An Analysis on the Samsung Galaxy Note 7 Failure Through Actor-Network Theory

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By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

In today's highly competitive smartphone industry, manufacturers constantly push the boundaries of innovation, balancing cutting-edge design with safety and reliability. In 2016, Samsung pushed to release their new Galaxy Note 7 to compete with Apple's iPhone 7, prioritizing speed over stability (Stephan, 2017). This decision led to engineering oversights, inadequate safety testing, and the misalignment of key actors such as corporate executives, engineers, battery suppliers, regulatory agencies, retailers, media outlets, and consumers. Shortly after the Galaxy Note 7's release, reports of battery explosions began surfacing worldwide (Mozur, 2017). While the failure was initially attributed to battery defects, deeper structural issues within the network of human and non-human actors played a major role in the device's downfall.

Actor-Network Theory (ANT) is a Science, Technology, and Society (STS) framework that examines how human and non-human actors form interdependent networks whose stability determines technological success or failure. Most analyses of the Note 7 failure focus on Samsung's corporate ethics, crisis management, and public relations failures. However, these views often overlook the intricate relationships between technical design, corporate strategy, regulatory oversight, and consumer behavior. By applying ANT, this paper analyzes the Galaxy Note 7 failure as a result of misaligned relationships between human and non-human actors.

The consequences of this failure extend far beyond a single product recall. The Galaxy Note 7 crisis damaged consumer trust in Samsung's brand, disrupted supply chains, and led to financial losses. More importantly, the Galaxy Note 7 failure demonstrates how neglecting the stability of an actor-network in favor of rapid innovation can lead to widespread technological

and economic disruptions. Evidence from industry reports, regulatory actions, and media coverage reveal the issues within the Galaxy Note 7 network.

I argue that the failure of the Galaxy Note 7 was not a singular technological defect but the result of a weak socio-technical network that collapsed due to poor alignment between Samsung executives, engineers, battery manufacturers, regulatory agencies, retailers, media outlets, and consumers. The misalignment among these actors led to rushed decision-making, inadequate safety testing, regulatory intervention, and a loss of consumer trust, ultimately causing the network's failure. To support this claim, I will analyze the Galaxy Note 7's failure in three stages: first, the misalignment between corporate leadership and engineers; second, the regulatory and market response; and third, the consumer and media influence. By understanding this failure through ANT, this study demonstrates that technological failures emerge not from isolated engineering defects but from disruptions within a broader socio-technical network.

Literature Review

Several scholars have studied the Samsung Galaxy Note 7 case and looked at the case from the perspective of analyzing the company's response to the crisis, that is, the company's failure to control risk, communicate, and regain consumer confidence. These studies primarily cover the ethical and public relations themes in the case; however, they do not touch on the actors involved that caused the actual recall and failure of the Samsung Galaxy Note 7.

In the article, "Exploding Galaxies: How to Do Recalls Right" Stephan (2017), Stephan criticizes the recall process carried out by Samsung since the collapse of the company was a result of ineffective crisis communication and risk management. The journal compares Samsung's recall to other large-scale product recalls and states that transparency and accountability are the most important factors in reducing damage. Stephan's argument is that a

successful recall policy needs to include early identification of the problem, a smooth replacement process, and open communication with the consumer. While this analysis is a good review of best recall practices, it primarily addresses corporate ethics and risk management, rather than examining the network of actors and technological failures that contributed to the crisis.

Similarly, Aleshinloye and Orolade (2020) in *Crisis Communication and Management: Lessons from the 2016 Samsung Galaxy Note 7 (SGN7) Crisis* examine Samsung's crisis communication using traditional crisis management models. They explain the three stages of crisis management—pre-crisis, crisis, and post-crisis—and assess how Samsung's delayed reaction and inconsistent messages damaged the company's image. The study argues that Samsung's excessive reliance on image repair strategies at the expense of active consumer engagement further undermined public trust. This study does not, however, entirely address how technical problems led to the product recall and ultimate collapse.

