

A Critical Case Report of Samsung Note 7 Recall

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Abstract: *This article is a report of Samsung Note 7 recall in 2016. Relevant literature, annual and news reports are summarized to analyze and assess. Samsung launched the smartphone Galaxy Note 7 on 19th August 2016. However, this product suffered multiple incidents of overheating or explosions around the world due to quality problems. Before the product was removed from the market completely, it had experienced two recalls. This incident caused Samsung significant financial losses and a crisis of consumer trust. While Samsung was quickly forgiven by consumers globally, the corporation has been accused of differential treatment in China, and the resulting impact has been far-reaching. For all the smartphone industry, it is recommended that: 1. there should be a gradual shift towards an open model of innovation; 2. suppliers should be scrutinized and enhanced in design awareness; 3. a well-designed crisis management plan should be recommended; 4. should pay more attention to the Chinese market.*

Keywords: *Samsung, Design Management, Business Strategy, Crisis Management*

1. Introduction

In 2016, after the fall of the old mobile phone incumbents represented by Nokia, a third of the industry's market share was captured by Samsung. It was followed closely by Apple, which held about 20% of the market. While Apple attracts consumers with its unique design and ecosystem, Samsung occupies various market segments with a large variety and stimulates consumer desire with its rapidly developed products. In September, Samsung launched its new flagship Note 7 ahead of Apple to capture the premium market. However, the phone that was supposed to be a strong competitor to iPhone 7 turned out to be a famous recall tragedy in history. Multiple explosions and two successive recalls cause massive losses for Samsung.

The incident has lessons to learn not only for Samsung but also for the whole smartphone industry. Therefore, this report investigates and analyses Samsung's corporate strategy, the recall process, and its crisis management, to understand the core causes of the explosion, discuss how such incidents can be avoided and what the implications are for the entire business.

In this article, Samsung sometimes refers to the Samsung Group and sometimes to Samsung Electronics Company; this distinction makes no difference as it has no bearing on the following analysis and discussion.

