, the world's second-largest telecommunications base station equipment supplier, and leading global information and communications solutions provider. Huawei's expansion is a focused reflection of China's information industry pace and height. This shift has caused consternation among competitors, as well as resistance and conflict in the West. For example, to prevent technology from being comparatively weak at the top of the advantage of backwardness, the US has implemented export limits on high-tech technology, such as cutting off Huawei's supply chain and contracting Huawei's international sales. to Huawei has brought the raw materials are in short supply and the problem of shortage of funds for Huawei enterprise crisis changes along with the changes and development of the sino-us trade friction. Based on the game theory model, this paper studies that the game strategy of the United States is to boycott Huawei products, compress the market, and block technology, to achieve the purpose of Huawei's withdrawal from the European and American markets. Specifically, the US government took the lead in boycotting Huawei products, requiring its Allies to ban Huawei products, investing a large amount of money in research and development of new technologies, and blocking related technologies such as chips. Huawei's game strategy is to speed up technology research and development and expand other markets. Specifically, Huawei's R&D personnel account for 53.4% of the total employees, and the r&d amount in 2020 is as high as 141,893 million yuan. Huawei will expand smart home, and smart car fields, innovate mobile application ecology and continue to develop in multiple fields.

Keywords: *The Us-China trade war; Game theory; Huawei; communication*

1. INTRODUCTION

Trade deficit on global capital flows and the contradiction of ordinary Americans, to ease the contradiction, the need to rely on international financial profits from the global value chain, this produces the United States made the contradiction between profit and global production division of labor, to maintain the financial order, and the United States needs to science and technology advantage, need to hit the other countries of advanced industry, It began to try to impede China's progress in all aspects, especially in technology, resulting in the contradiction between American hegemony and the development of other countries.

Many studies have been carried out in the literature. This is the reason why the United States boycotts Huawei. [1]Combined with the background of the Sino-US trade war, the information revolution brought by overseas social media and Huawei's corporate crisis can be divided into life cycles in a specific period. China's high-tech industry has become the "new force" of "going out", anti-globalization and high-tech. The sensitivity of China's high-tech industry has brought a hidden danger of the crisis. [2] Under the background of China's strategy shifting from engagement to "regulation and lock", the United States has gradually intensified its suppression of China's scientific and technological innovation and high-tech industry development since 2018. [3]One of the core measures is to strike China's high-tech enterprises in turn. At present, the US government has made it clear that while strengthening cooperation with China on many issues, it still sees China as a potential threat and competitor in many areas, and scientific and technological innovation is the top priority. In this context, believe that there is a clear trend of the lasting game between China and the United States centering on technological innovation and high-tech industry

development. Since the US launched the science and technology war, its various measures have attracted continuous attention from scholars, including strengthening restrictions on technology import and export, [4]strengthening protection of digital space infrastructure [5], and focusing on the right to establish technical standards. [6]

In the world communication field, Cisco was the world's largest network and telecommunications equipment manufacturer at that time and adopted a hostile policy toward Huawei. Filed lawsuits against Huawei over software and patent infringement. Meanwhile, Some scholars believe that China has been constructed as a "brutal" economic aggressor in the RECENT American political discourse. The "political reality" and "knowledge" generated by such discourse practice not only serve the political necessity of legalizing the POLICY choice of the U.S. trade war but also have a special need for "civilized" hegemony. That is to legitimize its power and behavior outside of a trade war. For several party cadres as the Huawei leadership team of the communist party of China the leadership of the national companies such as Huawei, such as the United States to China for an organized attack.[7] Therefore, this paper focuses on the west for a crackdown on China and resist measures, as well as Huawei's policy and back, try to use the method of game theory, find out the core of Huawei's resistance strategies against future and development of the route. Using the game model, we conclude that only innovation can improve enterprise income and promote social progress. Only by working together and helping each other to build a community with a shared future for mankind can we maximize our interests. Otherwise, we will only harm ourselves and others. In addition, Huawei can broaden its product field and expand its external market. For example, by taking advantage of national strategies such as the Belt and Road Initiative, Huawei can strengthen its trade with neighboring countries. Huawei expand smart home and smart car, innovate mobile application ecology and continue to develop in multiple fields.

The second part of this paper introduces the development process of Huawei, the third part analyzes the attack strategies of the United States on Huawei, the fourth part analyzes Huawei's counterattack, survival, and redevelopment strategies, and the fifth part is the conclusion and the prospect of the future situation and Huawei's possible coping strategies.

