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Reviving The Boeing Project By Using Project Management Methodologies

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**REVIVING OF THE BOEING PROJECT BY USING PROJECT
MANAGEMENT METHODOLOGIES**

A thesis

Presented to

The faculty of the School of Professional Studies

Clark University

In fulfillment

Of the requirements of the degree

Master of Information Technology in Project Management

By

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Abstract

The Boeing 737 Max was created to be an updated and more fuel-efficient version of Boeing's successful 737 aircraft line. However, two fatal 737 Max crashes in 2018 and 2019 led to the demise of this aircraft model and a huge blow to Boeing's image.

The Boeing 737 Max's failure was caused not only by technical flaws in the aircraft's design but also by organizational culture and poor leadership at Boeing. The corporate culture of the corporation was centered on profitability and efficiency, which resulted in cutting corners in the aircraft's design and certification processes, ignoring warning indications, and failing to prioritize safety.

Boeing's leadership also played a crucial part in the 737 Max's demise. The company's top management prioritized profits over safety, resulting in a lack of transparency and contact with regulatory bodies and customers. The failure of the leadership to fully train pilots on the MCAS technology contributed to the crashes.

A defect in the 737 Max's Maneuvering Characteristics Augmentation System (MCAS), which is supposed to prevent stalling by automatically altering the plane's nose angle. In both crashes, defective sensor data prompted the MCAS to activate incorrectly, causing the planes' noses to drop and the pilots to lose control.

Furthermore, Boeing's leadership was chastised for their early denial of responsibility and blamed the crashes on pilot mistakes. This strategy destroyed faith in the organization and harmed its brand. The study revealed multiple flaws in the 737 Max's design and certification, including insufficient pilot training and a lack of transparency and communication between Boeing and the Federal Aviation Administration (FAA).

Boeing's organizational culture and leadership had a detrimental influence that extended beyond the company's financial and legal implications. The crashes claimed hundreds of lives and had an impact on the victims' families and communities. The incident also caused many to lose faith in the aviation industry, regulatory authorities, and Boeing itself.

As a result, Boeing faced severe financial and legal ramifications, including a \$2.5 billion settlement with the US Department of Justice and a reduction in stock value. The corporation was also chastised for putting profits ahead of safety and neglecting to prioritize the lives of the 737 Max passengers and crew.

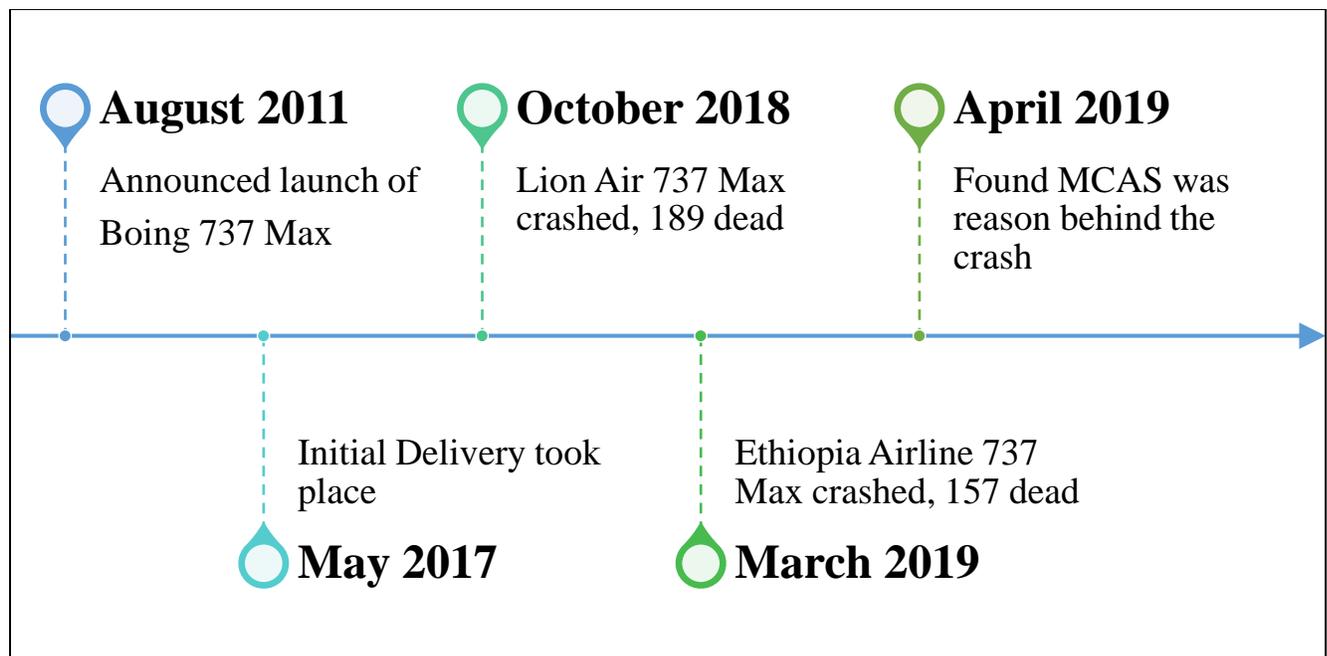
Overall, the Boeing 737 Max disaster serves as a cautionary tale about the need for ethical leadership, a safety culture, and transparency in organizations. The tragedy emphasizes the necessity for organizations to choose safety before profits and to build an accountability and transparency culture to avoid repeat catastrophes.

Chapter 01 Introduction

1.1 Introduction to Research Paper

The Boeing 737 Max was created to be an updated and more fuel-efficient version of Boeing's successful 737 aircraft line. However, two fatal 737 Max crashes in 2018 and 2019 resulted in the grounding of this aircraft model and a severe problem for Boeing. The problem was caused by organizational culture and poor leadership at Boeing, which resulted in a lack of transparency, communication, and safety prioritization (Herkert, Miller, & Borenstein, 2020).

The crash of the Boeing 737 Max serves as an important case study for organizations across industries on the significance of putting safety and ethical leadership first. The catastrophe exemplifies the dangers of putting profits ahead of safety, ignoring warning signs, and failing to develop an accountability and transparency culture.



This thesis will examine the elements that contributed to the Boeing 737 Max's demise, such as technical flaws, organizational culture, and poor leadership. The investigation will investigate the activities taken by Boeing and regulatory agencies in reaction to the disaster and their success in restoring trust and averting similar tragedies in the future.

A review of relevant literature on crisis management, organizational culture, and leadership, as well as an examination of primary and secondary materials relating to the Boeing 737 Max situation, will be done as part of the analysis. The study intends to add to the literature on crisis management, organizational culture, and leadership, as well as provide recommendations for organizations to avoid such crises in the future.

1.2 History of the Organization

Boeing Company is a major American corporation that is the world's largest aerospace company and the leading manufacturer of commercial jet transportation. William E. Boeing (1881-1956) started it in 1916 (as Aero Products Company). It became a subsidiary of United Aircraft and Transport Corp. in the late 1920s, but it reemerged as a separate corporation in 1934, when that company was broken up to comply with antitrust legislation. Boeing was a pioneer in the creation of single-wing planes in the 1930s, with its B-17 Flying Fortress (first flown in 1935) and B-29 Superfortress (1942) playing important roles in World War II.

Following the war, the company produced the B-52 jet bomber, which has long been the backbone of US strategic forces. It developed the first commercial aircraft in the United States, the Boeing 707 (in service in 1958), and went on to create a highly successful series of commercial jet carriers. By the turn of the century, these had evolved into seven distinct families: the narrow-body 737 and 757; the wide-body 747, 767, and 777; the 717 (originally McDonnell Douglas MD-95); and the

MD-11. Boeing manufactured the Lunar Orbiters, Lunar Roving Vehicles, and the first stage of the Saturn V rockets for the United States Apollo program in the 1960s.

During World War I, Boeing's early success was largely driven by its manufacturing of military aircraft, particularly the Model C, Model CD, and Model 15, which were utilized for training reasons. Following the war, Boeing moved its focus to commercial aviation, introducing the Boeing Model 80A, its first passenger plane, in 1928.

Boeing continued to innovate and expand its commercial aviation company throughout the 1930s, introducing the Boeing 247 in 1933, the first modern airliner with a streamlined fuselage and retractable landing gear. Boeing also started developing larger planes, such as the Boeing 314 Clipper, which was utilized for transoceanic travel.

Boeing was a major player in the construction of military aircraft during World War II, including the B-17 Flying Fortress and the B-29 Superfortress, which were used to drop atomic bombs on Hiroshima and Nagasaki. Following the war, Boeing continued to develop military aircraft and missiles while also increasing its commercial aviation industry with the debut of the Boeing 707, the first commercially successful jet airliner, in 1957.

Boeing continued to innovate and expand its commercial and military industries throughout the next several decades, introducing airplanes such as the Boeing 727, 737, and 747, as well as the Apache attack helicopter, the Chinook transport helicopter, and the Harpoon anti-ship missile.

In the 1990s, Boeing faced major competition from Airbus, a European aircraft manufacturer formed as a joint venture between several European countries. To improve its position in the aircraft business, Boeing began to buy other companies, such as McDonnell Douglas and Rockwell International.

Boeing is now one of the world's leading aerospace corporations, with operations in over 65 countries and a wide array of goods and services. Despite recent problems, such as the grounding of its 737 MAX aircraft after two catastrophic disasters, Boeing remains a prominent participant in the aerospace sector, devoted to pushing innovation and sustainability in aviation.

It was NASA's primary contractor for the International Space Station beginning in 1993. It bought Rockwell International Corp.'s aerospace and defense operations in 1996, and McDonnell Douglas Corp. a year later, in 2000, it purchased Hughes Electronics satellite business (Weiss, Amir, Curley, Gaur, & Gregersen, n.d.).

Chapter 02 Observation

2.1 Leadership

This chapter is related to the examination of significant observations about leadership and the code of ethics.

Leadership has been described in multiple ways within academic circles. It serves as a vital function within management, facilitating the efficient allocation of an organization's resources to achieve goals. Effective leaders play a crucial role in clarifying the organization's objectives, motivating, and guiding it towards fulfilling its mission. Recognizing the importance of leadership, irrespective of one's position, can significantly enhance individual contributions towards the company's goals (Team, 2022).

Leadership encompasses various essential functions crucial for organizational success. One of the primary responsibilities of a leader is to establish a vision for the organization, articulating what needs to be done by its members to bring it to fruition. While an organization comprises individuals with diverse skills and abilities, it is leadership that channels individual efforts towards a shared purpose. Through inspiration, motivation, and coordination, leaders enable their firms to achieve success by fostering a collaborative pursuit of common goals.

Importance of Leadership:

Vision: Successful leadership develops a clear picture of what the group can do. Leaders develop a roadmap describing the processes and resources required for their organization to get to the desired destination.

Communication: Leaders aid in communicating the firm's vision and objective to employees. This gives direction and assists everyone in identifying roles that best match their abilities and experiences. Leaders motivate their subordinates to behave to achieve goals through transparent communication.

Decision Making: One of the most important leadership talents is decision-making. In all situations, successful leadership makes the best decision for the organization. Leaders are specialists at making sound judgments in the face of adversity. They assess their organization's strengths and weaknesses to ensure that their decisions put them ahead today and in the future.