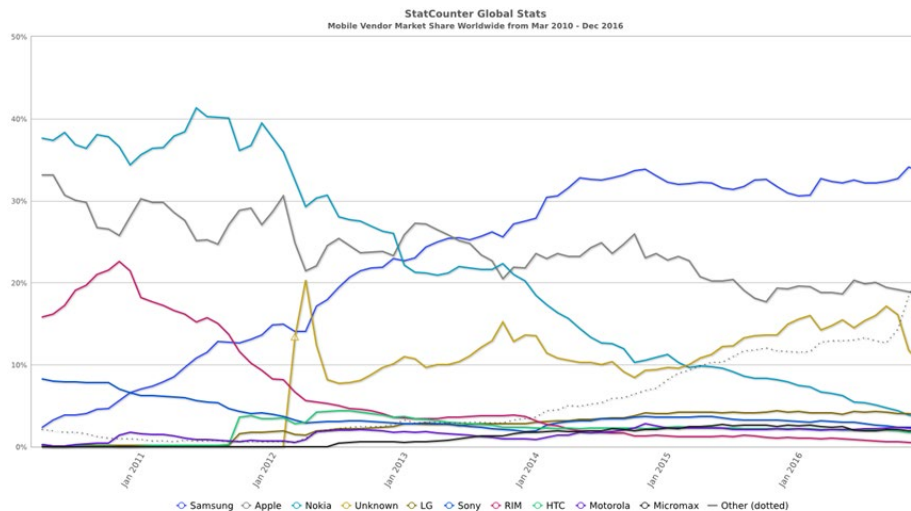
2. Analysis of the Case

2.1 The innovation

Samsung started as a low-cost manufacturer but is now a successful innovation global company and a leader in technology. Like many other Korean companies in the 1960s and 1970s, Samsung, founded in 1976, initially chose Japan as a reference (Freeze and Chung, 2008). After completing capital accumulation, Samsung began to increase the status of design in the company's strategy. In 1996, Kun-hee Lee, Samsung's chairman at that time, emphasized the importance of design and creativity in the company's development, and proposed a 'design revolution'. Design started to become an essential resource for the company (Samsung, n.d). In 2005, Samsung announced the 'Milan Design Strategy', which marked the upgrade of design from product styling to corporate strategy. Samsung began to invest as many resources as possible into the design to become a world first-class company (Freeze and Chung, 2008; Chung and Freeze, 2009; Samsung, n.d). Today, Samsung still puts design at the centre of its business and uses design thinking to lead the company.

In the smartphone sector, Samsung was not a leader at first either. Only two years after Apple

revolutionized the smartphone concept in 2007, did Samsung launch their first Android smartphone GT-I7500 Galaxy (Barham, 2020). However, Samsung was growing rapidly, gaining the top one global market share in the second half of 2013, and still today (see Figure 1). Samsung was able to compete with and eventually win against Apple, because of its rapid product launches and wide product range. Unlike Apple's single product line, Samsung has a presence in every market segment, from low-cost phones to flagships, to control the whole market (Yun et al., 2019). On the one hand, Samsung's huge R&D investment and emphasis on talented designers has enabled them to have a large design team that can support fast product development. On the other hand, Samsung takes advantage of its globalized industrial structure, standardized products, and being a supplier itself to significantly cut costs and thereby reduce selling prices (Simonin, 2014). Through excellent strategy and design thinking, Samsung did not eagerly capture the market with Apple, but steadily built on its strengths and eventually became the industry leader.



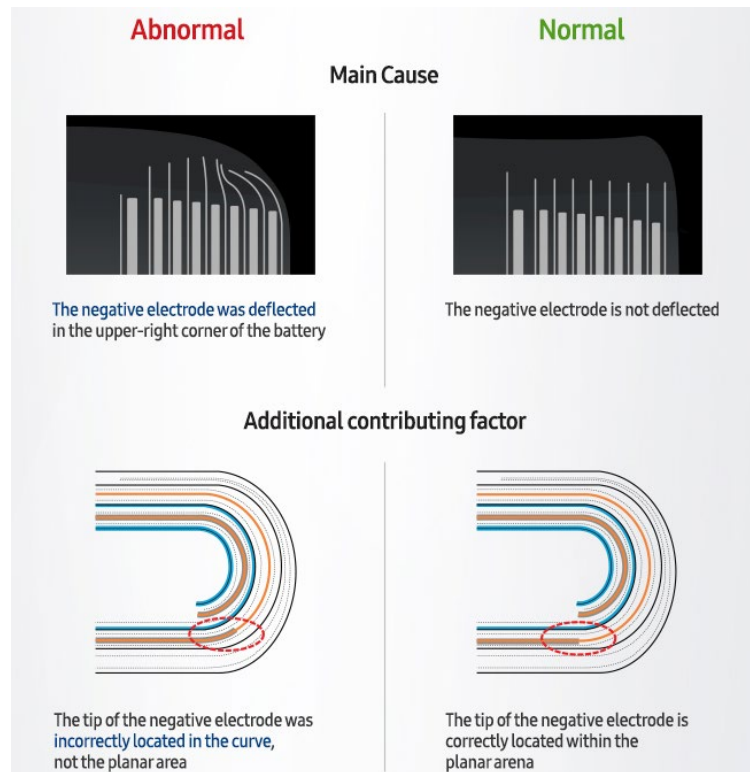
Stat Counter (n.d.) Global mobile phone market share from 2010 to 2016 [online image]. Available from: <https://gs.statcounter.com/vendor-market-share/mobile/worldwide/#monthly-201003-201612> [Accessed 18 March 2022].