2. HISTORY OF HUAWEI

In 1987, ren zhengfei, was founded in shenzhen huawei technologies co., LTD., a registered capital of 24000 yuan only, at first, is a Hong Kong company Huawei only small analog switches agents, in 1989, Huawei through independent research and development the PBX PBX successful transformation, took to the road of independent innovation, in 1993, Huawei developed for C&C 08 digital program-controlled switches, In October 1993, 08 machine finally smooth delivery, Huawei really have their own core technology accumulation, in 1996, Huawei and cheung kong holdings, hutchison telecom cooperation, provide with narrowband switch as the core business network products, Huawei 08 machine used successfully break into the Hong Kong, opened a lot of domestic business, and then, Transforming from pure telecoms equipment maker Huawei as telecom whole solution providers and service providers, since 1998, has hired 50 management consultants to Huawei, IBM has invested about $50 million, broke the previous department as the structure of Huawei management mode, turned to the business process as the core of the management pattern, in 2003, In the same year, Huawei's global market sales exceeded 30 billion yuan. In 2004, Huawei acquired the cooperation with Telfort, a Dutch operator, worth more than 25 million DOLLARS, which was a breakthrough for Huawei in the European market. In early 2003, Cisco east Texas to the United States federal court's software and patent infringement lawsuit accusing it of violating patent technology, and in many routers and switches from its source, in March 2003, the court held a hearing for the first time, the two sides finally settled in July 2004, ended the lawsuits, in 2013, In 2003, Huawei entered the mobile phone market. At that time, mobile phone chips were monopolized by foreign enterprises. In 2004, Huawei started its research and development of mobile phone chips. At the beginning of 2007, Huawei's annual flagship P10 Plus came out. At the end of 2016, in the DISCUSSION of 5G shortcode scheme at the 187th meeting of 3 GPP RAN, Huawei's polarization code became the final scheme for THE EM BB scene coding of 5G control channel, which is an important step on the road to 5G standard. The strength of Huawei can rival Ericsson and Nokia, in terms of enterprise business, Huawei is HP, IBM, and other international big companies rival, in the field of consumer electronics, Huawei in mobile phones, laptops, and apparel products, Not far behind Samsung and Apple, continuous innovation, is the biggest advantage of Huawei, in nearly a decade, Huawei has invested no less than 300 billion yuan in R&D, making it one of the world's top 10 r&d investment companies.

3. AMERICA'S STRATEGY AGAINST HUAWEI

3.1. Reasons for the US strike

On the surface, the US trade deficit is the cause of the trade conflict, but the root cause is the deep game between China and the US.

The formation of Thucydides trap. The So-called Thucydides trap refers to the phenomenon that a rising

power will inevitably challenge the existing power, and the existing power will inevitably respond to the threat, thus making war inevitable. The theory is often used to describe and reveal the inevitable conflict between a rising power and established power. [8] To prevent the backward countries using technical advantage backwardness implementation technology to catch up with and even the comprehensive strength of transcendence, to prevent the spread of advanced technology and restraining competition state of technology innovation, and on high technology export control measures is one of the effective measures to inhibit other countries' technology innovation. The U.S. government gave the current situation of the development of communication to carry out the export controls, our companies in the fields of communication, and the United States trade partner countries under pressure from the United States government policy was forced to suspend the cooperation with Huawei, Huawei has lost a lot of technical communication in the international market opportunities, reduce the market share, the technological development environment is restricted, the key technology is blocked, This reduces Huawei's overseas performance income, increases Huawei's trade cost and r&d cost, and restrains the rapid momentum of Huawei's technological innovation to a certain extent.

3.2 The United States strikes the basic process of Huawei

From 2008 to 2012, to protect American communication enterprises and prevent Chinese technology enterprises from acquiring American advanced communication technologies, the United States prevented Huawei from acquiring American communication enterprises and from selling communication equipment to Huawei

Table 1. Basic events of Huawei's MERGER and acquisition failures from 2008 to 2012

2008	3Com	Joint acquisition	Failed CFIUS review
2008	AT&T 4G device	Equipment sales contract	The NSA intervention
2010	Sprint 4G device	Equipment sales contract	U.S. Commerce Department intervenes
2010	2Wire	Mergers and acquisitions	M&a targets worry about the risk of censorship
2010	MOTOROLA Wireless	Mergers and acquisitions	M&a targets worry about the risk of censorship
2011	3Leaf cloud computing technology	Patent purchase	The deal was then blocked by CFIUS
2012	Symantec	A joint venture	Withdrawal of the joint venture party

From 2013 to 2017, Huawei realized that acquiring American communication technology through mergers and acquisitions was a dead end as it failed to acquire American enterprises many times. Huawei has gone into seclusion mode, acquiring technology by setting up joint research and development centers abroad. Less aggressive has led the US to let its guard down on Huawei. The US is in observation mode over Huawei.

Table 2. Specific progress and important events of the United States' crackdown on Huawei

Time	Event	Nature of the event
2018.1	AT&T and Verizon, two of the big four U.S. carriers, have terminated their smartphone sales cooperation with Huawei	Compression market
2018.2.13	FBI Director Chris Wray warned the public not to buy Huawei phones	Compression market
2018.3.22	Huawei phones lost the backing of retailer Best Buy	Compression market
2018.5.2	The US Department of Defense has banned the sale of Huawei and ZTE phones on US military bases	Compression market
2018.6.20	U.S. lawmakers have called on Google to stop working with Huawei	Compression market