Both works analyze the case and are informative and insightful with regard to the Samsung Galaxy Note 7 failure, but they both focus on corporate responses and ethical decision-making rather than the complex interactions between technology, corporate policies, and regulatory forces that shaped the crisis. By applying ANT, this research will extend existing work by analyzing how different human and non-human actors (e.g., software, batteries, engineers, and media coverage) all contributed to the failure and recall of Samsung's Galaxy Note 7. Understanding the crisis through ANT allows for a more comprehensive understanding of how technological products rely on interdependent networks, how failures are caused by disruptions within these networks, and how to potentially prevent other major product recalls and failures. This perspective offers a broader, more dynamic view of the incident, demonstrating

that product failures are not just ethical or managerial crises but are also embedded in technological and organizational complexities.

Conceptual Framework

My analysis of the Samsung Galaxy Note 7 case draws on ANT, a Science, Technology, and Society (STS) framework that examines how human and non-human actors act within a network to shape technological results. ANT, developed by scholars Michel Callon, Bruno Latour, and John Law (Cressman, 2009), challenges the idea that technological failure results from intrinsic design flaws or human error. Instead, it claims that failures emerge from unstable interactions within a heterogeneous network of actors including corporate leaders, engineers, regulators, consumers, and the technology itself.

In ANT, an "actor" can be an individual, organization, or even a non-human entity such as a device or a material component. These actors form networks through a process called "translation," where one actor recruits and aligns others toward a common goal. A successful translation results in a stable actor-network. However, when alignment fails, the network becomes unstable, leading to breakdown (Cressman, 2009).

Another key ANT concept is "punctualization," where a complex system appears as a single coherent unit. Technologies that function reliably become "black-boxed" and are taken for granted. When failures occur, this black box is "opened,"exposing the network's internal complexity and fragility. Once opened, restoring the network's former stability becomes difficult, particularly when multiple actors redefine the technology's identity.

Drawing on ANT in the following analysis, I begin by examining how Samsung's misalignment between corporate leadership and engineering teams created a weak actor-network, prioritizing market competition over product safety. I then assess how regulatory agencies,

retailers, and airlines played a disruptive role in accelerating the network's failure once safety concerns became public. Lastly, I analyze how media coverage and consumer perception reopened the Galaxy Note 7's black box, leading to the collapse of the entire actor-network. By applying ANT, this analysis demonstrates that technological failures do not happen in isolation but result from the breakdown of complex socio-technical networks.

Analysis

Corporate and Engineering Misalignment

The failure of the Samsung Galaxy Note 7 began with a fundamental misalignment between Samsung's corporate leadership and its engineering teams. The company fought to compete with Apple in a race to release their new Galaxy Note 7 before the iPhone 7 (Stephan, 2017). This race pushed Samsung to prioritize speed over stability of the network. The rushed release led to compromised safety testing and design choices, which ended up creating the conditions for failure. ANT suggests that networks succeed when key actors are properly aligned; however, Samsung's internal power dynamics disrupted this process (Cressman, 2009).

Samsung's executives, in an effort to maintain dominance in the smartphone market, pressured battery suppliers Samsung SDI and Amperex Technology Limited (ATL) to create thinner, high-capacity lithium-ion batteries, increasing the risk of electrode bending and internal short circuits (*[Infographic] Galaxy Note7: What We Discovered*, 2017). This aggressive corporate strategy ignored key engineering concerns, such as the risks associated with reducing the size of battery separators, making the device more susceptible to overheating (Gikas & Beilinson, 2017). While engineers expressed concerns early on, Samsung prioritized competitiveness over safety. In ANT terms, this failure in translation between corporate

decision-makers and technical experts created a structurally weak network, making failure inevitable once external stressors were introduced.

Further exacerbating this issue was Samsung's aggressive design strategy, which pushed engineering limits beyond safe tolerances. A report by The New York Times (Mozur, 2017) stated that in addition to the new battery, the company also packed the Galaxy Note 7 with advanced features like waterproofing and iris-scanning for security, aiming to position itself as more than just a fast follower of Apple (Mozur, 2017). However, these ambitious design choices further constrained the internal space of the device, creating additional stress on an already compromised battery design.

Battery scientists have pointed to Samsung's decision to use an exceptionally thin separator in the battery, a major component that sits between electrodes to prevent short circuits. This thin separator left almost no safety margin, meaning that any pressure on the smartphone casing could lead to breakdowns, fires, or explosions (Gikas & Beilinson, 2017). According to Qichao Hu, founder of battery start-up SolidEnergy Systems, Samsung's management pushed engineers to make the separator as thin as possible, increasing the likelihood of catastrophic failure. This decision demonstrates how non-human actors (battery components) and human actors (executive pressures) interacted to create an unstable network (Mozur, 2017).