Figure 1: Global mobile phone market share from 2010 to 2016

2.2 The incident

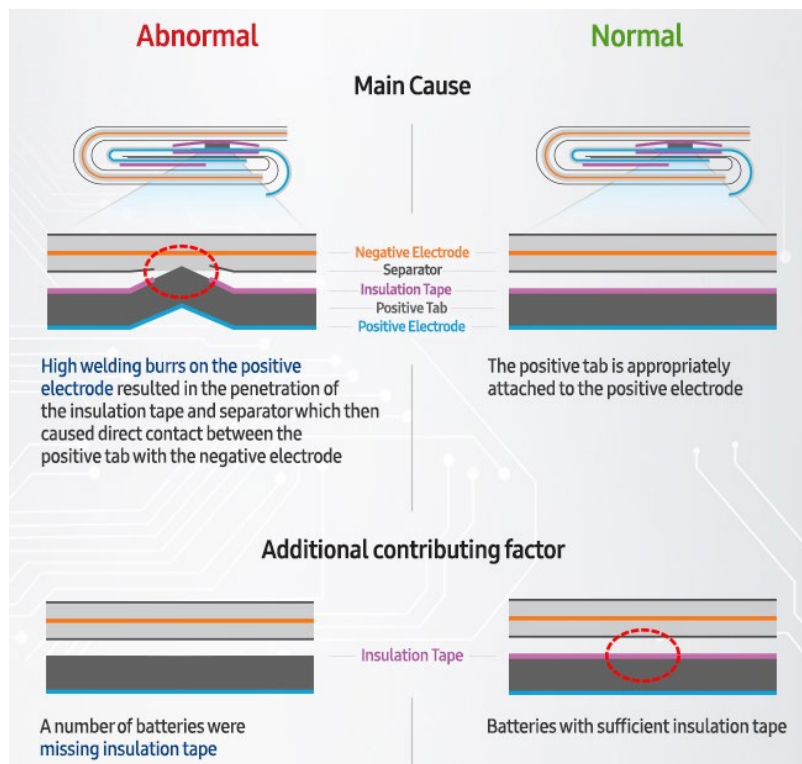
On 19th August 2016, Samsung released Note 7, one month before Apple's iPhone 7. Only a few days after the model was released, the first explosion was reported on the 24th, then one after another, customers claimed their Note 7 overheated, caught fire, or exploded. Then on 2nd September, Samsung started a global recall for Note 7 phones which used batteries from Samsung SDI, and replace them with new phones using ATL batteries which they claimed to be safe. However, on 6th October, a newly replaced note 7 smoked on a flight, causing passengers to be evacuated. In the following days, reports of replacement devices overheating or catching fire also appeared. Finally, on 11th October, Samsung announced to cease producing and selling of Note 7 and appealed to customers to stop using the device (BBC, 2016). According to projections, Samsung lost a total of US\$17 billion including intangible assets such as the brand image in its worst-ever recall incident (TRT World, 2016).

Three months after the second recall, Samsung finally confirmed through its investigation that the direct cause of the device fire was separately battery issues from the two suppliers (NBC, 2017). The third-party testing company Underwriters Laboratories (UL) had tested batteries from 'Company A and Company B', which are believed to be SDI and ATL (and they are referred to SDI and ATL hereafter). UL found internal short circuits from damaged SDI batteries, while the top right corners are deformed in some of the undamaged ones. In addition, some of the negative electrodes were too long (see Figure 2). In terms of ATL batteries, some of the insulation tapes were missing, some of the insulation was damaged by protruding welds (Tullo, 2017) (see Figure 3). All of these conditions are likely to cause the battery to short-circuit and thus overheat or even explode. This means that after the SDI-batteried phones were recalled due to a design fault that made them prone to short circuits, Samsung replaced them with ATL batteries that coincidentally had manufacturing issues, which still resulted in explosions. The second recall dealt heavy damage to consumer awareness and brand image, forcing Samsung to discontinue the production of Note 7 to reduce further losses.