2018.8.23	Australia, a U.S. ally, has banned Huawei from building 5G networks	Compression market
2018.12.1	The United States ordered the third country to arrest Meng Wanzhou, Huawei's CFO	Making excuses for a crackdown
2018.12.5	BT, a CARRIER in the United Kingdom and a U.S. ally, will remove Huawei's 4G equipment and not purchase Huawei's 5G core network equipment	Compression market
2018.12.10	The Japanese government, a US ally, effectively excluded Huawei and ZTE from its procurement list	Compression market
2019.1.11	A Huawei employee in Poland has been arrested on suspicion of spying	Making excuses for a crackdown
2019.1.28	The US has filed 23 charges against Huawei for alleged theft of trade secrets and fraud	Making excuses for a crackdown
2019.1.28	The FBI raided Huawei LABS in San Diego, California	Making excuses for a crackdown
2019.2.27	The US delegation lobbied European governments and private companies hard to discourage the adoption of Huawei's 5G mobile technology	Compression market
2019.3.1	The United States has warned the Philippines not to use Huawei 5G equipment	Compression market
2019.3.12	The United States has warned Germany that Huawei must be banned or it will limit intelligence sharing with Germany	Compression market
2019.3.28	Regulators in Britain, a U.S. ally, have warned that Huawei's products "significantly increase risks."	Making excuses for a crackdown
2019.4.20	The CIA claims Huawei is funded by China's state security services	Making excuses for a crackdown
2019.5.15	President Trump signed an "emergency" executive order authorizing the Department of Commerce to add Huawei to the "entity list", requiring the withholding of products and services in which the proportion of Huawei's TECHNOLOGY in the US exceeds 25%	Attack Huawei from the supply chain
2019.5.20	Google has removed Huawei phones from its android upgrade list	Compression market
2019.5.20	The United States has for the first time granted a "90-day temporary license" to Huawei, suspending a trade ban on the company	First reprieve from supply chain crackdown
2019.5.23	The US has accused Huawei of lying about its relationship with the Chinese government	Making excuses for a crackdown

2019.6.24	FCC commissioner calls for Huawei to be removed from US networks	Compression market
2019.7.16	The US Senate has blacklisted Huawei over 5G legislation	Compression market
2019.8.19	The Commerce Department extended a 90-day reprieve from the trade ban to allow American companies to work with Huawei	Second reprieve from supply chain crackdown
2019.11.7	Trump administration's tech chief slams countries for 'opening arms' to Huawei	Compression market
2019.11.18	The Commerce Department extended a 90-day reprieve from the trade ban to allow American companies to work with Huawei	Third reprieve from supply chain crackdown
2019.11.22	The FEDERAL Communications Commission barred carriers from using federal subsidy funds to buy Huawei and ZTE equipment	Compression market
2019.12.17	Telefonica will significantly reduce equipment used for Huawei's 5G core network	Compression market
2019.12.23	The US Department of Commerce plans to reduce the proportion of US technologies that are cut off from Huawei's products and services from no more than 25% to no more than 10%, to block companies such as TSMC from supplying Huawei	To strengthen the supply Chain strike force
2020.1.13	The US has asked the UK to block Huawei from its 5G network	Compression market
2020.2.11	Us government claims it "found Huawei has backdoor access to mobile networks around the world"	Making excuses for a crackdown
2020.2.13	The Us Justice Department has accused Huawei of racketeering and theft of trade secrets	Making excuses for a crackdown
2020.2.13	The US Commerce Department has suspended its trade ban on Huawei for another 45 days	Fourth reprieve Supply chain strike
2020.2.28	The US Senate has passed a bill banning government purchases of Huawei equipment	Compression market
2020.3.10	The US Department of Commerce seeks public comments on the extension of Huawei's temporary General License and extends the license to 5. 15	Fifth reprieve Supply chain strike
2020.5.15	The US Department of Commerce requires any company supplying semiconductor products containing US technology to Huawei to obtain an export license from the US government. The ban will be enforced after 120 days	Resupply Chain strike force
2020.6	Us proposes clean Web Initiative	Making excuses for a crackdown

2020.7.29	America threatens Brazil to ditch Huawei	Compression market
2020.9.15	The US trade ban on Huawei has come into effect	Supply chain strike Formal implementation
2020.10.14	Us announces more than 25 EU and NATO countries have joined clean Net Initiative	Compression market
2020.10	North Macedonia, Bulgaria, and Kosovo join US Clean Net Program	Compression market
2020.11.10	Brazil supports the US Clean Network Initiative's proposal for "transparent 5G technology"	Compression market
2020.12.21	The United States will approve $1.9 billion in subsidies for American telecom operators to scrap Huawei equipment	Compression market
2020.12.23	Ukraine says it has joined US Clean Net Initiative	Compression market
2021.3.12	The Biden administration has further restricted the supply of 5G products to Huawei by revising related licenses	Strengthen supply chain strike
2021.4.7	The US Secretary of Commerce confirmed that Huawei would remain on the entity list	Keep supply chain cracking down
2021.4.15	Romania has banned Huawei from developing the country's 5G network	Compression market

3.2.1 Strike strategy of the United States

From 2008 to 2012, the United States mainly used the interference of the Ministry of Commerce to prevent Huawei from acquiring American communication enterprises and selling communication equipment to Huawei

From 2013 to 2017, the United States put Huawei under observation and did not propose any major suppression policies

From 2018 to 2021, first, the US Departments of Defense, Treasury, Intelligence, and Justice boycotted Huawei and its products, and second, asked its Allies to prohibit the use of Huawei equipment. Third, invest a lot of money in technology research and development and so on. In this way, Huawei can reduce its competitive market, reduce its customers and partners, and achieve the goal that Huawei will lose its competitive ability due to its lack of funds and market, thus withdrawing from the world, especially the European and American communication equipment market.