Passion: Leaders are enthusiastic about their goals and infect others with their drive to see them realized. Effective leadership motivates others to support the company's goals and provides a compelling incentive for everyone to stick to their jobs.

Guidance: Once staff understands what they need to do to complete projects, effective leaders monitor their progress to ensure they are fulfilling their responsibilities. Leaders ensure that staff efforts are aligned with organizational goals to increase efficiency.

Commitment: Effective leaders are invested in the success of their company and its people. They stay focused on the long-term goals of the organization and do not let momentary setbacks dampen their spirits. When faced with a setback, strong leaders excite their teams and assist them in seeing past the issues that are blocking them from achieving the common goal.

Integrity: Successful leadership instills ethical ideals in the organization. Regardless of their obstacles, strong leaders do what is necessary to achieve their objectives. Integrity, truthfulness, and fairness are key characteristics they want to see in their firm and its interactions with contractors and clients.

Confidence: Leaders encourage subordinates to excel in their careers and all aspects of life by demonstrating faith in their skills. They listen to employees' concerns about their jobs, provide positive comments, and make certain that the office environment brings out the best in them.

Morale: Leadership enhances employee morale through the establishment of trust. It demonstrates the leader's confidence in employees' abilities to contribute to the organization's vision and goals. High employee morale minimizes distractions and enables individuals to focus on achieving company objectives.

Growth: Exceptional leaders create an environment that nurtures the growth of others. They embrace new ideas and approaches to achieving desired outcomes and are willing to acknowledge their own mistakes. To promote innovation and loyalty, effective leaders encourage subordinates to contribute ideas for improving work processes and recognize exemplary performance.

Coordination: Ineffective leadership fails to strike a balance between personal interests and organizational goals. Leaders recognize that individuals have diverse personal motivations for working within the organization. They foster an environment that allows the company to achieve its objectives while ensuring employee satisfaction. As we researched and read more in-depth about the downfall of the Boeing 737 Max, we observed that personal interests and corporate goals must be balanced by ineffective leadership. Leaders understand that people work for their organization for a variety of personal reasons. They foster an atmosphere in which the firm may achieve its objectives while maintaining employee happiness.

Investigators were still piecing together the reason for the Ethiopian disaster, but early signs suggested that the plane displayed the same catastrophic tendencies as Indonesia's Lion Air Flight

610. It, too, was a 737 MAX that crashed shortly after takeoff in October of 2018, killing all 189 passengers and crew. Both planes' flight records now appear to be remarkably similar.

The evidence was piling up against Boeing's lack of leadership, rather than pilot fault. Governments across the world appear to share this sentiment. The 737 MAX was grounded in all nations while investigators and engineers continue their investigation.

Boeing has constructed and supplied nearly 10,000 737-class aircraft to airlines worldwide since the aircraft's introduction in 1967. It was and still is a cash cow for the firm. However, things changed in 2010 when the business realized that its primary competitor, Airbus, had launched the A320neo, a far more fuel-efficient short-haul airliner (Tangel, Pasztor, & Wall, 2019).

It was also reported by the Wall Street Journal realizing that one of its largest clients, American Airlines, has agreed to replace its short-haul fleet with the A320neo, Boeing's top executives acted quickly. American Airlines requested that Boeing create something like the Airbus product. Boeing seized the chance quickly, launching the 737 MAX nine months after Airbus announced it.

Boeing shareholders filed a lawsuit against the board of directors of the business. They claimed that the board failed to fulfill its oversight responsibilities by failing to hold Boeing accountable for safety both before and after the crashes of two 737 MAX flights in 2018 and 2019. "Safety was no longer a topic of Board discussion, and there was no mechanism within Boeing through which safety concerns regarding the 737 MAX were elevated to the Board or any Board committee," they stated in the 120-page filing.

Boards are fiduciaries, meaning their job is to uphold the interests of others, commonly described as a duty of care, a duty of loyalty, and some legal academics say, a duty of candor.

A movie produced on the Downfall of Boeing 737 Max showed that any member who tried to bring the faults or risk analysis on the 737 Max was asked to leave the company. The employees were strictly asked to work and not raise any questions and if they did so they would lose the job. This sets a bad leadership image in front of everyone, which led to the cost of the organization's reputation.

2.2 Code of Ethics

A code of ethics consists of a set of guidelines designed to assist professionals in conducting business with honesty and integrity. It typically includes the organization's objectives, values, principles for handling issues, and the standards by which professionals are expected to abide.

Business ethics focuses on how ethical norms guide a company's activities. It encompasses various areas such as employer-employee relations, discrimination, environmental issues, bribery, insider trading, and social responsibility. While regulations exist to establish basic ethical standards in business, the development of a code of ethics largely depends on the leadership of a company (Hayes, Code of Ethics, 2023) .

Both businesses and trade organizations have codes of ethics that employees or members are expected to follow. Violating the code of ethics can lead to dismissal or termination. A code of ethics is crucial as it establishes clear behavioral standards and provides a framework for guidance.

There are two main types of business ethics codes:

1. **Compliance-Based Code of Ethics:** This type of code not only provides recommendations for behavior but also imposes penalties for non-compliance. Compliance officers may be appointed to ensure adherence to the code and monitor staff behavior.

2. **Value-Based Code of Ethics:** This type of code addresses the core values of a company and may include responsible behavior standards for the greater benefit of the public and the environment. It often requires self-regulation and combines compliance and value-based language.

A code of ethics and a code of conduct are similar in that they are both sets of rules that guide organizational behavior. However, a code of ethics focuses on ensuring clear and unclouded judgment, while a code of conduct specifies the precise actions expected from employees.

Boeing, for example, has a code of conduct that emphasizes safety, quality, integrity, and transparency as core values. The company encourages compliance and ethical behavior from all employees and promotes an open and inclusive workplace. Boeing's Global Compliance division is responsible for driving compliance across regions and fostering a culture of honesty and transparency (Gotterbarn, Miller, & Rogerson, 1997).

Boeing encourages employees to raise concerns and report potential infractions or policy issues promptly. The company values open communication and provides various channels for employees to voice their concerns confidentially.

However, some reports from Boeing employees have indicated intense pressure to minimize safety testing and expedite analysis, which goes against the code of ethics. There have been instances where employees who resisted such pressure were terminated. Furthermore, the System Safety Analysis provided by Boeing to the FAA failed to assess the improvements made to MCAS during flight testing, resulting in oversight of the system's shortcomings.

An internal Boeing whistleblower submitted an ethics complaint alleging that Boeing executives rejected many 737 MAX safety enhancements throughout the plane's development. They desired

minimum changes to the flight systems to prevent the requirement for further pilot training, which would be disruptive to airlines.

The interesting fact is that Boeing didn't respond after the first crash. There was no statement from the CEO. Instead, the public relations department issued a statement saying, "We are very sorry this happened, and we are deferring all inquiries to the National Transportation Safety Board, which will investigate it." Basically, not assuming any sort of accountability. Then, approximately a week, 10 days later, Boeing issued a statement claiming that the 737 Max is the safest aircraft ever flown. So now this was a risky statement to publish when you didn't know what exactly happened. To pacify the airlines to which it would eventually sell the 737 MAX, as well as the potentially exorbitant expense of pilot training, Boeing demonstrated its first leadership blunder. The corporation disregarded its own "enduring values."

Boeing claimed to operate "by a set of core values that not only define who we are but also serve as guideposts to help us become the company we would like to be." Many businesses place a premium on integrity. Boeing is no exception. It defines integrity as "the high road by practicing the highest ethical standards."

Another important consideration is safety. "We value human life and well-being above all else and take action accordingly," the corporation claims, adding that "by committing to safety first, we advance our goals for quality, cost, and schedule." The mechanical improvements made to the 737 MAX jet did not necessitate pilot training. And we strive to live these ideals every day," the organization said. Which was not convinced by a lot of people.

It's one thing to ignore the necessity for pilot training and the blatant disregard for its values; it's quite another to figure out how that decision was made. Sure, one could claim that Boeing just ignored its ethics.

Not only did the firm disregard integrity and safety, but perhaps Boeing executives were motivated by haste. There have been similar cases where if the organization has tried to break the code of ethics and when the corporate culture changes and the behavior of the senior leaders is changed it only focuses solely on speed and power and which leads to the failure of the product and putting organization reputation at risk.

An organization's values are critical. But what's the point if senior leaders are just words on a wall or photographs on a company website, rather than actual behaviors to exhibit regularly? One should aspire to live with these values every day.

Chapter 03 Interpret

3.1 People Perception

After learning about the disaster of a Ukrainian International Airlines 737-800 in Iran, professionals in the aerospace sector began to consider how it would impact the 737 MAX situation and Boeing more generally. They were worried that the corporation might not be able to endure yet another round of terrible news.

As it tries to put the 737 MAX back in service, Boeing may have a lot of difficulties to resolve with the FAA and other regulators across the world, as well as with its customers and suppliers, but polling reveals that it may be doing better than you'd think with the public.

Since the accident of Ethiopian Flight 302, Rian Mehta, an assistant professor of aviation at the Florida Institute of Technology, has been gathering longitudinal data via online surveys. He has been gathering information on consumer attitudes toward Boeing in general as well as their willingness to fly in the 737 MAX. It is significant to remember that Mehta is a freelance researcher and has no business or financial ties to Boeing.

His findings about the 737 MAX are unambiguous and unsurprising: Americans are not pleased with it. The news simply does not appear to get any better after almost a year. Consumer interest in flying plunged substantially following the most recent disaster in Tehran, reaching lows last seen shortly after the Ethiopian crash. According to Mehta's poll taken on Thursday, only 36.5% of Americans would be willing to ride on this aircraft, while 61.5% would be unwilling. From September, when the figures were 46% willing and 48% unwilling, there has been a significant decline (Rice, 2020).

Although the public is unfavorable toward the 737 MAX, they are not as unfavorable about Boeing as a whole. Mehta discovers that Americans' opinions of Boeing are essentially unchanged from those from the previous year. He discovered that, as of Thursday, 49% of respondents had unfavorable opinions of Boeing, down from 50.2% in March of last year. After several unsettling internal Boeing messages were made public on Friday, a secondary survey asking about how respondents felt about Boeing as a corporation had evolved over the previous year was done. There were about 300 responders. According to 49.4% of respondents, they either had a more favorable opinion of Boeing or their opinion had not changed.

This implies that Boeing has a pool of acceptable goodwill to draw from. Many Americans might ultimately forget if Boeing shows transparency and guarantees that they are making every effort to solve the 737 MAX.

Reputation is everything in aviation travel. This is something that the Boeing Company is still learning the hard way as it battles through one of the biggest crises in its 103-year history, the two crashes of its brand-new 737 Max airplanes that occurred within five months and resulted in 346 fatalities.

Boeing had a sterling reputation among airline pilots for many years.

Captain Dennis Tajer, a 737 pilot with American Airlines, claims to have been flying on Boeing aircraft for more than 33 years. He claims that Boeing aircraft saved his life while he was a military pilot. "If it isn't Boeing, I am not going," was a common phrase among pilots to express their confidence in the brand's airplanes.

