

QUANTIFYING HUAWEI'S MARKET LEADERSHIP IN FIFTH GENERATION (5G) NETWORK EQUIPMENT

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Fifth Generation (5G) network represents a new generation network able to transmit data with a speed higher than 1 gigabit per second and with much lower latency – the time that it takes to move data back and forth. 5G network will be about 20 times faster than the current 4G networks, and latency could be as low as 1 ms compared to 50 ms for the 4G networks (Liu & Liu, 2016). Accordingly, fifth generation (5G) networks will enhance the productivity of are critical to the infrastructure.

5G Network Market Leadership

Huawei is the major global supplier of effective but low-cost wireless equipment. It is now the world's biggest telecommunication equipment maker, with a 28 per cent market share and a pioneer in 5G network market. Its closest rivals are Ericsson and Nokia, the European companies. In US, the big four carriers – Verizon, AT&T, Mobile and Sprint – are beginning developing 5G networks.

To maintain its market leadership and to increase its autonomy in 5G market, Huawei has released a series of 5G based chipsets designed to compete with U.S. and Korean competitors. These chipsets cover most of the telecom field: Kirin 980 chipset for smartphones; Balong 5000 chipset for modems; Tiangong 5G base station; and Kunpeng 920 chipset for the Taishan cloud server (“Huawei and the Global Landscape in 5G and Cloud”, 2019).

Of course, Huawei is facing serious impediments in the US. Setting this aside, we can compute Huawei's market share in the 5G network market.

Quantifying Market Share Advantage

There is extensive research that has established the following two empirical facts (Kalyanaram et al., 1995).

1. One, the pioneer/first-mover enjoys a sustained market share advantage. Early entrants to a market enjoy a sustained market share advantage (Kalyanaram, 2013) .
2. Two, this advantage can be quantified. In a two-players market, the market share advantage of the pioneer is 58 percent (vs 42 percent for the second entrant). In a four-players market, the market shares are 36, 25, 21 and 18 percent respectively for the first, second, third and fourth entrants. In a five-players market, the respective market shares of the entrants are 31, 22, 18, 16, and 13 percent (Robinson et al., 1994) .

Applying these well-established facts, Huawei's market share can be forecast to be about 31 percent, even four other viable competitors – Ericsson, Nokia, Verizon, and AT&T – emerge.

This has serious implications to commerce, economy and society, because the applications of 5G networks are pervasive. Therefore, Huawei now stands as a potential significant global contributor to increased economic growth and productivity through its enabling technologies.

Applications of 5G Networks

In general, virtual and augmented reality experience and implementation will be richer, personalized and more complete.

Reordering monetary world

One of the important developments that is likely to dramatically alter our society, commerce and economy, and polity is the conceptualization, design and increasing rise of crypto-currencies and block chains in economy and commerce. With a clever application of cryptography, we will be able to secure the transfer of money and payment without needing a trusted third party. No central banks, no clearing houses. Per most technology and policy experts, the role of traditional currency will diminish in the next decade or two and even disappear ([“Digital Currency Bitcoin and Cryptocurrency”](#), 2018). Obviously, this will change the optics and substance of commerce and conduct. Experts are already discussing regulatory mechanisms for the new world order ([“Bitcoin Cryptocurrency: A Review”](#), 2018). The crypto-currency and block-chain efficiencies and effectiveness will depend much on the speed of the networks, and the 5G networks will be crucial in this context. Accordingly, Huawei will have a big role to play in the design of new global economic and market ecology and order.

Remaking the medical world

5G will make an enormous difference in providing health care to millions of people in remote locations, as well as training doctors in surgical specialties ([Borgstrom, 2011](#)). Telecom equipment maker Ericsson is already working with doctors at King's College in London to test 5G-compatible prototypes of touch-sensitive gloves connected to robots.

Reimagining mobility and transportation

5G will accelerate the adoption of self-driving cars and vehicle-to-vehicle communication — where cars exchange their location, speed, acceleration, and direction. The vehicles will know before their drivers do when a truck five vehicles ahead suddenly brakes or another car turns into your blind spot. These changes will evidently recast mobility and safety. As with land vehicles, technology will enable communication between drones, and enhance their precision and safety.

The US Concerns

With such ubiquitous application of 5G technology, and Huawei's leadership in 5G market place, the US administration must weigh the concerns about security ([“Huawei battles security concerns”](#), 2019) with the enormous benefits that Huawei participation is likely to bring and the injury that Huawei's ban is likely to cause.

What are the likely adverse consequences of ban on Huawei? The rural America is likely to suffer in productivity and prosperity. We may unwittingly create a urban-rural digital and prosperity divide. The roll-out

of 5G networks is likely to be delayed, and the quality may suffer without direct competitive pressure. Most importantly, continued future innovations will suffer.

The question, therefore, is this: Can US protect its national security interests, and yet permit Huawei's participation? The answer is Yes, the US can. If Europeans can do it, why not the US which is the most innovative society in the world?

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