3.3 Effectiveness of US strike

3.3.1 Entity List

The entity list is an export control regulation established by the United States to safeguard its national security interests. U.S. exporters may not help companies on these lists obtain any items subject to this Regulation without obtaining a license. This will not only lead to losses for Huawei but also harm the interests of every enterprise in the global supply chain. [9]Delays in the launch of the new Matebook laptop and more than 600 job cuts at its subsidiary have made the negative impact of the "physical list" apparent. It will be hard to replace most of Huawei's high-end components anytime soon. The technical level of components independently developed by Huawei is still very different from that of the United States. Even if the independent research and development are intensified now, it is still unknown whether the quality of Huawei's products can be the same as before, which impacts the interests of Huawei's customers to some extent. In addition, the "entity list" has hit Huawei's suppliers in the United States. An American ban on Huawei would hurt not only Huawei but also its suppliers around the world, many of them American companies. Of Huawei's $70 billion component procurement spending in 2018, about $11 billion went to American companies such as Qualcomm, Intel, and Micron technology. On the day Huawei was added to the "entity list", Qualcomm's shares fell 4%, While The shares of Citation, Corvo, and Silas closed down 6.06%, 7.14%, and 7.27%, respectively. The "physical list" has deprived many US companies of a heavyweight buyer. Their shares fell sharply after the announcement on May 15 amid concerns about the adverse impact on profitability. [10]The exclusion of Huawei from the rollout of high-speed 5G mobile networks is motivated

by political and commercial interests, but not in the national interest. Since Huawei is banned, its competitors may corner the market, which could result in ordinary consumers paying more for worse service.[11]

In addition, Huawei's 2020 annual report showed that cash flow from operating activities was 35.2 billion yuan, down 61.56% year on year.

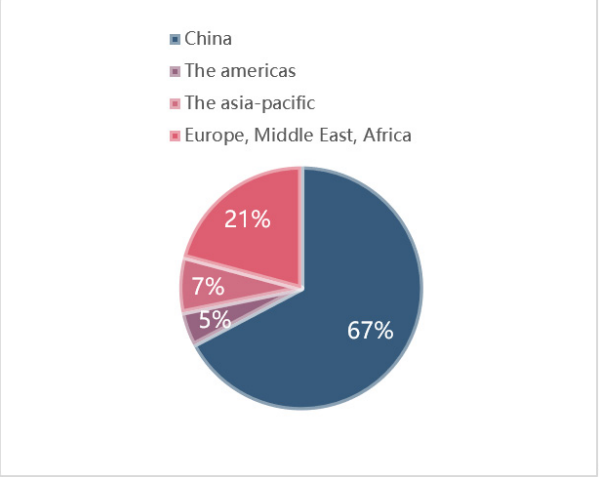

Figure 1 Regional sales revenue on

3.3.2 Huawei's 5G equipment market share declination.

The global market share of Huawei 5G equipment is declining rapidly. In 2018, Due to Huawei's huge technological and cost advantages compared with other competitors, Huawei is far ahead in 5G contracts and occupies an overwhelming market share. However, starting from 2019, under the continuous actions of the United States, Huawei lost its overwhelming advantage in market share rapidly, while Ericsson and Nokia began to reverse the trend surprisingly without changing their technological disadvantages, and overtook Huawei successively.

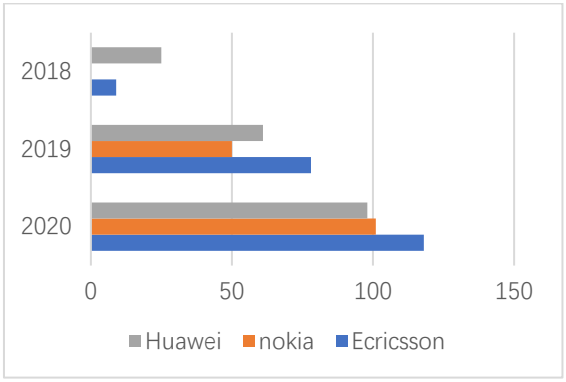

Figure 2 Interannual variation trend of global 5G contract quantity between Huawei and its competitors

4. COUNTERMEASURES OF CHINA'S HUAWEI

4.1 Basic Directions

On the one hand, import competition can play the catfish effect, that is, by introducing external competition to stimulate the vitality of domestic enterprises, forcing enterprises to reform, prompting enterprises to escape competition through innovation, to achieve the ultimate goal of industrial transformation and upgrading, this effect is also known as the "escape from competition effect". [12]Huawei's main countermeasures include 1. Emergency inventory; 2. Diversified procurement; 3. Local substitution; 4. In-depth cooperation with overseas suppliers in the supply chain. Due to the political and other irresistible external forces, emergency inventory, diversified procurement, and local substitution are the coping strategies adopted by Chinese enterprises. Stockpiling and multi-sourcing have cost-increasing disadvantages. At present, compared with the technology developed countries, China's integrated circuit has a certain gap. For the information and communications industry, finding local alternatives is difficult. Huawei provides other high-tech enterprises in China with another strategy to manage the risk of supply chain disruption -- independent r&d and production is the best choice under the condition of strong capital preparation and talent reserve. [9]