But that level of assurance is no longer present. When you ask Tajer how he feels about Boeing right now, he replies, "Oh, it's been shaken. Absolutely. Although Boeing is still a fantastic company, this airplane was mishandled.

Boeing installed a defective flight control system that caused both planes to drop into uncontrollable nose dives, but according to Tajer, a representative for the American Pilot's Union, pilots are also furious because Boeing failed to inform them of the system's existence. When As Boeing initially defended the design and placed more blame on pilot error for the crashes, public dissatisfaction grew. The situation was further exacerbated by evidence indicating that Boeing officials downplayed safety concerns despite being aware of the system issues prior to the accidents (Pontefract, 2019).

"These are only poisonous liquids poured over the bond of trust, claims Tajer. It doesn't necessarily imply we can't get there (and regain confidence in Boeing). It simply means that we're down to "show me," rather than just "trust but verify."

Flyer's faith rattled -

Who can blame frequent travelers like Wendy Rheault, who expressed her worries about flying on a 737 Max even if aviation officials recertify the jets as safe, before boarding a recent flight from Chicago's O'Hare airport to Sacramento?

The healthcare executive claims, "I think I would be uncomfortable flying it." "After it starts flying again, I'd have to wait for a while," the speaker said. She claims that she would find it difficult to put her trust in the plane's safety.

Who can blame frequent travelers like Wendy Rheault, who expressed her worries about flying on a 737 Max before boarding a recent flight from Chicago's O'Hare airport to Sacramento? This is true even if aviation regulators recertify the planes as safe.

The healthcare CEO says, "I think I would feel awkward flying it. "After it starts flying again, I would have to wait for a while," She claims she would find it difficult to put her trust in the safety of the aircraft.

On his trip from London to Ottawa, Jay Hanmantgad of London stopped at O'Hare and said, "I'd fly on a Max, but only after European, Canadian, and other international regulators recertify it to fly."

And he claims that his former admiration for Boeing has diminished.

"Yes, it very definitely has, responds Hanmantgad. He believes that to reduce costs and maximize profits, the business rushed the plane through the development and certification procedure, "which is a criminal violation, I would say. Therefore, they must be held responsible for that.

According to a recent survey of approximately 2,000 air travelers, more than 80% of respondents said they would avoid flying on a 737 Max within its first six months of service, and more than half said they would pay a higher rate solely to do so.

Airlines and their flight crews have the option to decline to fly the 737 Max even if the FAA and other aviation regulators recertify the aircraft as safe to fly again if they aren't persuaded.

Jeopardizing a long-standing safety reputation -

Tim Calkins, a professor at Northwestern University's Kellogg School of Management and a branding and crisis management specialist, believes that it is a particularly crucial time for Boeing

as a company. He claims that because Boeing lacks credibility, it needs the airlines, flight attendants, and pilots to attest to the safety of the aircraft (Schaper, 2019).

There isn't much Boeing can say right now that people will trust, according to Calkins, so that is the difficult part. I'm unsure whether to believe Boeing if they claim the jet is safe because they previously made that claim.

To achieve this, Boeing representatives have been meeting with aviation authorities, airlines, pilots, and other important groups regularly as they work to create and test software fixes for the Max aircraft. As part of its outreach efforts, the business is also publishing full-page newspaper ads to send condolences to the families of those who perished in the two crashes. Additionally, it has produced promotional movies in which a wide range of Boeing staff members speak positively about the company's safety culture.

One of the recordings features Boeing's top 737 test pilot Jennifer Henderson saying, "It's important that I do my job properly when I take a 737 Max for a test flight." "I will unquestionably fly my family on the 737 Max when it is back in service." (Kamb, Miletich, & Gates , 2019)

However, a lot of people in the aviation community are not persuaded. Some have commented on social media platforms where the videos have been posted that it is likely that the employees had no choice but to promote their company.

On a Facebook community for Boeing fans, one poster said, "Well, I think she could not say it would be unsafe."

A catastrophe for public relations – The endeavor to regain the confidence of air travelers thus far seems to have failed, despite the appointment of the illustrious PR company Edelman to support crisis communications efforts. CEO Dennis Muilenberg's recent hearing before two Congressional

committees has drawn heavy criticism because he appeared unprepared to respond to many of the inquiries.

The author of "The Crash Detectives," a book about investigating plane crashes, Christine Negroni, argues that Boeing needs to undergo a conversion experience, but she hasn't yet witnessed one.

According to her, Muilenburg and other Boeing officials haven't been completely transparent in describing their mistakes throughout the 737 Max's development and what the business knew about potential issues with the plane before the crash. Negroni asserts that they continue to refuse to address more pervasive issues within the organization (Negroni).

Boeing is in a pickle and acknowledging that it is in a pickle may be the hardest step, according to Negroni. "I told them it was a 'come to Jesus' moment. The question is, "Do you realize you're a sinner and what are you going to do to fix it?"

Northwestern's Tim Calkins thinks that despite its issues, the business can yet restore its former stellar image.

Boeing may appear to be a brand that is still powerful, is still dependable, and perhaps is better for all of this, argues Calkins, if the correct actions are taken today. But failing to take the proper actions causes serious, protracted issues for the business.

Boeing may be able to correct the issues that caused two of its 737 MAX aircraft to crash, but the corporation also confronts the challenge of reestablishing its once-acclaimed image for safety as it seeks regulatory approval to put the Max back into service early next year.

3.2 Testing

CNN has found that the device connected to the Boeing 737 Max software, which is currently under investigation due to two fatal crashes, was previously identified in over 200 incident reports submitted to the Federal Aviation Administration (FAA). However, Boeing did not conduct flight tests to determine how the software would respond to a malfunction of this device. The software in question receives data from the angle-of-attack (AOA) sensor, which is responsible for pushing the aircraft's nose down in the event of a potential stall. It is believed that the software, activated by false data from the AOA sensors, played a role in the Lion Air and Ethiopian Airlines crashes. Experts and former Boeing engineers criticized the initial software design for relying on a single AOA sensor, pointing out that such sensors are prone to errors. FAA data shows that there have been at least 216 reports of AOA sensor malfunctions or the need for repairs, replacements, or corrections since 2004, with around 20% of these reports involving Boeing aircraft. Some incidents caused by faulty sensors required pilots to abort takeoffs or make emergency landings (Wallace, 2023).

There were instances prior to the release of the 737 Max where AOA sensors were identified as potential issues, and the FAA issued directives for other Boeing aircraft types to address sensor-related problems. Despite this, the 737 Max was not covered by these instructions. Peter Goelz, a former managing director of the National Transportation Safety Board, stated that AOA sensors operate similarly across different aircraft models, highlighting the significance of relying on them as a single source of data.

Boeing claims that the 737 Max and its stall-prevention system, known as MCAS, met all FAA requirements and that pilots could maintain control of the aircraft by following established

procedures in the event of incorrect AOA sensor inputs. However, critics argue that the system should have been designed with redundancy and multiple inputs to ensure fail-safe operation.

The House Transportation and Infrastructure Committee, chaired by Peter DeFazio, is investigating Boeing's design of the 737 Max and the FAA's approval of the MCAS system that relied on a single AOA sensor. A lawsuit has been filed by the family of a victim from the Ethiopian Airlines crash, alleging that a defective AOA sensor contributed to the accident and accusing Boeing of prioritizing profits over safety (House Transportation and Infrastructure, 2019-2020).

In retrospect, incorporating Agile methodology in testing could have been beneficial. Agile methodology emphasizes incremental development and quick response to feedback. By dividing the project into smaller sprints and conducting regular testing and feedback cycles, issues with the MCAS system and other parts of the aircraft could have been identified earlier. Thorough testing, including user interface and experience testing, load testing, and stress testing, is crucial for ensuring the reliability and safety of complex systems like aircraft. Implementing testing at every stage of development and employing an iterative approach could have helped identify and rectify potential problems before the aircraft was released to the public. While it may not have prevented the crashes entirely, rigorous testing and agile methods might have uncovered and addressed some of the issues earlier in the development process.

To guarantee that possible problems are found and resolved before they may damage people, it's also crucial to have efficient quality assurance processes in place, strong safety cultures, and regulatory monitoring.

3.3 Ethical Standards

Engineering Ethics Lessons that should have been considered:

The ongoing investigation of the 737 MAX case is expected to provide more details in the future. However, there are already significant lessons that can be learned from this case. One obvious lesson is the need for engineers to prioritize the public interest, especially public safety. Another lesson is related to the "problem of many hands" and whether it applies in this situation. Additionally, it is crucial for businesses, engineering societies, and educators to address the challenge of promoting and supporting ethical behavior among engineers.

Every major engineering society's code of ethics emphasizes that the safety, health, and welfare of the public should be an engineer's top priority. Engineers are required to prioritize public safety in the performance of their duties. Software engineers, specifically, are expected to ensure software security, meet requirements, pass necessary tests, and avoid negative impacts on quality of life, privacy, and the environment (Herkert, Miller, & Borenstein, 2020).

Although there are multiple engineering codes of ethics, they vary in their moral authority and enforceability. They also apply to different groups of engineers based on their discipline or organizational membership. However, these codes are widely recognized as declarations of the ethical principles underlying engineering.

Engineers may need to consider variables like cost and scheduling, but the needs of the public should always come first. The design flaws and software mistakes in the development of the 737 MAX, which resulted in numerous fatalities, were clear violations of engineering ethics.

From an engineering perspective, the decision to rely on software (MCAS) to compensate for a problematic hardware design regarding the engine's position and its impact on aircraft aerodynamics is a major ethical concern in the MAX case. This reliance on software fixes, although common, can create a significant safety burden that may exceed its capabilities, as demonstrated by past incidents like the Therac-25 radiation therapy equipment.

Questionable management decisions were made both at Boeing and the FAA, in addition to engineering choices that failed to prioritize public safety. Boeing's leadership overlooked several warning signs indicating the 737 MAX's safety risks, while the FAA made a mistake by increasing its reliance on Boeing's self-regulation. These lessons were learned at a high cost of human lives.

Enabling Ethical Engineers:

The Ford Pinto, the Space Shuttle Challenger, and the GM ignition switch are well-known engineering ethics case studies that bear similarities to the MAX situation. In the case of the Ford Pinto, despite crash studies revealing the fuel tank's vulnerability to rupture in rear-end collisions, engineers approved its design and made it available to the public. Similarly, with the GM ignition switch, engineers were aware of the design flaws for several years, leading to tragic accidents.

Before the Challenger disaster, engineer Roger Boisjoly raised concerns about fatal flaws in the shuttle's solid rocket boosters, but his warnings were not heeded. This highlights the importance of listening to engineers' concerns. In the MAX case, it raises the question of whether individuals like Ewbank could have taken further action beyond filing ethics charges or providing public testimony after the crashes (Herkert, Miller, & Borenstein, 2020).

One suggestion to promote better moral behavior is mandating professional registration for all engineers in the United States, granting licensing boards more control over licensee behavior.

However, the industry exemption from registration poses a challenge as most engineers employed by large businesses are exempt.

Strengthening internal ethics procedures within companies like Boeing, such as establishing anonymous complaint channels and responsive ethics programs, can empower engineers with safety concerns. Ethical business culture should have solid core ethical beliefs, a structured ethics program, and competent ethical leadership.