Samsung (2017) Short-circuiting causes in SDI batteries [online image]. Available from: <https://news.samsung.com/global/infographic-galaxy-note7-what-we-discovered> [Accessed 19 March 2022].

Figure 2: Short-circuiting causes in SDI batteries

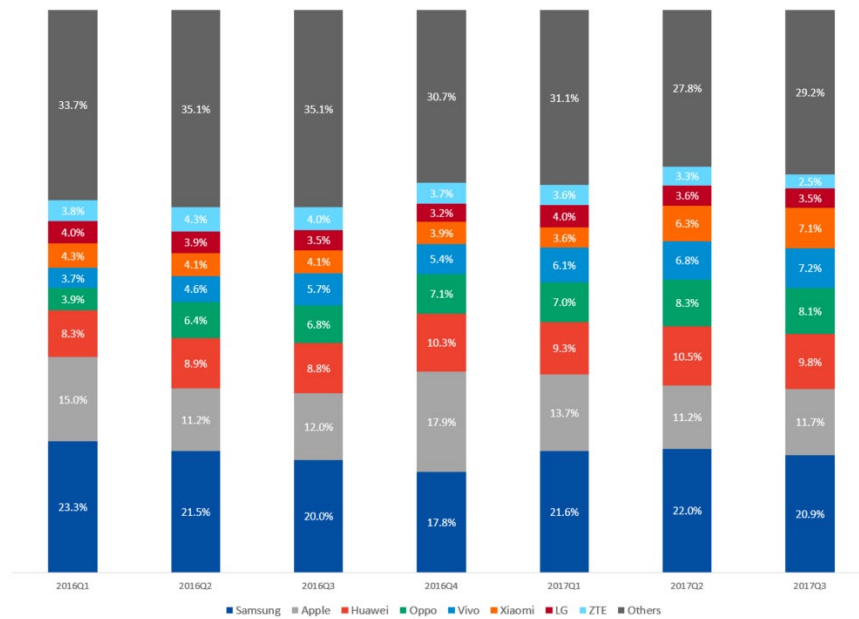


Samsung (2017) Short-circuiting causes in ATL batteries [online image]. Available from: <https://news.samsung.com/global/infographic-galaxy-note7-what-we-discovered> [Accessed 19 March 2022].

Figure 3: Short-circuiting causes in ATL batteries

2.3 The crisis

The recall has caused huge losses for Samsung and made consumers disappointed at the beginning (Zhang, 2020), but through a series of public relations efforts, Samsung seemed to have regained the trust of their target consumers. Darbinyan (2020) concluded from analyzing Samsung's advertisements that Samsung's target group is conscious progressive young adults. Bajaj (2017) claimed that Samsung's customer segments include fashionable young people, professionals, and large businesses. The research of Lai (2018) revealed that Generation Y had forgiven Samsung and was willing to continue buying Samsung products in the future. A survey in April 2017 showed that 89% of current Samsung customers would consider purchasing another Samsung phone, while 66% of non-Samsung customers would consider buying one (McAllister, 2018). In the smartphone sector, Samsung's market share declined significantly in 2016Q4, the time of the explosion, but recovered straight back to previous levels in 2017Q1 and Q2, when the new Galaxy S8 was launched (see Figure 4). In conclusion, Samsung overcame the crisis quickly and secured its position in the global market and its market share does not seem to have changed significantly in the short term.



Team counterpoint (2017) Global smartphone market share from 2016 Q1 to 2017 Q3 [online image]. Available from: <https://www.counterpointresearch.com/zh-hans/global-smartphone-share-2016-q1-2017-q3/> [Accessed 19 March 2022].