4.2 Game Model

Below, we use a game model to analyze why Huawei invests a lot of money in developing new technologies instead of marketing or developing new fields in the absence of external interference. For the convenience of analysis, we assume that the governments of the two countries do not interfere in enterprise innovation. We assume that there are only two enterprises A and B in the world. A and B have the same production scale, research, and development capacity, and produce the same products. Both companies have two strategies in the production process: innovation or marketing; In the long run, innovation will reap the greatest benefits. Marketing only works in the short term. In the absence of external regulation, if neither of the two enterprises innovates, the technology will stagnate and the economy will stop developing, and the income of the two enterprises will be affected. Assume that the income of each enterprise is A; On the contrary, if both enterprises innovate, a higher environment will reduce the production cost of the enterprise and improve its earnings, assuming that the earnings of each enterprise are B; In addition, if one enterprise does not innovate and the other innovates in the environment, the income of the innovative enterprise will be greater than that of the non-innovative enterprise. It is assumed that the income of the non-innovative enterprise is C and that of the innovative enterprise is D.

We assume that c< a < b < d, then the matrix of the above game is as follows:

Table 3. Game model innovation and marketing

		B	
A	marketing	marketing	Innovation
		a , a	
	Innovation		c , d
		d , c	b , b

In this game, it is assumed that enterprises a and b fully understand each other's selection strategy, and the information is completely symmetrical. the

When enterprise a chooses innovation, enterprise b must choose innovation, because for enterprise b, if the choice of innovation

If we choose not to innovate, we get c, and c < b; Conversely, if a chooses

If enterprise b chooses not to innovate, then enterprise b must also choose to innovate, because if enterprise b chooses not to innovate, its income is a.

The benefit of innovation is d. At this point, for b, the benefit of innovation strategy is greater than that of choice

Returns of non-innovative strategies, a < d. (b, b) is a Nash equilibrium.

In the following repeated game model with complete information, we assume that there is no interference from other countries and markets. In the face of Huawei's development and competition in the European and American markets, the United States has two choices: hostile blocking actions and friendly policy support. Huawei also has two strategies to respond, the hostile counter-attack strategy, such as no longer providing equipment and services to the United States, and the friendly concession strategy,

To provide products and services as required by the United States under U.S. sanctions. Since the HIGH-TECH industry of the United States has been at the leading level for a long time and controls the local market of the United States, the loss benefit of the hostile strategy of the United States is -3, which is smaller than the loss benefit of the hostile strategy of Huawei is -4. In this game, it is assumed that the enterprises of Party A and Party B fully understand each other's selection strategy and the information is completely symmetrical. Game in the first round, the United States and Huawei are friendly policy choices, to achieve the benefit maximization, later in the game, the United States to change strategy, first choose a rival, Huawei profit loss less than 3, 1, U.S. interests in the next step, Huawei to punish the United States, can choose the hostile policy, both for hostile policy at this time, but for the maximum profit, Ultimately Huawei will choose a friendly strategy even if the US is hostile. The subgame refined Nash equilibrium (4,4) is obtained. The conclusion is that only friendly development and mutual benefit can maximize the benefits. Hostility and blockade will only hurt others and ourselves. However, at the current stage, The United States is hostile to Huawei. Huawei has to endure the American target and still try its best to expand the European and American markets and sell products.

Table 4. Game model hostile and friendly

	Huawei		
America		hostile	friendly
	hostile	-4 , -3	5 , 5
	friendly	-2 , -3	4 , 4

Now, using the finite number of repetitions of the prisoner's dilemma game with unilateral incomplete information:

Assume that the US is rational, but Huawei has two possible types: (1) the "irrational" type (probability p) will only choose tit-for-tat strategy: in the first stage, choose cooperation; Starting with stage 2, choose your opponent's actions in the previous stage. (2) The "rational" type (probability 1-P) can choose any strategy.

If Huawei is rational, it will choose betrayal in the second and third stages, but it may also choose cooperation in the first stage because establishing an image of cooperation can exchange for the cooperation of the United States in the second stage: If p is greater than or equal to 0.25, and Huawei believes that "The United States will cooperate in the first stage, and the United States will cooperate in the second stage when Huawei cooperates in the first stage", then, when Huawei chooses to cooperate in the first stage, it can get benefits 3+4+0 = 7. When Huawei chooses to betray in the first stage, it exposes its type, which leads to the United States must choose to betray in the second stage, and Huawei gets 4+0+0 = 4. Huawei chose cooperation over betrayal in phase 1.

Table 5. A Finite number of repetitions of the Prisoner's Dilemma game with unilateral Incomplete Information

		T1	T2	T3
Huawei	irrational (p)	cooperation	Y=cooperation	X=cooperation
	rational (1-p)	cooperation	betrayal	betrayal
America	rational	Y=cooperation	X=cooperation	betrayal

America's choice:

America must choose betrayal in stage 3.

In the second stage, if Huawei chooses to betray in the first stage, it can be concluded that Huawei is rational and the United States will choose to betray.

In the second stage, it is observed that Huawei chose to cooperate in the first stage, but it is still impossible to judge whether Huawei is rational. Therefore, the United States can choose either cooperation or betrayal.

In the first stage, the game has just started, and the US cannot base its choice on its observation of Huawei's behavior, so it can choose to cooperate or betray.