Boeing's Board has implemented changes in response to the MAX crashes, including creating a corporate safety group and altering reporting processes to prioritize the chief engineer. The effectiveness of these measures in restoring Boeing's engineering-centric approach remains to be seen.

Professional engineering societies should play a more active role in promoting and upholding codes of ethics, offering opportunities for learning and encouraging ethical behavior among engineers. Teaching moral bravery and emphasizing adherence to codes of ethics in engineering education is crucial, especially in large organizations where engineers' agency may be limited by organizational culture.

The MAX case serves as an instructive case study for engineering education, highlighting the intricate connections and occasional conflicts between administrative and engineering concerns. It demonstrates how seemingly insignificant mistakes by an individual engineer can culminate in a major tragedy, emphasizing the need to prioritize public safety.

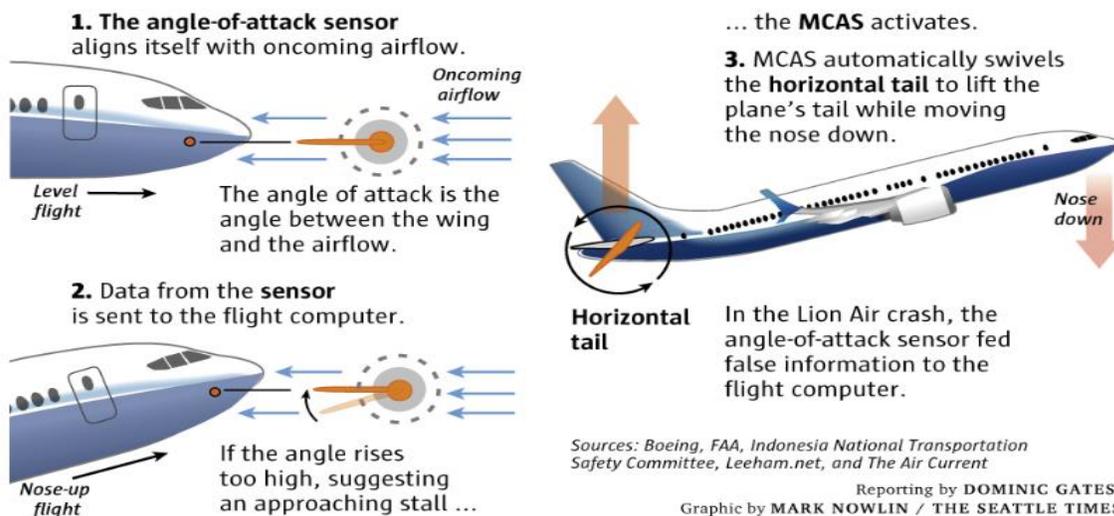
Using role-playing exercises in classrooms can help students understand the perspectives and responsibilities of various stakeholders, including engineers, managers, regulators, the flying

public, airline staff, and members of the engineering society. This approach enables a comprehensive exploration of the ethical issues raised in the case.

To recapitulate the Enabling Ethical Engineers -

The Boeing 737 MAX case provides valuable lessons for engineers and engineering educators regarding their ethical responsibilities. It underscores the importance of prioritizing safety, even if it entails higher costs. Negligent engineering design aimed at reducing expenses and meeting deadlines reflects a decline in moral values. Boeing's decisions concerning the safety of the 737 MAX, particularly regarding MCAS, clearly lack any fundamental ethical analysis or framework.

How the MCAS (Maneuvering Characteristics Augmentation System) works on the 737 MAX



Boeing failed in its responsibility to ensure public safety. At the very least, the company should have informed airlines and pilots about crucial design changes, including the role of MCAS in compensating for the different engine positions in the MAX compared to previous 737 models. This modification had a direct and tragic impact on public safety. The presence of conflicts of

interest in regulatory actions within the aviation industry is a significant concern, as demonstrated by the relationship between Boeing and the FAA (Herkert, Miller, & Borenstein, 2020).

The ability of Boeing and FAA engineers to fulfill their professional ethical obligations may have been hindered by internal and external organizational limitations. This is a recurring issue that requires serious attention from industry leaders, regulators, professional societies, and educators. The lessons to be learned from this situation are not novel. Calls for reform are often heard following major engineering decision-making disasters. However, it seems that each generation of engineers needs to be educated and reminded about these principles.

Chapter 04 Findings and Analysis

4.1 Project Management Methodologies

Software development (engineering) is a young field that began in the 1950s. Software development has typically been done using the Waterfall process, which emphasizes finishing each phase of development before moving on to the next. Agile approaches to software development gained popularity in the 1990s, and teams began to experiment with new ways to produce software.

Waterfall development approaches are linear, prescriptive, and rely heavily on documentation, whereas Agile methods encourage iterative development, flexibility, and intuitive design. The Agile Manifesto is a manifesto written in 2001 to achieve agreement on the ideals shared by Agile techniques and to advocate for a new way of thinking about software development. The authors established 12 additional principles shortly after drafting the Agile Manifesto to explain the rationale for the values in the Agile Manifesto (Sacolick, 2022).

Organizational culture is the result of years of interactions and experiences that have shaped a belief system about how work is done, and choices are made. To transition to an Agile culture, the organization must be willing to accept new roles, workflows, and definitions of success.

Self-organizing teams have working agreements, choose the work they will own, cross-train and support one another, and build a dynamic that plays to everyone's abilities. Continuous team improvement entails members being able to address their problems without the need for outside assistance and trying to enhance not only the product but also team effectiveness. Agile success is dependent on the regular delivery of working software.

Executives in Agile-adopting firms will discover that their jobs have shifted as well. Because CEOs frequently control the budget and the decision-making power, their engagement in the

change is important. Executives may help Agile by understanding and accepting changing requirements. Those seeking complete strategies and business cases will miss out on the advantages of iterative development, rapid feedback loops, and continual learning.

With Agile, executives are in a unique position to honor commitments and priorities. They receive complaints and input from a wide range of stakeholders and may be tempted to act on that feedback without fully comprehending the disruption and bad impact on the team. Executives that truly want Agile to be a part of their organization's culture must devote budget funds to its implementation, which could include tools, training, staffing, consulting, or a variety of other things. A shift of this magnitude necessitates financial investment.

Comparison of Agile Methodology:

Agile Methodology	Emphasis	Founder(s)
Extreme Programming (XP)	Efficiency, customer focus and feedback, and quality	Kent Beck
Scrum	Teaming, organizing work	Jeff Sutherland and Ken Schwaber
Feature-Driven Development	Iterative development of user-focused features	Jeff De Luca
Dynamic Systems Development Method (DSDM)	A structured approach to rapid development, collection of best practices	DSDM Consortium
Lean Software Development	Eliminate work that does not create customer value	Mary and Tom Poppendieck
Kanban Method	Visualize and manage workflow, just-in-time development	David J. Anderson
Crystal Family	People, communication, process rigor maps to product and organizational dynamics	Alistair Cockburn

4.2 Findings on the Crisis

1. Ineffective Leadership:

The leadership issue was also one of the contributing factors to the downfall of Boeing. Several leadership failures led to the 737 Max crisis, which ultimately impacted the company's reputation and financial performance (Pontefract, 2019). Some of the key leadership issues are:

- **Lack of Accountability:**

The lack of accountability among the leadership team was evident throughout the 737 Max crisis. Boeing's senior executives and board members failed to take responsibility for the design flaws in the 737 Max, which ultimately led to the tragic crashes. Instead, they initially downplayed the seriousness of the issues, and when the severity became apparent, they blamed individual employees rather than taking responsibility themselves. The lack of accountability damaged the company's reputation and eroded trust among its stakeholders.

- **Poor Decision Making:**

Boeing's leadership made several poor decisions that contributed to the 737 Max crisis. One of the most significant was prioritizing cost-cutting measures over safety. This decision led to design flaws in the 737 Max, including the faulty Maneuvering Characteristics Augmentation System (MCAS). Boeing's leadership also failed to fully disclose the risks associated with the MCAS to regulators, airlines, and pilots. As a result, the aircraft was certified to fly without proper scrutiny, leading to the two fatal crashes.

- **Culture of Fear:**

A culture of fear had developed within Boeing, where employees were afraid to raise concerns or question decisions. This culture of fear discouraged open communication, and employees who did raise concerns were often ignored or retaliated against. The culture of fear also contributed to a lack of transparency, which made it difficult to identify and address issues. The culture of fear ultimately impacted the company's reputation, as employees and stakeholders lost confidence in the company's ability to operate safely and transparently.

- **Lack of Technical Expertise:**

Boeing's leadership team lacked technical expertise, which meant that they did not fully understand the complexities of the aircraft's design and safety features. The leadership team's lack of technical knowledge contributed to poor decision-making and a failure to prioritize safety over cost-cutting. In addition, the lack of technical expertise made it difficult for the leadership team to communicate effectively with regulators, airlines, and pilots, leading to confusion and mistrust.

- **Poor Communication:**

Finally, poor communication was a significant issue that contributed to the 737 Max crisis. Boeing's leadership team failed to communicate effectively with regulators, airlines, and pilots about the risks associated with the MCAS. The company's communication strategy was also inadequate, with executives providing inconsistent and contradictory statements about the design flaws in the 737 Max. The poor communication ultimately eroded trust among stakeholders and led to a loss of confidence in the company's ability to prioritize safety.

2. Poor Operational Strategy:

- **Overreliance on the 737:**

Boeing's overreliance on the 737 was due to the company's desire to maintain market share and generate revenue. However, this strategy led to complacency in the company's operations, and a failure to prioritize safety in the design and development of the 737 Max. Additionally, Boeing did not invest in new aircraft designs, which put the company at a disadvantage when its competitors introduced new, more efficient aircraft (George).

- **Outsourcing:**

Boeing's outsourcing strategy for the 737 Max production was intended to reduce costs and speed up production. However, this strategy led to several operational challenges. For example, Boeing struggled to manage the supply chain effectively, which led to delays and quality control issues. Additionally, the outsourcing strategy created a lack of transparency and communication within the company, making it difficult to identify and address issues with the 737 Max design.

- **Lack of Safety Culture:**

Boeing's operational strategy did not prioritize safety as it should have. The company's focus on cost-cutting measures over safety led to the design flaws in the 737 Max, and a failure to address safety concerns raised by employees. Additionally, the lack of a safety culture within the organization contributed to the failure to identify and address safety risks associated with the MCAS system.

- **Inadequate Testing and Certification:**

Boeing's operational strategy included a focus on minimizing testing and certification requirements to speed up production and reduce costs. However, this approach led to a lack of adequate testing and certification of the 737 Max, which resulted in the faulty design of the MCAS system and the two fatal crashes. Additionally, Boeing's rush to get the aircraft certified contributed to the lack of transparency and communication within the company.

- **Lack of Transparency:**

Finally, Boeing's operational strategy lacked transparency, which made it difficult to identify and address issues. The company did not disclose the risks associated with the MCAS system to regulators, airlines, and pilots, which contributed to the certification of the aircraft without proper scrutiny. Additionally, Boeing's focus on cost-cutting measures over safety led to a lack of transparency within the organization, which made it difficult to identify and address safety concerns.