Ultimately, Samsung's internal pressure to outpace competitors contributed to the Galaxy Note 7's failure, but the way the company handled the recall process further exposed broader management problems (Mozur, 2017). The misalignment disrupted translation between corporate goals and engineering feasibility. It led to compromised design and testing, while corporate decision-making failed to incorporate safety considerations. ANT identifies this failure in actor coordination as a precursor to network collapse.

Regulatory and Market Response

While Samsung's internal decisions initially weakened the Galaxy Note 7 network, the failure was accelerated by the response of external regulatory agencies, retailers, and airlines, which played a major role in destabilizing the device's market presence. ANT claims that technological networks remain stable only when all actors function in coordination; however, once failures emerged, external actors disrupted the already fragile network (Cressman, 2009). Samsung initially relied on internal quality control rather than engaging third-party safety regulators, assuming that their own testing would suffice. However, when consumer reports of battery explosions gained widespread media attention, government agencies such as the U.S. Department of Transportation (DOT) and the Federal Aviation Administration (FAA) intervened. These agencies banned the Galaxy Note 7 from air travel, classifying it as hazardous material (Dot bans all Samsung Galaxy Note7 phones from airplanes, 2016). This action reframed the device not as a premium smartphone but as a potential safety threat, redefining its role within the technological network. Eventually, the U.S. Consumer Product Safety Commission issued the first recall on the device and instructed consumers to stop using the Galaxy Note 7 and to return it to the retail outlet where they purchased it in order to "receive a new Galaxy Note 7 with a different battery, a refund or a new replacement device," (Samsung Recalls Galaxy Note7 Smartphones Due To Serious Fire and Burn Hazards, 2016).

Retailers and service providers also played a key role in accelerating the network's collapse. After the first recall, major carriers such as AT&T and T-Mobile urged customers to return their phones, citing safety concerns (Selyukh, 2016). This further isolated the Galaxy Note 7 from the market, making it nearly impossible for Samsung to recover consumer confidence. As

ANT suggests, once key actors within a network (in this case, airlines and retailers) withdraw support, the network enters a state of collapse, as it is no longer able to function as originally intended.

In addition, international regulatory bodies reacted differently to the crisis, further complicating the situation. In some countries, Samsung attempted to continue selling the Note 7 even after initial reports of failures emerged, leading to consumer skepticism and regulatory scrutiny. The inconsistent global response fragmented the Note 7's network, making standardization of the recall effort nearly impossible (Aleshinloye & Orolade, 2020). This lack of cohesion among global regulatory actors worsened the instability of the Galaxy Note 7's network, illustrating that a lack of alignment among external actors can accelerate technological collapse.

As I have argued, the failure of the Samsung Galaxy Note 7 was not simply a result of faulty batteries but rather a breakdown in the actor-network caused by misaligned relationships between corporate leaders, engineers, regulators, and consumers. Some might argue, however, that Samsung's swift recall process and replacement program demonstrate that the company took immediate responsibility and acted ethically to resolve the crisis (Stephan, 2017).

Yet, this perspective fails to account for the fact that Samsung's recall efforts were poorly executed and exacerbated the crisis rather than mitigating it. Samsung's initial recall was premature and incomplete, as the replacement devices also contained defective batteries leading to a second recall (Solon, 2017). In addition, Samsung's lack of transparency in communicating the root cause of the failures further eroded consumer trust and regulatory confidence. Instead of stabilizing the network, Samsung's reactive decisions worsened instability, reinforcing the argument that the failure was not just technical but systemic. This case demonstrates that

corporate crisis management cannot be assessed in isolation but must be examined within the broader socio-technical network in which it operates.

Media Influence and Consumers

The final stage of the Galaxy Note 7's failure occurred when media coverage and consumer perception continued to reframe the device as a safety hazard, resulting in the total collapse of the actor-network. ANT explains that once a "black box" is reopened—meaning that a technology's reliability is questioned—the network is nearly impossible to restore to its original stable state (Cressman, 2009). In this case, consumer backlash and viral media coverage accelerated the collapse beyond Samsung's control.