After eliminating bad strategies, the US has four options:

((the cooperative | A1 = cooperation, betrayal | A1 = betrayal), betrayal) expected return 8 p + 2

(cooperation, (betrayal | A1 = cooperation, betrayal | A1 = betrayal), betrayal) expected return 4 p + 3

(betrayal, betrayal | A1 = cooperation, betrayal | A1 = betrayal), betrayal) expected return 4

(betrayal, (cooperation | A1 =, betrayal | A1 = betrayal), betrayal) expected return 4 p + 3

A1 indicates the actions selected by Huawei in phase 1.

4.2.1 conclusion

To sum up, even if the information between the two parties is not equal, cooperation is greater than the competition and the maximum expected return can still be obtained. In the game between the United States and Huawei, the United States still has not canceled its hostile policy towards Huawei and expects the least benefit. Only when the United States gradually loosens its regulations and sanctions, can the expected income increase and both the United States and Huawei get a win-win situation.

Similarly, the reality also confirms the conclusion, 2020.6 American companies will more fully cooperate with The Chinese communications giant Huawei, jointly participate in the development of 5G industry and other technical standards. The United States says it has allowed Chinese companies to cooperate with Huawei, but that this does not mean it will ease sanctions on the Chinese company, but that it will allow Huawei to enter the United States for the benefit of American manufacturers. This also verifies the repeated game of complete information. At the current stage, Huawei has to endure the targeting of the United States and try its best to expand the European and American markets and sell products. In order to maximize the benefits.

4.3 Internal reform

Huawei's innovation can be seen in many ways. For example, the reform and innovation in the enterprise are not bold and bold but based on comprehensive inheritance and continuous optimization. In terms of innovation, Huawei only gives play to its subjective initiative and creativity in the main waterway, concentrating its efforts in a few areas in order to form a competitive advantage over its rivals. [13] Huawei has always emphasized that innovation is always the most powerful power source for science and technology enterprises, leading the world in product research and development, technological content, and the patent number. Huawei is one of the world's largest patent holders. By the end of 2020, more than 40,000 valid and authorized patents were held worldwide, with more than 100,000 patents. More than 90 percent of patents are invention patents. Participated in more than 30 industrial alliance projects, actively engaged in academic activities, and published more than 590 papers. Leading future network technology innovations such as 5G, all-optical network, smart IP, and ADN.

Huawei creates intelligent connectivity solutions for all scenarios. We have worked with operators around the world to build 5G networks, worked with partners to promote the ecological development of 5GtoB, and launched RuralStar Pro innovative solutions to provide Internet services to more than 50 million people in remote areas in more than 60 countries and regions.

In the field of pan-IoT, The company has deepened cooperation with more than 600 major household appliance brands around the world based on the Huawei HiLink platform, covering more than 3,000 products, and has accumulated more than 50 million users. It launched

ModelArts3.0, a one-stop AI development platform, and released the industry's first full-lifecycle knowledge computing solution, enabling developers to accelerate innovation and efficiently use ARTIFICIAL intelligence capabilities.

In the field of intelligent vehicle solutions, more than 30 intelligent components will be launched in succession. Further, improve the whole scene of intelligent ecology, to bring smart life experience for consumers.

With the launch of HMS Core 5.0, HMS Ecosystem has become the third-largest mobile application ecosystem in the world, integrating more than 120,000 HMS Core applications worldwide and registering more than 2.3 million developers worldwide. It provides a platform for mobile developers and application manufacturers to innovate. As the fastest-growing mainstream cloud service provider in the world, Huawei Cloud has launched more than 220 cloud services and 210 solutions, developed more than 19,000 partners and 1.6 million developers and launched more than 4,000 applications in the cloud market. We launched a global anti-epidemic campaign and worked with partners and scientific research institutions to provide Huawei cloud AI-assisted diagnosis and other services to all regions to tide over the difficulties. Proposed "Agent", an open technology reference architecture based on cloud and centered on AI,

More than 700 cities and 253 Fortune 500 companies around the world have chosen Huawei as their digital transformation partners, and Huawei has more than 30,000 enterprise market partners.

In addition, Huawei actively creates social value. Huawei has always adhered to the strategy of globalization and localization, hiring local employees, investing in procurement, and setting up research institutions in the countries and regions where it operates to promote local employment and economic development. Information and communication technology not only directly creates social wealth, but also produces a huge driving effect. ICT technology is widely used in industry, agriculture, finance, transportation, and other fields, improving the labor productivity of enterprises and society as a whole, and bringing good social benefits. Huawei is committed to open cooperation and innovation, flourishing the industrial ecosystem, providing an open platform for local partners, SMEs, and individual developers, and promoting the development of ICT industrial clusters and digital economies in various countries. To promote the development of local industrial clusters and SMEs. Huawei actively participates in various industries and academic organizations to discuss industrial problems and promote basic research, standard formulation, and industrial cooperation. Strengthen open source innovation in basic software and continue to contribute to the mainstream open source community. We will promote openness and innovation, industrial upgrading, and ecological prosperity. Huawei supports the United Nations Sustainable Development Goals and continues to make contributions to digital skills, environmental protection, and anti-epidemic technologies.