3. Change Management Issue:

Change management is the process of managing organizational changes effectively to achieve successful outcomes. In the case of Boeing, several change management issues contributed to the company's downfall. These include:

- **Failure to Manage Cultural Change:**

Boeing's acquisition of McDonnell Douglas in 1997 led to significant cultural differences between the two organizations, resulting in a lack of integration and collaboration. The failure to manage

cultural change effectively created a divide within the organization, which made it difficult to identify and address issues with the 737 Max design (Putter, 2019).

- **Lack of Communication:**

Boeing's change management strategy lacked adequate communication channels between the company's leadership, employees, and stakeholders. This lack of communication led to a lack of transparency and made it difficult to identify and address issues with the 737 Max design, including the MCAS system.

- **Resistance to Change:**

Boeing's culture was resistant to change, which made it difficult to address issues and implement necessary changes effectively. The company's management was slow to respond to concerns about the 737 Max, including the design flaws in the MCAS system, which ultimately led to the two fatal crashes (Managing organisational change in Boeing, 2020).

- **Poor Change Implementation:**

Boeing's change management process was not effective in implementing changes, including the necessary changes to the 737 Max design. The company did not prioritize safety over profits, which led to design flaws in the MCAS system and a failure to identify and address safety risks adequately.

- **Inadequate Training:**

Boeing's change management process did not include adequate training for employees, pilots, and airlines regarding the 737 Max design and the MCAS system. The lack of training and

communication regarding the MCAS system contributed to the two fatal crashes, which ultimately led to the grounding of the 737 Max fleet.

- **Outsourcing Issues:**

Boeing's reliance on outsourcing for critical functions, including the design and manufacturing of key components of the 737 Max, contributed to quality control issues and made it difficult for the company to identify and address issues with the new design.

- **Decentralized Decision-Making:**

Boeing's decentralized decision-making structure, with different business units and departments operating independently, made it difficult to coordinate efforts and implement changes effectively. This decentralized structure also contributed to a lack of accountability and transparency within the company. There were reports of a lack of communication between Boeing's different divisions, which made it difficult to identify and address issues with the 737 Max.

4. Outsourcing Management:

Outsourcing played a significant role in the downfall of Boeing, particularly in the development of the 737 MAX. Boeing relied heavily on outsourcing key components of the aircraft to suppliers around the world, which created challenges in terms of quality control, communication, and coordination.

One of the main issues with outsourcing in the 737 MAX development was that Boeing did not provide adequate oversight or quality control over its suppliers. This led to the production of faulty components, such as the Maneuvering Characteristics Augmentation System (MCAS), which contributed to the two fatal crashes of the aircraft (Shepardson, 2020).

In addition, outsourcing also created challenges in terms of communication and coordination between suppliers and Boeing's own engineering and manufacturing teams. This led to delays, cost overruns, and quality issues, which ultimately contributed to the 737 MAX crisis.

4.3 Crisis Analysis and Improvisation

1. The Integrated Product Development (IPD) Process:

The 787 Dreamliner project encountered several problems that caused significant delays and increased costs, prompting Boeing to acknowledge various areas for enhancement in their project management processes. A key problem was the absence of coordination between the design and production teams, leading to design flaws that affected production. This issue led to the development of the Integrated Product Development (IPD) process, a project management methodology that involves bringing together cross-functional teams to work together and concurrently on the product's design, development, and production (FELIZ, 2022).

The Integrated Product Development (IPD) process is a widely utilized project management methodology by organizations in diverse industries, including aerospace and aviation, to enhance project outcomes. Implementing the IPD process could considerably improve project management processes for the Reviving the Boeing Project by setting clear project objectives, roles, and responsibilities, leading to better communication and coordination among teams. The following are the steps involved in the IPD process:

- **Determine the project scope and goals:**

Defining the project's scope and goals is the first stage in the IPD process, which entails identifying the project's objectives, the products, or services to be delivered, and the project's timeline.

- **Develop the project team:**

The next step is to establish a cross-functional team with the required expertise to work collaboratively on the project, including representatives from design, engineering, production, procurement, and quality control.

- **Determine the product requirements:**

The team should collaborate to identify the product requirements, including performance, safety, reliability, and cost. The team should also establish design and production standards and processes.

- **Develop the project plan:**

The team should develop a comprehensive project plan that includes tasks, milestones, timelines, and resources. The plan should also include contingency plans to address potential risks and delays.

- **Design and development:**

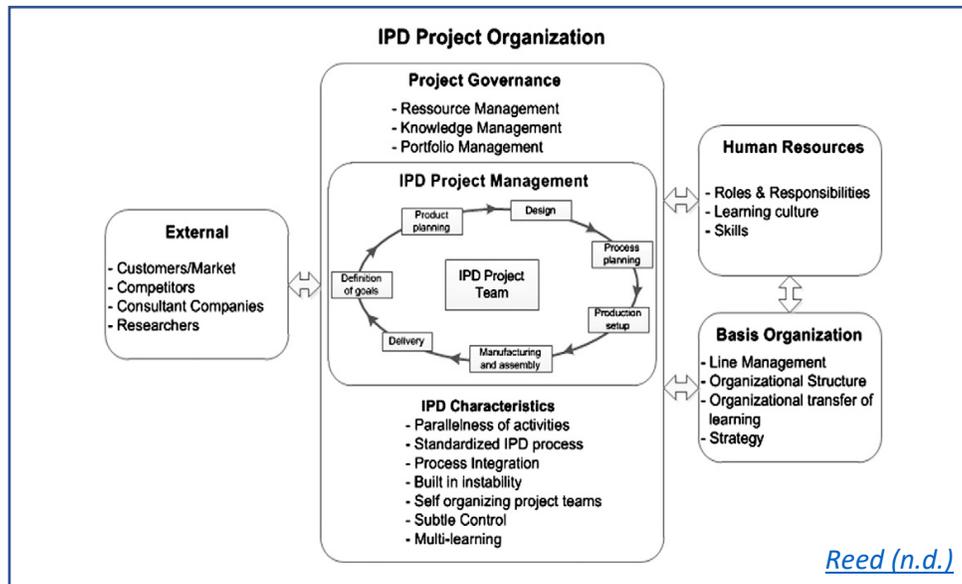
The team should collaborate to design and develop the product, with continuous communication and feedback to ensure that the design and development satisfy the product requirements.

- **Prototype and testing:**

The team should create a prototype of the product and conduct testing to ensure that it meets the product requirements. The testing should be comprehensive, including functional, performance, and safety tests.

- **Production and delivery:**

Once the product is tested and approved, the team should begin production and delivery. This should involve close coordination between design, engineering, production, procurement, and quality control to ensure that the product meets the established standards.



Component	Traditional	Integrated/IPD
Teams	Fragmented, hierarchical, controlled, formed on "as-needed" basis	Integrated team of key project stakeholders, assembled early in process, highly collaborative
Process	Linear, segregated, siloed	Concurrent, multi-level, openly shared information
Risk	Managed individually, transferred to greatest extent	Managed collectively, appropriately shared
Compensation	Individually pursued, usually on a first-cost basis (lowest price of design and construction of the building alone, without maintenance and other costs)	Value-based team success tied to project goals established up front
Communications	Paper-based and two-dimensional	Digital, virtual, rely heavily on BIM and simulation
Agreements/Contracts	Unilateral effort, allocate and transfer risk, no sharing	Multilateral, open sharing of risk and information
Behaviors	Self-preservation, combative	Open, trusting

Reed (n.d.)

2. Organizational Safety Culture:

The concept of safety culture refers to the set of attitudes, values, and behaviors that an organization adopts to prioritize safety as a fundamental principle. This includes the shared beliefs, practices, and attitudes of employees towards safety, as well as the systems and processes established to manage safety risks.

In the case of Boeing, a robust safety culture would have necessitated a deep-seated commitment to safety across all levels of the organization, from the leadership team to front-line employees. This would require clear communication and comprehension of safety goals and objectives, as well as accountability for safety performance.

Additionally, an effective safety culture demands a proactive approach to identifying and mitigating safety risks. This would require a well-structured safety management system, with thorough hazard identification, risk assessment, and risk mitigation processes. Continuous improvement practices would also need to be in place, with regular safety performance reviews and corrective actions (N. McDonald *, S. Corrigan, C. Daly, S. Cromie, 2000).

An important element of a strong safety culture is the prioritization of transparency and open communication. Employees should feel comfortable reporting safety concerns without fear of retaliation, and there should be effective channels in place for addressing safety issues.

In conclusion, a robust safety culture would have ensured that safety was the top priority in all decision-making processes and that all employees were dedicated to upholding the highest safety standards. This would have prevented the safety issues that ultimately caused the downfall of Boeing.

3. Leadership Style:

Leadership involves inspiring, guiding, and influencing individuals or groups to work towards a common goal. Effective leadership is crucial for the success of any organization, as it establishes the tone and direction of the entire organization.



(Leadership Definition and Model, n.d.)

In the case of Boeing, ineffective leadership was a key factor in the company’s downfall. A lack of effective leadership resulted in poor decision-making, inadequate communication, and a failure to prioritize safety (Pontefract, 2019).

Effective leadership would have necessitated a clear vision and direction for the company, with a focus on innovation, quality, and safety. It would have required strong communication skills, including the ability to communicate clearly and effectively with employees, customers, and stakeholders. It would have demanded a commitment to employee development and empowerment, as well as fostering a culture of accountability and transparency.

Leadership would also have required a proactive approach to identifying and mitigating risks, with an emphasis on continuous improvement and learning from past errors. It would have called for

the willingness to make tough decisions, even if they were unpopular or incurred significant short-term costs (Doyle, 2022).

In conclusion, effective leadership would have ensured that the company was well-prepared to adapt to industry changes, maintain a focus on quality and safety, and deliver long-term value to customers and shareholders.

4. Operational Strategies:

The operational strategy involves the decisions and actions taken by an organization to align its operations with its overall business strategy. This includes designing and implementing processes, systems, and structures that enable the organization to deliver products or services efficiently and effectively to customers, while also achieving its strategic goals (Hayes, *Operations Management: Understanding and Using It*, 2023).

In the case of Boeing, the company's operational strategy played a significant role in its downfall. One of the primary issues was a focus on cost-cutting and outsourcing, which resulted in a loss of control over critical aspects of the design, manufacturing, and quality control processes. This led to the 737 MAX crisis, as the company failed to adequately address safety concerns during the aircraft's design (Sucher & Gupta, 2021).

To prevent similar issues in the future, Boeing must prioritize an operational strategy that prioritizes quality, safety, and risk management. This may involve bringing critical design and manufacturing processes in-house, investing in new technologies and processes to improve efficiency and reduce waste, and implementing robust quality control systems to ensure that products meet or exceed safety and performance standards.

Additionally, the operational strategy must consider changing market conditions and customer needs. For example, Boeing may need to focus on developing more fuel-efficient and environmentally sustainable aircraft to meet the increasing demand for sustainable transportation. An effective operational strategy is crucial for any organization's success, as it allows the organization to deliver value to customers while also achieving its strategic goals.

5. Adaption of Change Management:

Change management refers to the process of planning, implementing, and controlling changes within an organization, which can include changes to systems, processes, culture, or structures. It is a crucial aspect of project management since projects often involve significant changes to the organization's operations (A Guide to the Project Management Body of Knowledge (PMBOK Guide), 2017).