Figure 4: Global smartphone market share from 2016 Q1 to 2017 Q3

However, things were not the same in China. Note 7 went on sale in China on 1st September, but the first recall on 2nd September did not include China. Samsung claimed that the ATL batteries used in the Chinese market were safe. However, during September, there were also several Note 7 explosions in China. During this period, Samsung recalled just over 1,800 phones in China that had been distributed before the official launch, meaning that those were brought into China through informal channels and used unsafe SDI batteries. Samsung also investigated the first exploding device in China, declaring that the explosion was caused by external heat sources rather than the battery itself (Associated Press, 2016; Cook, 2016). This action was interpreted by Chinese media as unfair treatment of Chinese consumers (Zhang, 2020). And then the ATL batteries, which Samsung insisted were safe, also exploded, making Chinese consumers even angrier, with many seeing this as discrimination and deception against China (Cook, 2016). Unlike in international markets, Samsung's brand trust in China seemed to have never recovered. Samsung's share of smartphones in China dropped sharply from 6.8% in 2016Q3 to 2.6% in 2017Q3, while the share of local Chinese phones, represented by Huawei, increased significantly (see Figure 5). It could be said that Samsung has lost China, the world's largest mobile phone market (Newzoo, 2021).

China Smartphone Share (%)	2016Q1	2016Q2	2016Q3	2016Q4	2017Q1	2017Q2	2017Q3
Samsung	8.3%	6.8%	6.8%	5.7%	3.3%	3.0%	2.6%
Apple	12.0%	8.3%	8.5%	13.1%	10.0%	8.2%	9.6%
Huawei	15.9%	16.5%	14.9%	17.0%	19.6%	20.1%	18.6%
Oppo	9.8%	15.6%	16.5%	17.9%	17.4%	18.9%	19.2%
Vivo	10.8%	12.9%	16.1%	15.0%	17.0%	16.9%	18.6%
Xiaomi	12.3%	10.9%	10.3%	10.3%	8.0%	13.0%	13.8%
Meizu	4.8%	4.4%	4.7%	4.0%	5.2%	3.6%	3.8%
ZTE	3.8%	3.9%	3.8%	3.4%	4.0%	3.3%	1.1%
Others	22.2%	20.8%	18.2%	13.7%	15.5%	13.0%	12.7%

Team counterpoint (2017) Chinese smartphone market share from 2016Q1 to 2017Q3 [online image]. Available from: <https://www.counterpointresearch.com/zh-hans/chinese-smartphone-market-2016-and-2017-overview/> [Accessed 19 March 2022].

Figure 5: Chinese smartphone market share from 2016Q1 to 2017Q3

3. Details of Discussion

3.1 The innovation: closed or open

Samsung's innovation is manifested in multiple aspects. Saengouthay (2019) proposed that Samsung blend the innovative mind with leadership awareness, brand culture, and economic performance. Firstly, design thinking runs through the entire structure of the company. Samsung recruits designers in large numbers and constantly emphasizes the importance of design in the company's strategy. Secondly, Samsung invests heavily in R&D. Samsung's R&D investment for the fiscal year 2021 amounts to US\$20.3 million (converted at the average exchange rate from KRW to USD in 2021) (Deloitte, 2022), which is less than its main competitor Apple's US\$21.9 million (Apple, 2021), but is still a significant amount.

In terms of the output method of innovation, although Yun et al. (2018) argued that Samsung is typically a closed innovation (CI) company, there is also much evidence that Samsung has gone beyond the definition of CI. The concept of CI is that the innovation process takes place only within the company, offering products and solutions through its own innovation centre. While the results of open innovation (OI) may come from both inside and outside the company (Zapfl, 2018). However, Samsung gave up developing its own operating system and adopt Android from Google, that is a clear case of external collaboration. In addition, Samsung used acquisitions and partnerships to counteract declining profits in 2015 (Ross, 2021), this is also a solution of OI.