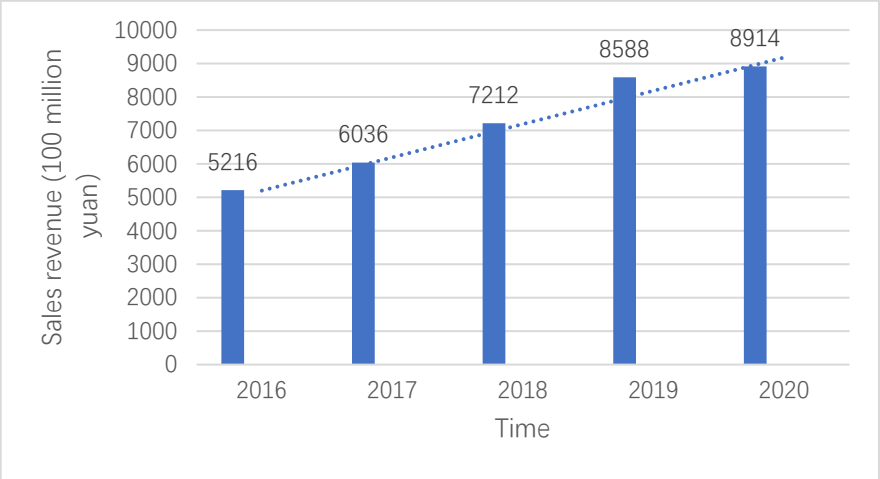

Figure 3 Huawei's sales revenue in the past five years

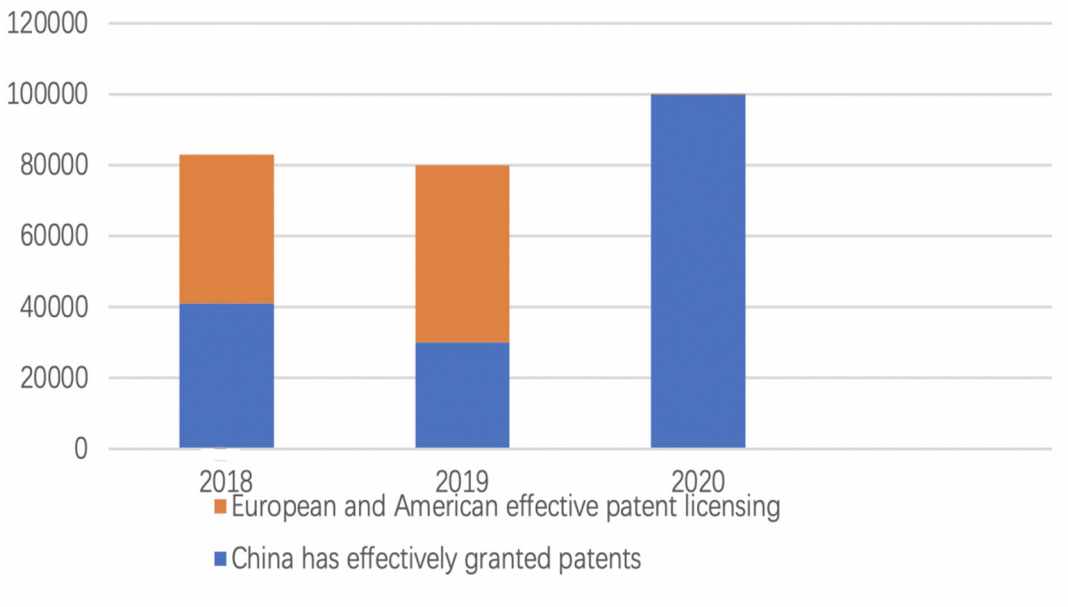

Figure 4 Number of total employees and R&D personnel of Huawei from 2018 to 2020

4.4 Huawei Countermeasures

There is a clear trend of a long-term game between China and the United States over scientific and technological innovation and the development of high-tech industries. At present, the United States adopts "market compression under the coordination of technological restrictions" to continuously compress Huawei's market space through the coordination of various means. Force Huawei to enter a vicious circle of "shrinking market space -- decreasing enterprise income -- decreasing R&D investment -- shrinking R&D team -- decreasing technological strength -- further shrinking market share -- and finally total collapse", so as to destroy Huawei's entire industry and its accumulated technological strength. To the greatest extent, the opponent's technological innovation and high-tech industry development. [4]

Second, the prerequisite for Huawei to break through the technology blockade is that Huawei can maintain its market base to support huge r&d investment. Independent innovation relies on R&D investment, and the increase of R&D investment promotes knowledge accumulation and the improvement of independent innovation level, thus promoting technological progress. R&d investment mainly achieves the goal of technological progress through physical capital and human capital. [14] At present, Huawei's cash flow is decreasing, and r&d needs a large number of funds. Huawei should make use of its huge market influence as a leading enterprise, constantly radiate to the industrial chain and supply chain, promote, coordinate and integrate related technology research and development. It provides relevant enterprises with market application scenarios required for technological research and development, provides sufficient market orders to support r&d investment required for a technological breakthrough, and finally realizes effective coordination between the entire industrial system and supply system on technological breakthrough and industrial upgrading. Huawei can try to reduce its dependence on a certain country or enterprise, diversify its business risks and technology development risks, and consider carrying out trade cooperation with countries along the Belt and Road to expand overseas markets.

Third, Huawei should adhere to the rules explored in the past, make bold innovations, learn from the best, enrich the corporate culture, optimize the management mode, constantly metabolize, and adhere to the market-oriented development direction. Try to get rid of US sanctions as soon as possible and flourish.