In the case of Boeing, the company's inability to manage change effectively contributed to its downfall. The company faced difficulties in implementing changes, managing cultural changes, addressing resistance to change, and establishing effective communication channels. These issues resulted in delays, cost overruns, and quality problems that ultimately contributed to the 737 MAX crisis (Cusumano, 2021).

To prevent similar issues in the future, Boeing must prioritize effective change management procedures. This might include developing a clear framework for managing change, engaging stakeholders in the change management process, providing appropriate training and support to employees, and ensuring that changes are effectively communicated to all parties involved.

Furthermore, effective change management also requires a culture that is open to change and focused on continuous improvement. This could include fostering a culture of innovation,

promoting feedback and collaboration, and instilling a sense of ownership and accountability among employees.

Chapter 05 Evaluate and Discussion

Leadership:

In project management, effective leadership is critical to the success of a project. Agile and Scrum methodologies promote effective leadership by emphasizing transparency, accountability, and collaboration. Project leaders using these methodologies should encourage open communication and feedback, establish effective decision-making processes, and ensure that all team members understand the project's goals and objectives (Alie, 2015).

One of the key principles of Agile and Scrum is the concept of "servant leadership." This approach emphasizes the leader's responsibility to serve the team and enable them to succeed, rather than simply telling them what to do. Project leaders using Agile and Scrum should strive to be facilitators rather than controllers, empowering team members to make decisions and take ownership of their work (White, 2022).

Regular retrospectives are another important aspect of effective leadership in Agile and Scrum. Retrospectives are regular meetings where the team reflects on their progress, identifies areas for improvement, and makes plans to address those areas. Leaders should encourage open and honest communication during these meetings and use the feedback to continuously improve their leadership approach and team dynamics.

Overall, effective leadership in project management requires strong communication skills, the ability to build trust and rapport with team members, and a willingness to adapt and improve based on feedback. By following the principles of Agile and Scrum and adopting a servant leadership approach, project leaders can create a positive and productive work environment that supports the success of the project.

Operational strategies:

They are essential for project management, as they help ensure that the project's resources are used efficiently and effectively. Project management methodologies such as Lean and Six Sigma provide tools and techniques to improve operational strategies by promoting continuous improvement and a focus on quality control.

Lean focuses on the elimination of waste and non-value-added activities in processes. Waste can include overproduction, excess inventory, waiting time, defects, overprocessing, unnecessary motion, and underutilization of talent. By identifying these areas of waste, project teams can optimize operations and reduce the risk of errors or safety issues. Lean techniques such as value stream mapping can be used to visualize the flow of work and identify areas for improvement. Value stream mapping helps to identify the process steps, lead time, cycle time, bottlenecks, and areas of waste (Skhmot, 2017).

Six Sigma is a quality control approach that relies on data to minimize defects and enhance process efficiency. Its main objective is to utilize statistical tools and techniques for the identification, measurement, analysis, improvement, and control of processes. The methodology follows a structured framework known as DMAIC, which stands for Define, Measure, Analyze, Improve, and Control. This systematic approach is employed to pinpoint the underlying causes of problems, devise solutions, and monitor the process to ensure sustained improvements (Learn about quality, 2023). By implementing Lean and Six Sigma methodologies, the organization can enhance its processes and mitigate the risk of errors or safety concerns. Here are several ways in which Lean and Six Sigma can be employed to address these issues:

Inadequate Risk Identification: To improve risk identification, the company could use Lean tools such as Value Stream Mapping (VSM) to identify inefficiencies in its risk management processes. They could also use Six Sigma's DMAIC (Define, Measure, Analyze, Improve, Control) methodology to identify the root cause of the issue and implement corrective actions.

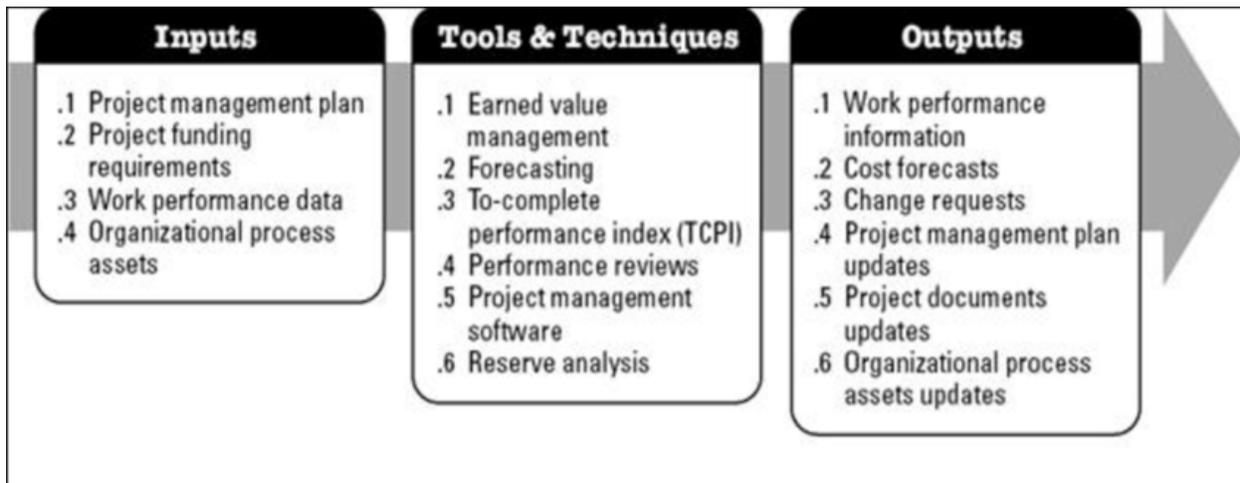
Insufficient Quality Control: To improve quality control, the company could use Lean tools such as Gemba Walks to identify areas of waste in their processes and implement improvements. They could also use Six Sigma's Statistical Process Control (SPC) to monitor the quality of their processes and reduce variability.

Poor Communication: To improve communication, the company could use Lean's Visual Management tools to make information more visible and accessible to stakeholders. They could also use Six Sigma's Voice of the Customer (VOC) methodology to gather feedback from customers and ensure that their needs are being met.

Lack of Continuous Improvement: To improve continuous improvement, the company could use Lean's Kaizen methodology to encourage small, incremental improvements in its processes. They could also use Six Sigma's Control phase to ensure that improvements are sustained over time. By combining Lean and Six Sigma methodologies, project teams can optimize operations, reduce costs, improve quality, and increase customer satisfaction. Both methodologies encourage the use of cross-functional teams, collaboration, and continuous improvement. These methodologies also focus on engaging and empowering team members to identify and solve problems, promoting a culture of continuous improvement, and reducing waste and inefficiencies in processes (EPA, 2022).

Risk Management:

Risk Management is the process of identifying, assessing, and prioritizing risks that may affect a project's success or objectives. Effective risk management involves identifying potential risks, evaluating the likelihood and impact of those risks, and implementing appropriate risk responses to minimize or mitigate the risks (Ray, 2021).



To implement an effective risk management process, a project team can follow the following steps:

Identify Risks: A project team should identify all possible risks that may affect the project. Risks can be identified through brainstorming sessions, risk checklists, or by analyzing historical data from previous projects.

Assess Risks: Once the risks have been identified, the project team should assess each risk's likelihood and impact on the project's objectives. This step helps the team to prioritize the risks and focus on those that are more critical.

Develop Risk Response Plans: Based on the assessed risks, the project team should develop risk response plans to manage or mitigate the identified risks. These plans should include specific actions that can be taken to reduce or eliminate the risks.

Monitor and Control Risks: The project team should continuously monitor the risks to ensure that the risk response plans are effective. The team should also be ready to adapt and adjust their plans if new risks emerge or if the existing risks change.

Quality Management:

Quality Management, on the other hand, is a systematic approach to ensuring that a product or service meets or exceeds customer expectations. Quality management involves implementing processes, procedures, and standards to ensure that a project's deliverables meet the required quality standards (Taylor, 2022).

To implement an effective quality management process, a project team can follow these steps:

Define Quality Standards: The project team should define the quality standards that the project's deliverables must meet. These standards should be based on the customer's requirements and expectations.

Develop Quality Plans: The project team should develop quality plans that outline the processes and procedures that will be used to ensure that the project's deliverables meet the defined quality standards.

Execute Quality Plans: The project team should execute the quality plans by implementing the defined processes and procedures to produce the project's deliverables.

Monitor and Control Quality: The project team should continuously monitor the project's deliverables to ensure that they meet the defined quality standards. If any quality issues are identified, the team should take corrective action to address the issues and prevent them from recurring.

Continual Improvement: The project team should strive for continual improvement by collecting feedback from stakeholders and using this feedback to identify areas for improvement in the project's quality management processes. This approach helps the team to identify and implement improvements that will enhance the project's overall quality.

Change Management:

Change management is a crucial aspect of project management that involves planning, implementing, and monitoring changes in an organization's processes, systems, or structures. Prosci's ADKAR model is a widely used approach to change management that emphasizes the importance of awareness, desire, knowledge, ability, and reinforcement in facilitating successful change (The Prosci ADKAR Model: Why it Works, n.d.).

The ADKAR model can be broken down as follows:

- **Awareness:**

This involves ensuring that stakeholders are aware of the need for change and why it is necessary. Communication is key to creating awareness, and project teams can use a variety of channels to communicate the message, including newsletters, meetings, and town halls.

- **Desire:**

Once stakeholders are aware of the need for change, they must be motivated to support it. Project teams can create a sense of desire by highlighting the benefits of the change and addressing any concerns or resistance that stakeholders may have.

- **Knowledge:**

To make the change successfully, stakeholders must have the necessary knowledge and skills. Project teams can provide training, workshops, and other resources to equip stakeholders with the knowledge and skills they need.

- **Ability:**

Even with knowledge and skills, stakeholders may face obstacles that prevent them from making the change. Project teams can identify these obstacles and remove them by making changes to the process, technology, or structure of the organization.

- **Reinforcement:**

Finally, it's important to reinforce the change to sustain it over time. This can be done through ongoing communication, incentives, and recognition for those who have successfully implemented the change.

By following the ADKAR model, project teams can ensure that all stakeholders are equipped to make the change and that the change is sustained over the long term. Effective change management can result in improved efficiency, increased productivity, and greater organizational agility.



Safety Culture:

Safety culture refers to the collective values, attitudes, beliefs, and behaviors regarding safety that exist within an organization or project team. It encompasses both the physical safety of employees and the safety of the project outcomes or products. A strong safety culture ensures that safety is a top priority throughout the project and that all team members are aware of and committed to promoting safety.

To promote a safety culture within a project, project teams can use project management methodologies such as PMI's Project Risk Management. This involves identifying potential hazards, assessing risks, and implementing mitigation strategies to ensure that safety is integrated into every aspect of the project. Risk assessments can help identify potential safety hazards and allow teams to prioritize safety measures (Lavanya & Malarvizhi, 2008).

Effective communication plans and strategies are also important for promoting a safety culture. Teams can hold safety briefings, safety stand-downs, or safety meetings to discuss safety concerns and provide updates on safety measures. Regular reminders can also help reinforce safety behaviors and practices.