As reports of battery explosions surfaced, social media platforms, tech review sites, and news outlets furthered consumer fears, circulating videos of the Galaxy Note 7 catching fire. A Facebook Live video of a Note 7 being stress-tested and overheating reached over 5.7 million viewers, reinforcing public perception that the phone was unsafe (*Over 5.7 million watched a Facebook live link, waiting for Samsung Note 7 to explode*, 2016). Viral tweets and YouTube videos showcased burned devices and personal testimonies of explosions, further solidifying the device's reputation as a safety hazard. Major media outlets such as The New York Times and NPR covered these incidents extensively, which contributed to the device's rapid decline in market trust. Once the FAA and DOT issued bans, this further validated the narrative that the device was a hazard, causing irreversible damage to the network's stability.

In ANT terms, these actors reopened the Note 7's black box, reframing it from a cutting-edge device to a public safety hazard. Consumer advocacy groups like the CPSC issued formal warnings, contributing to a feedback loop that compounded reputational damage. Even

Samsung's offers of refunds and replacements could not stabilize the network, as consumers increasingly perceived the device as irredeemably flawed.

Unlike previous smartphone failures, which may have been contained through controlled damage mitigation, the instantaneous spread of information through digital media ensured that Samsung could not control the narrative. ANT claims that once external actors redefine the meaning of a technology within a network, it becomes nearly impossible to restore its original function. In this case, the Galaxy Note 7 was no longer seen as a high-end smartphone but as a defective and dangerous product.

Additionally, consumer advocacy groups and safety organizations entered the network, further reinforcing public distrust. As stated previously, groups such as the U.S. Consumer Product Safety Commission issued formal warnings, instructing consumers to power down and return their devices immediately (*Samsung Recalls Galaxy Note7 Smartphones Due To Serious Fire and Burn Hazards*, 2016). This regulatory response, combined with widespread negative media coverage, created an information feedback loop that accelerated the device's downfall. Samsung attempted damage control by offering financial incentives and replacement devices, but by this point, the actor-network had already collapsed.

Consumers began returning their devices, retailers pulled the Galaxy Note 7 from shelves, and Samsung was forced to discontinue production entirely (Hern, 2016). This aligns with ANT's claim that once external actors reshape the perception of a technology within a network, the network itself collapses. By the time Samsung officially ended Note 7 production, its actor-network had disintegrated beyond repair.

Some may argue that Samsung's recall and compensation efforts demonstrate ethical responsibility and effective crisis management. However, the recall process itself was flawed.

Replacement devices also failed, prompting a second recall (Solon, 2017). Samsung's lack of transparency regarding the root cause delayed resolution and worsened public sentiment. Thus, what seemed like crisis management was in fact a reactive series of decisions that deepened instability within the network.

Conclusion

The failure of the Samsung Galaxy Note 7 was not simply one of faulty batteries or corporate ineptitude—it was the result of a fundamental failure of actor-network alignment. Samsung's prioritization of market competition over stability destabilized the actor-network from the beginning, while the defective lithium-ion batteries actively weakend key relations between engineers, and regulatory bodies. Once external actors such as regulators, retailers, and airlines intervened, the network became even more unstable, leading to restrictions on device usage and product recalls. Finally, media coverage and consumer influence irreversibly reshaped public perception, reopening the device's "black box" and solidifying its reputation as an unsafe product.

From an ANT viewpoint, this study demonstrates that technological failure does not occur in isolation but emerges from the misalignment of key actors within a broader socio-technical system. The findings of this study show the need for companies to ensure early synchronization between technical design, regulatory compliance, and safety protocols to prevent cascading failures. Furthermore, the role of media and consumer perception in reinforcing technological instability demonstrates the importance of proactive crisis communication and risk management.

By ensuring stronger coordination between corporate leadership, engineers, regulatory agencies, and consumers, companies can mitigate risks and avoid major failures. The case of the

Galaxy Note 7 serves as a lesson in how neglecting actor alignment can transform an innovative product into a global crisis, demonstrating that the success or failure of technology is not just a matter of engineering but of its relationships within a complex and interdependent network.

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