Fourth, Huawei has not made a major breakthrough in chip technology at the present stage, so it should appropriately expand its product direction and fields. For example, Huawei has made progress in smart homes and smart cars, which can also become another sales business for Huawei besides the mobile phone business to increase its sales revenue.

Fifth, to improve enterprise compliance management as the element. The US technology export control system is strict and its extraterritorial effects are widespread. Once an enterprise violates the US export control system, it will be investigated for civil, administrative, or even criminal liability. In the worst cases, it will be subject to us technology blockade and international supply chain isolation, which will have a huge impact on the long-term development of the enterprise. Therefore, relevant agencies should strengthen export compliance management in daily operations. On the one hand, enterprises should learn from the experience of their American partners, establish a sound internal control

system, strengthen the "negative list" screening of their overseas trading partners and products, and especially do a good job in the background investigation of their first-time trading partners. On the other hand, we will strengthen the construction of compliance and legal forces and do a good job in crisis planning. At the same time, enterprises should broaden the supply channels of high-tech products and parts, and do a good job of emergency supply chain reserve in advance. [15]

To sum up, scientific and technological innovation and win-win cooperation are the purposes of Huawei. Huawei's game of both wisdom and courage in the field of communication is not only a model in the field of communication but also a typical representative of Chinese excellent culture. An excellent enterprise cannot do without its soil, which is the essence of Chinese culture. In the context of harmony and diversity of Chinese culture, Huawei should continue to develop.

5. CONCLUSION

Based on the background of the Sino-US trade war, this paper makes a basic introduction and analysis of Huawei, focusing on the relevant strategies and impacts of the United States against Huawei and Huawei's basic coping strategies. The author analyzed and discussed the logic and purpose behind the US policy and Huawei's countermeasures .Also , writer provided effective prevention and resistance suggestions to other high-tech enterprises that may be suppressed by the United States.This paper examines the causes for the United States' suppression approach and Huawei's countermeasures using a game theory model. First, Huawei should grow the market by following the trend of a community with a common future for humanity and global integration. Second, we should create bold innovations and broaden the scope of technology applications. What is more, increasing the quality of technology and development is important. In addition, fix shortcomings based on sufficient capital, a solid supply chain, and a trade market. Third, identify the research and development director with the market at the center, and resolve technical issues as quickly as feasible.This paper is short in length, and the model constructed is relatively simple, which has a big gap with real life. The information collected is less, so it is not perfect enough, and the epidemic situation and other related factors are not taken into account. The analysis is partial. In the future, the model can be parameterized and multiple data can be collected, such as Huawei's losses under the impact of the trade war, the decline of total revenue and market share, and the impact on employees, such as layoffs and salary cuts.

REFERENCES

[1] Q.Mou: A study on the Impact of US Export Control on Innovation in China's communication Industry [D] Master thesis of Beijing University of Posts and Telecommunications, 2019 29, 38-39

[2] Z.Li.(2018). Analysis of the causes and countermeasures of the Sino-US trade game. Modern Business, 21.

[3]Y.Zhang, W.Feng, From"Engagement" to "Regulation lock": America's Strategic intention towards China and Four Prospects of Sino-US Game [J]. Tsinghua Financial Review, 2018 (7) 24-25

[4] X.Ren, J.Yu. An analysis of the Strategy of American Foreign science and technology Attack in the context of persistent Game: a case study of the Japanese semiconductor industry and Huawei [J]. Contemporary Asia Pacific, 2021 (3) 110-136

[5] H.Sun, Us pressure strategy on China science and technology: development trend, strategic logic and influencing factors [J]. Modern International Relations,2019(01):38-45.

[6] Q.Huang, Great Power Strategic Competition and the Change of American Technology Policy towards China [J]. Diplomatic Review, 2020 (3) 102-128

[7] Y.Zhang. 'Barbarising' China in American trade war discourse: the assault on Huawei[J]. Third World Quarterly,2021,42(7).

[8] X.Fang, J . Xiong, Y.Zhang. The deep game of Sino-US economy and trade and China's strategic choice [J]. Social Science Research, 2018(4):10.

[9] Z.Fu, Z.Ye. Risk of Mid-break and "spare Tire" management of global Supply Chain in International Games [J]. Journal of Jiangsu Social Sciences, 2021 (4) 111-119

[10] C. H.Kwan, China-US Trade War: Deep-Rooted Causes, Shifting Focus and Uncertain Prospects. [J]. Asian Economic Policy Review,2020,15(1).

[11] Bruno Mascitelli, Mona Chung. Hue and cry over Huawei: Cold war tensions, security threats or anti-competitive behavior?[J]. Research in Globalization,2019,1(C).

[12] H.Wei, H.Lian, J.WU. Trade friction between China and the United States, the impact of U.S. imports, and Chinese firms' innovation [J]. Statistical research, 2019,36 (08) : 46-59.

[13] J.Huang. Huawei Internal Training [M]. Beijing: China Friendship Press, 2016:1; 193-237.

[14] Q.Li. The impact of independent innovation and technology introduction on industrial technology upgrading -- a case study of communication equipment manufacturing industry [D]. Beijing:

Capital University of Economics and Business, 2020:1-45

[15]L.Zhou, W.Yang, L.Yu. An analysis of the entity List of U.S. technology export control to China and its implications [J]. Journal of Information science, 2020 (07): 23-28