It's important to note that safety culture is not solely the responsibility of the project team, but also involves stakeholders, sponsors, and management. Leaders should foster an environment that encourages reporting of safety incidents and near-misses, as well as continuous improvement processes to address safety concerns.

A strong safety culture not only promotes the well-being of employees but also ensures that the project outcomes are safe and meet the intended objectives. By prioritizing safety, project teams can avoid costly accidents and delays, and build a positive reputation for safety in their industry.

Chapter 06 Recommendation

6.1 Recommendation

The 737 Max crisis has proven to be a difficult one to manage. The crisis is distinguished by rapid developments and widespread stakeholder involvement, resulting in numerous layers to properly manage. The research lauds Boeing for implementing far-reaching steps to mitigate the crisis's impact on the company brand. However, the researcher proposes the following crisis management strategies to effectively manage the problem and prevent future crises.

First, the analysis indicated that Boeing's relaxed attitude toward a critical prodrome served as the launchpad for the second tragedy.

Based on this analysis, the researcher recommends that the organization adopt a proactive approach to crisis management, giving priority to technologies that can detect and respond to warning signs. Moreover, the researcher identifies a crisis management misstep in Boeing's inconsistent initial statements, which created a negative perception of blame-shifting and evading responsibility. To address this issue, the study proposes the implementation of a comprehensive and up-to-date crisis communication plan, ensuring consistent and timely dissemination of messages to key stakeholders through various channels.

Furthermore, the researcher highlights the unethical nature of Boeing's decisions regarding the disclosure of the MCAS software to pilots and the delayed correction of the faulty sensors after the Lion Air crash. Consequently, it is suggested that future corporate decisions should align with the company's ethical responsibility to prioritize public safety.

Additionally, according to Gelles (2019), a Boeing survey conducted in December 2019 revealed that 40% of regular passengers expressed reluctance to travel on the 737 MAX. However, the investigation did not uncover any clear actions taken by Boeing to address this risk.

To improve project outcomes, reduce costs, and prevent delays, the researcher proposes the implementation of the Integrated Project Delivery (IPD) process, which offers a framework for effective project management. In the case of the Boeing project, adopting the IPD process can help establish clear project goals, roles, and responsibilities, facilitating better communication and coordination among teams. This, in turn, can result in more efficient resource utilization, improved quality, and cost reduction, ultimately ensuring the project's success.

6.2 Conclusion

The Boeing 737 Max tragedy can be attributed to a blend of technical and corporate failures that significantly damaged Boeing's reputation. Nevertheless, it is crucial for the company to take effective measures through their crisis response strategy to restore their image as a responsible corporate entity. Currently, Boeing's response actions appear to be heading in the right direction to regain public trust. However, the true extent of the effectiveness of these measures will only become evident in the long run.

Overall, by focusing on these areas of improvement, Boeing could have avoided the downfall that the company experienced and maintained its position as a leader in the aerospace industry.

Overall, the operational strategy issues at Boeing were a significant factor in the company's downfall. To prevent similar issues in the future, Boeing must prioritize safety in its operations, invest in adequate testing and certification of its aircraft, and foster a safety culture within the

organization. Additionally, the company must ensure transparency in its operations and communication with regulators, airlines, and pilots to identify and address safety concerns promptly.

In conclusion, the leadership issues at Boeing were numerous and contributed significantly to the company's downfall. To regain the trust of its stakeholders and prevent similar issues in the future, Boeing must address these leadership issues and prioritize transparency, accountability, and technical expertise.

Overall, improving its outsourcing management would have enabled Boeing to reduce the risks and challenges associated with outsourcing and ensure that it delivered safe and high-quality products to its customers.

Overall, effective change management is critical for the success of any organization, as it enables the organization to adapt to changing market conditions, improve efficiency and performance, and deliver value to customers.

Current airworthiness standards are either obsolete or insufficient. The importance of design rules and quantitative performance requirements should be reduced in favor of qualitative performance needs.

Accidents are currently thought to occur because of hardware, software, or human failings, which are frequently evaluated individually. The industry should employ true risk-based design and current system hazard analysis approaches that account for hardware, software, and liveware failures and interactions.

Because of the ever-widening resources and skills gap between regulators and industry, the safety certification process has become progressively less effective. Organizations should be established to give independent technical and scientific support to regulatory authorities on an ad hoc basis.

Chapter 07 References and conclusion

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Chapter 08 Appendices

8.1 Lessons Learned

Developed by *Anjali Shah, Chandrakant Kamble, Aashay Mhatre, and Shehzad Malim* on **04th May 2023**.

Capstone Project Name: **Reviving the Boing Project by using Project Management**

Methodologies.

What did we do well?

These are things that we did well or went well on the Reviving of the Boeing 737 Max Project.

- We did extensive research on the Boeing 737 Max project, including its history, technical specs, and difficulties.
- We created a thorough project management plan that included a precise timeline and budget and a risk management plan and a stakeholder management plan.
- We used Agile project management approaches, which allowed for greater flexibility and agility in project execution.
- We worked well as a team, utilizing each member's talents and knowledge.
- To ensure alignment and manage expectations, we spoke clearly and frequently with stakeholders.

What can we do better?

These are things that in retrospect could have been done better.

- We could have undertaken more frequent and detailed risk assessments, especially when it came to potential regulatory or legal stumbling blocks.
- We might have included a broader range of stakeholders, such as representatives from regulatory agencies, airlines, and passengers.

- We might have undertaken more comprehensive user testing and feedback gathering to guarantee that the final product satisfies the needs and expectations of the users.

What still puzzles us?

These are things that we still do not quite understand. There was uncertainty and ambiguity concerning certain aspects of the Reviving of the Boeing 737 Max Project.

- There is still some ambiguity regarding the project's possible long-term impact on Boeing's reputation and financial performance.
- There is still some confusion about the core causes of the issues that led to the grounding of the 737 Max and the effectiveness of the corrective steps implemented.

What would we do again?

These are activities and tasks that we consider essential. We would want to repeat these activities on this type of project, or a similar one.

- Extensive research and analysis to help with project planning and execution.
- Effective communication and collaboration among team members and stakeholders.
- Agile project management approaches are used to improve flexibility and adaptability.
- Conduct thorough project reviews regularly to assess progress and modify the course as needed.

What would we not do again?

These are activities and tasks that we consider detrimental. We want to make certain that these are things that we do not repeat, so we can avoid replicating the project mistakes.

- Relying entirely on internal firm expertise and opinions, rather than involving a broader spectrum of stakeholders.
- Underestimation of the project's possible risks and uncertainties.
- Failure to undertake thorough user testing and feedback collection.

What would we do differently?

These are activities and tasks that did not quite work out as you expected. To make them succeed, what would we have changed?

- Include a broader range of stakeholders, such as regulatory authorities, airlines, and passengers, in project development and execution.
- Conduct more frequent and comprehensive risk assessments to detect potential stumbling blocks and modify direction as needed.
- Increase the importance of user testing and feedback collecting to guarantee that the final product satisfies the needs and expectations of the users.

What have we learned?

What lessons have been learned that can be applied to future projects to support the successful delivery of the goal and project objectives? These may be changes that need to be made or an emphasis on the success factors that this project illustrates.

- The significance of involving a wide range of stakeholders in project planning and implementation.
- Risk management is crucial to project success.
- The significance of Agile project management approaches in fostering flexibility and adaptability.
- The requirement for a regular and thorough evaluation of project progress and course modification as needed.

8.2 Project Charter

1 Project Overview

1.1 Introduction

The business need for this project is to address the failure of the Boeing project due to several reasons,

- Resistance to change from stakeholders,
- Unforeseen obstacles during the implementation of solutions,
- Inadequate resources and budget,
- Inability to identify the root cause of the project failure.

To improve the development process, meet customer expectations, increase market share, and generate revenues for the company.

1.2 Major Stakeholders

- Mary Piecewicz (*Project Sponsor*)
- CASA Committee.
- Chandrakant Kamble (*Program Manager*)
- Aashay Mhatre (*Project Manager*)
- Shehzad Malim (*Development Team*)
- Anjali Shah (*Quality Assurance Team*)
- BOEING Organisation. (*Customers*)

2 Project Goal and Scope

2.1 Project Goal

To successfully revive the failed BOEING project and bring it back to life using the project management methodologies.

2.2 Project Scope

In Scope:

The scope of this project includes the implementation of the project management methodology to the development process of the Boeing project, the identification of the root cause of the project failure, and the implementation of solutions to overcome those obstacles. The project will also include the development of a detailed project plan, regular monitoring of progress, and regular communication with stakeholders to ensure that the project stays on track.

Out of Scope:

1. Development of other aircraft models
2. Expansion of new market
3. Development of new technology
4. Changes to regulation or standards

3. Assumptions

- Availability of Key Personnel: It is assumed that key personnel will be available to work on the project as needed.
- Adequate Funding: It is assumed that adequate funding will be available to complete the project.
- Support from Stakeholders: It is assumed that stakeholders will support the implementation of the Project management methodologies and the revival of the failed project.

4. Constraints

- Limited Resources: There may be limited resources available to complete the project, including budget and personnel.
- Regulatory Requirements: The project must comply with all applicable regulations and standards, which may impose constraints on the development process.
- Timeframe: The project must be completed within a specified timeframe, which may impose constraints on the development process

5. Risks

- Technical Challenges: There may be technical challenges in reviving the failed project, including the identification of the root cause of the failure and the implementation of solutions to address it.
- Schedule Delays: There is a risk that the project schedule may be delayed due to technical challenges or other factors.

- Budget Overruns: There is a risk that the project budget may be exceeded due to unanticipated costs or other factors.
- Resistance to Change: There is a risk that team members or stakeholders may resist the implementation of the Agile methodology, leading to delays or other issues.

3 *Communication Plan (Describe how the project team will communicate effectively with team members, the client, and the capstone advisor). (For capstone thesis/case study students this section is not required)*

N/A

4 *Project Team (List the project team members involved in the project including the client and capstone advisor). (For capstone thesis/case study students this section is not required) :*

N/A

5 *High-Level Roles & Responsibilities of the Project Team (For capstone thesis/case study students this section is not required)*

	<i>Team Members</i>				
Tasks					
Project Lead					
Responsible for the project charter					
Responsible for the ensuring effective communication					
Responsible for the quality of the final paper					

	<i>Team Members</i>				
Tasks					
Responsible for the quality of the final presentation					
Responsible for submitting peer reviews					
Problem identification and analysis					
Problem resolution					

6 Measures of Success

Project Outcomes	Measure of Success
A comprehensive project plan, including the implementation of the Agile methodology	Implementation of project management methodologies leads to a significant improvement in the development process.
Identification of the root cause of the project failure and implementation of solutions	The root cause of the Boeing project is identified and successfully addressed
A detailed progress report, including regular monitoring and regular communication with stakeholders	The Boeing project is completed within the estimated timeline and budget.
A successful revival of the failed Boeing project	The successful revival of the BOEING project has been achieved.

7 Stakeholder Sign-off

(For capstone thesis/case study students only a capstone advisor signature is required)

This project charter has been signed off by the client, capstone advisor, and project team members.