In conclusion, Samsung's method of innovation has combined closed vertical integration with open external collaboration. Also, according to the Total Quality Management theory, the primary cause of quality problems is often inappropriate management systems and production processes (Mitroff, 1994). This means that the cause of battery quality problems may be 'internal factors' rather than 'closed innovation'. Thus, this advanced innovation model is not a contributor to the recall. Instead, after the Note7 was completely withdrawn from the market, Samsung conducted an extensive investigation and reconsideration of its technological innovation improvements (Saengouthay, 2019), learning from this tragedy and feeding back into the company's development.

3.2 The incident: the core reasons

Samsung Note 7 incident is the costliest electronics recall in history (Burrows, 2018). The reasons for this are various. Firstly, Samsung had the highest market share of smartphones at that time, and Note 7 was the company's highly regarded flagship model. The type was costly and shipped in high volumes, making the recall an extraordinarily costly loss. Secondly, Samsung's plan after the first recall was to replace them with safe batteries and put them back into the market. However, the batteries that were deemed to be safe also had quality issues, which ultimately forced Samsung to discontinue the Note 7 completely. If the batteries were replaced after the first recall was flawless, the second recall could have been avoided, thereby significantly reducing the losses.

As analyzed previously, different quality problems existed in the batteries provided by the two suppliers. However, these problems could have been avoided through strict quality control. Jaruzelski et al. (2014) described Samsung as a 'fast follower', whose strategy development depends primarily on external factors, such as competitor stakeholders and market demand. Based on this strategy, Samsung continues to launch different models for various market segments to capture the market. A large number of models and rapid development of products places a huge burden on the product department, short R&D cycles and tight deadlines may be the reason why quality control is neglected (Yun et al., 2018).

Furthermore, if Samsung had taken more time to test ATL batteries after the first recall to ensure they were safe before exchanging to them, it might have avoided the second recall as well. However, as mentioned earlier, the first recall of the Note 7 was on 6th September 2016, when its target rival, the iPhone 7, was about to be launched. It can be surmised that Samsung likely overlooked further testing of the ATL batteries, to place the phone on the market earlier than its competitors.

In summary, Samsung's strategic characteristics may sow the seeds of its unstrict quality supervision, which eventually lead to an irrevocable massive recall due to the two successive quality issues.

3.3 The crisis: explicit and implicit influences

Crises are unexpected by nature, which makes it particularly important to have an appropriate crisis response plan in place in advance (Parsons, 1996). According to the Crisis Management Model created by Mitroff (1988), the five phases of crisis management are: 1. signal detection; 2. preparation/prevention; 3. containment/damage limitation; 4. Recovery, and 5. learning. Samsung's crisis management failures in the Note 7 incident were mainly on the first three points, as shown in the chart below (see Figure 6). As China has a special position in this event, Samsung's global actions will be compared with those in China.

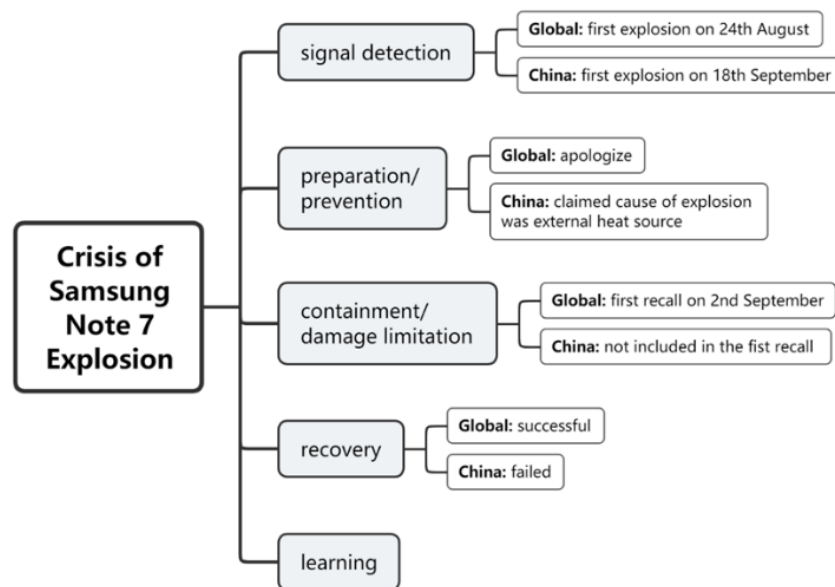


Figure 6: Crisis management of Samsung in Note 7 incident

Looking at Samsung's global response to the crisis alone, it could be argued that it has been rather swift. Apologies were made immediately after the first explosion to reassure consumers, and the recall was announced just a week later. However, after the explosion in China, Samsung made no apology to Chinese consumers. The company only recalled phones from informal channels and claimed that the explosion was caused by an external heat source. Although Samsung did not intend to treat Chinese consumers differently, this behaviour has attracted discontent due to the influence of distorted factual reports in social media (Gou, 2016 cited from Zhang, 2020) to attract attention. In particular, the implied accusations against consumers have angered them furthermore. Samsung ignored the feelings of Chinese consumers during the first three stages of the crisis, which led to a serious PR crisis. Since then, Samsung's reputation in China has been in tatters.

On the other hand, If Samsung had paid attention to the crisis signals of exploding phones in China,

and had investigated rigorously in the prevention phase, it might have been able to identify the problems with ATL batteries. Replacing all the batteries would have delayed the re-launch and perhaps lost the market to competitors, but it would also have avoided the devastating loss of trust and a complete stoppage of production.

In conclusion, Samsung made two mistakes in crisis management, as Parsons (1996) suggests: 1. speculating on what they did not know, insisting on the safety of ATL batteries before retesting them; 2. blaming the consumer, even though the burning problem was indeed caused by the battery failure. These reflect Samsung's poor crisis management skills and lack of clear decision-making mechanisms and resilience. On the surface, this is a PR crisis for Samsung in China, but on a deeper level, it could have avoided the second recall and significantly reduced economic losses.

4. Conclusions and Recommendations

This paper analyses and discusses Samsung's innovation model, the causes of the Note 7 recall, and the company's crisis management of this incident, ultimately coming to the following conclusions:

- 1) Samsung's innovation model was not the main cause of the recall;
- 2) Samsung's marketing strategy had a significant impact on the incident;
- 3) Samsung's poor crisis management further exacerbated the event.

More than five years have passed since the Samsung Note 7 recall. In these years, the smartphone market has changed not much, but Chinese mobile phone manufacturers represented by Xiaomi and Huawei have gradually increased their market share. Especially after the Covid-19, Samsung's market share has been on a downward trend and falling behind Apple at the end of 2021.

The pandemic has deeply changed customer life and behaviors. David et al. (2021) pointed out that the use of smartphones can mitigate the negative effects of low socialization caused by the pandemic and offer psychological support. The study by Storeng and Puyvallée (2021) also showed that digital solutions for companies and institutions for Covid-19 can reinforce society's reliance on smartphones. As a result, the demand for mobile phones will increase in the post-pandemic period. If they want to take advantage of this growth opportunity, all smartphone manufacturers, not just Samsung, should further strengthen their design capabilities and awareness, continuously increase the share of open innovation and build unique differentiation.

In terms of product manufacturing, the supervision of suppliers and the testing of raw materials should be strengthened to avoid serious quality problems in products. The design awareness of suppliers should be improved to prevent the production of unreasonable components.

As for crisis and public relations, it is important to set up a reasonable and comprehensive crisis response mechanism, to minimize damage when the crisis cannot be prevented.

China currently holds the largest share of the global smartphone market, with over 950 million smartphone users in the country, almost twice as many as second-placed India (Newzoo, 2021). If Samsung can maintain its market share of around 8% in China before the recall, it will also gain a large number of customers. However, Samsung's mistakes have resulted in its market in China being almost entirely split by Chinese brands. Although Samsung's global share does not appear to have decreased significantly, it has lost what would have been a better growth potential.

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