Mary Piecewicz
Name

MSPM Advisor
Title

Feb 16th, 2023
Date

8.3 Project Status

Capstone Status Report 01

Capstone Project Name: **Reviving the Boing Project by using Project Management**

Methodologies.

Student Name: **Chandrakant Kamble, Aashay Mhatre, Anjali Shah and Shehzad Malim.**

Date: **02/19/2023.**

Accomplished to date:

The stakeholders have given their approval to the project charter, and the project has now moved into the planning stage. The project's planning phase is crucial since it lays the groundwork for the rest of the execution. The purpose of this report is to provide an update on the status of the project planning phase.

Since the approval of the project charter, the project team has accomplished the following:

1. Assembled the project team: The project manager has put together a project team with representatives from several organizational departments. The project objectives have been explained to the team members, and their roles and responsibilities have been outlined.
2. Defined the project scope: The project scope has been established and consists of the project's deliverables, goals, and constraints. The project sponsor and stakeholders have evaluated and approved the scope.
3. Created the project schedule: The project schedule, which details the project milestones, tasks, and timelines, has been created. The project sponsor and other interested parties have reviewed and approved the timetable.

4. Conducted risk analysis: The project team has created a risk management strategy after identifying potential risks. The plan includes methods to mitigate, avoid, or transfer the risks that have been identified.

Now, the project is moving forward as planned and is on target. The budget and resource allocation strategy for the project is currently being finalized by the project team. To make sure that the required materials and resources are accessible when required, the team is also assessing the procurement requirements.

Issues/Concerns:

- No issue or concern arrived at the stage.

Plans for the next 30 days:

The project team will be focusing on the following activities in the upcoming period:

1. Finalize the project's budget and resource allocation plan: The project team will do this before submitting them to the project sponsor and other stakeholders for approval.
2. Evaluate and finalize procurement needs: To make sure that all required materials and resources are available when needed, the project team will review and finalize the procurement requirements.
3. Create a communication plan: To keep all stakeholders updated on the project's status, the project team will create a communication strategy.

Capstone Status Report 02

Capstone Project Name: **Reviving the Boing Project by using Project Management**

Methodologies.

Student Name: **Chandrakant Kamble, Aashay Mhatre, Anjali Shah and Shehzad Malim.**

Date: **03/27/2023.**

Accomplished to Date:

This is the status report for the implementation phase of the Reviving the Boeing Aircraft Project by using project management methodologies. The project aims to revive the Boeing Aircraft product line by improving the leadership strategy and change management process and operations strategies. This report highlights the progress made during the implementation phase and the challenges faced.

Since we were in implanting phase, the project team has accomplished the following:

1. Finalized the project's budget and resource allocation plan: The project team did this before submitting them to the project sponsor and other stakeholders for approval and us green signal for this from them.
2. Evaluated and finalized procurement needs: To make sure that all required materials and resources were available when needed, the project team reviewed and finalized the procurement requirements, and made necessary documentation related to the procurement.
3. Created the communication plan: To keep all stakeholders updated on the project's status, the project team created a communication strategy and we have prepared effective communication for external and internal stakeholders.

Now, the project is moving forward as planned and is on target. The budget and resource allocation strategy for the project has been finalized by the project team. To make sure that the required materials and resources are accessible when required, the team is also assessing the procurement requirements.

Issues/Concerns:

- During the implementation phase, the project team faced several challenges, including resistance to change from some employees and unexpected delays in the procurement of some critical materials. However, the project team has addressed these challenges by revising the change management process and negotiating with the suppliers to ensure timely procurement of materials.

Plans for the next 30 days:

We are moving into the execution phase; During this phase, the team will start the actual work of reviving the Boeing Aircraft product line by implementing the strategies outlined in the project plan. the project team will be focusing on the following activities in the upcoming period:

1. Implementing the new operations strategies: During the execution phase, the project team will implement new operations strategies to improve the efficiency of the production process.
2. Improve leadership and change management process: To ensure the success of the project, the project team will work on improving the leadership and change management process.

3. Monitor project progress and risks: Throughout the execution phase, the project team will continuously monitor the progress of the project and identify any potential risks that may affect the project's timeline, budget, or quality.
4. Communicate with stakeholders: Effective communication is crucial during the execution phase. The project team will work on maintaining regular communication with all stakeholders, including suppliers, manufacturers, and customers, to keep them informed of the project's progress, any changes in scope, and potential delays or issues that may affect them.

Capstone Status Report 03

Capstone Project Name: **Reviving the Boing Project by using Project Management**

Methodologies.

Student Name: **Chandrakant Kamble, Aashay Mhatre, Anjali Shah and Shehzad Malim.**

Date: **04/17/2023.**

Accomplished to date:

This is the status report for the project execution phase of the Reviving the Boeing Project by using project management methodologies. The project aims to revive the Boeing Aircraft product line by improving the leadership strategy and change management process and operations strategies. This report highlights the progress made during the implementation phase and the challenges faced.

During this month, the following tasks were accomplished:

1. Implement new operations strategies: The project team has successfully implemented new operations strategies to improve the efficiency and effectiveness of the Boeing operations. These strategies include adopting new technologies, streamlining processes, and improving supply chain management.
2. Improve leadership and change management process: The project team has worked on improving the leadership and change management process. This involves providing training for the employees to ensure they have the necessary skills to manage the changes effectively.

3. Monitor project progress and risks: The project team has been actively monitoring the project progress and identifying potential risks that could impact the project's success. This includes tracking key performance indicators, such as cost, schedule, and quality.
4. Communicate with stakeholders: The project team has been in constant communication with the stakeholders to keep them updated on the project's progress.

Now, the project is moving forward as planned and is on target. The budget and resource allocation strategy for the project has been finalized by the project team. To make sure that the required materials and resources are accessible when required, the team is also assessing the procurement requirements.

Issues/Concerns:

- During the execution phase, the project team faced issues of lack of clarity and data being reported to the stakeholder due to more technical and complex data. Which caused conflict between stakeholders. However, the project team has addressed these challenges and ensured that stakeholders have a clear understanding of the project status and can make informed decisions.

Plans for the next 30 days:

We are moving to the monitoring and controlling phase as well as the closing phase; During this phase, the team will start the actual work of reviving the Boeing Aircraft product line by implementing the strategies outlined in the project plan. the project team will be focusing on the following activities in the upcoming period:

1. Monitor project performance: The project team will continue to monitor the project's performance and track key performance indicators to ensure the project is on track.
2. Control project schedule, cost, and quality: The project team will work on controlling the project schedule, cost, and quality to ensure the project is delivered on time, within budget, and meets the required quality standards.
3. Take corrective actions as needed: If any issues arise during the project, the project team will take corrective actions to address them and keep the project on track.
4. Update stakeholders on project status: The project team will keep stakeholders informed of the project's progress and any changes that may impact them.
5. Conduct project review: The project team will conduct a project review to evaluate the project's success and identify any areas for improvement.
6. Achieve project review: The project team will work towards achieving the project review and ensuring that the project meets its objectives.

WBS (Work Breakdown Structure) for Reviving the Boeing Aircraft Project:

Project Initiation

- 1.1 Define project goals and objectives.
- 1.2 Identify project stakeholders.
- 1.3 Develop project charter.

Project Planning

- 2.1 Finalize project scope.
- 2.2 Develop a project plan.
- 2.3 Create a budget and resource allocation plan.
- 2.4 Evaluate and finalize procurement needs.
- 2.5 Create a communication plan.

Project Execution

- 3.1 Implement new operations strategies.
- 3.2 Improve leadership and change management process.
- 3.4 Monitor project progress and risks
- 3.5 Communicate with stakeholders.

Project Monitoring and Control

- 4.1 Monitor project performance
- 4.2 Control project schedule, cost, and quality
- 4.3 Take corrective actions as needed.
- 4.4 Update stakeholders on project status

Project Closure

- 5.1 Conduct project review
- 5.2 Archive project documents
- 5.3 Celebrate project success.

8.3 Presentation Slides

REVIVING THE BOEING PROJECT BY USING PM METHODOLOGY



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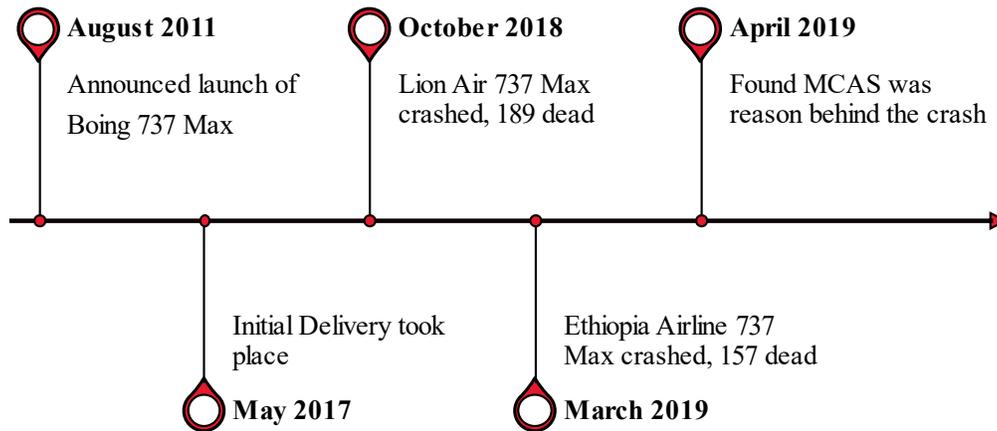
Anjali Shah
Chandrakant Kamble
Aashay Mhatre
Shehzad Malim

Introduction



- The Boeing 737 MAX, the fourth generation of the 737, includes features, orders, and safety concerns.
- August 2011: Announced launch of Boeing Max 737 aircraft.
- May 2017: Initial deliveries took place
- October 2018: Lion Air operated Boeing 737 Max that crashed killing 189 aboard
- March 2019: Ethiopian Airlines operated Boeing 737 Max that crashed killing 157 aboard
- April 2019: Boeing publicly acknowledged that MCAS was the reason behind both crashes.
- It is a competitor to the Airbus A320neo family.

Timeline



3

What went Wrong?

- Organizational Culture
- Lack of Communication
- Inferior Operational Strategy
- Change Management Issue
- Poor Leadership
- Outsourcing Management

4

What could be Improved?

The Integrated Product Development (IPD) Process

- Bringing together crossfunctional teams.

Organizational Safety Culture

- It includes employees' shared beliefs, practices, and attitudes regarding safety.

Leadership Style

- Effective leadership would have required a clear vision and direction for the company, with a focus on innovation, quality, and safety

Operational Strategies

- Operational strategy refers to the set of decisions and actions taken by an organization

Adaption of Change Management

- Change management is the process of planning, implementing, and managing changes within an organization.

5

How can be Revived?

Project management methodologies and tools to improve various aspects of the project.

Agile Methodology (Scrum)

Waterfall

Lean Six Sigma

Prosci's ADKAR Model

6

Recommendations/Conclusion

- Combination of Technical and Corporate Faults
- Good Communication
- Leadership Skills
- Company's Reputation
- Crisis gave birth to Interventions

7

Professional Development

- Importance of Leadership
- Organizational Culture
- People Perception
- Cost Cutting
- Training
- Hybrid Method



8



Questions?

9

THANK YOU