Influence of historical context on group decision-making

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Abstract. “Black Swans” andgroup decision making have become familiar terms in the relevant fileds. There have been many Black Swan events in history, such as the current covid9 epidemic or the failed launch of the Challenger space shuttle in 1986. In the run-up to the Challenger launch, NASA conducts a conference call. This contains typical group decision-making issues. As an example, through access to information. Aboutexamine the impact of the social and historical context of the Challenger launch on the conference call, and author also analyses the impact of these contextual factors on the decision-making group. In order to identify these potential factors so that they can be avoided in future decision making. Some Black Swan events are accompanied by group decisions, which can influence the direction of events. However, the decision makers and participants in group decisions are also influenced by different factors. For example, social context and pressure. In high pressure or reactive situations, group decisions can be biased in different ways. In the case of Challenger, the decision makers were influenced by public opinion and the pressure of the international situation at the time, which led to problematic decisions. This is why it is more important in group decision-making to look at the problem of the event itself and consider the problems that existed. This paper using a literature review research method with Challenger as the subject of the study, examines the impact of the historical context and social environment on decision-making at the Challenger pre-launch group meeting. The research results show that the context created economic, public opinion and time pressures on NASA. These pressures in turn had a huge impact on the decision makers. In the end the panel's decision making was flawed.

Keywords: Literature Search Challenger launch Group decision-making.

1. Introduction

"The Challenger space shuttle disaster was a major fatal accident in the US human spaceflight programme on 28 January 1986. The Challenger broke up 73 seconds after take-off, killing all seven astronauts. Group decision-making is a form of participatory decision-making where a group of people work together to solve a problem in nature. Group members try to discover and evaluate creative options to solve complex problems. It is a participatory process in which group members share their ideas, knowledge, expertise and experience. A literature search and analysis were conducted to identify the influence of historical context on decision-making in team meetings on the eve of Challenger. For most teams, there is no clear methodology or process for team decision making and it is in a relatively vague state. Once we are aware of the concept of team decision making, it is easy to understand the importance of team decision making. To achieve team goals, it is not only necessary for team members to behave towards the same goal, but also for each member of the team to contribute creative thinking: on the one hand, when individual ideas and opinions are presented, it brings satisfaction and helps to motivate people, but also promotes thinking and is a process of gradual accumulation of individual abilities; on the other hand, each member of the team can see the problem from a different direction On the other hand, each member of the team can look at the problem from a different direction, and the presentation of the problem is more comprehensive and more conducive to coming up with creative ideas and making team decisions more scientific. Otherwise, some complex problems often involve multiple objectives, time dynamics and state uncertainty. To ensure creativity and improve the quality of team decision making, a range of methods for improving decision making have been developed in management.

2. Contextual influences

2.1 Stress effects

2.1.1 Financial pressures

The Challenger Launch decision on January 28th 1986, proved to be one of the crucial decisions ever made as it lead to one of space science's most talked about disasters. The teleconference gave us an insight into the issues in the group's decision making. Firstly, the Vietnam War was ongoing and so the Challenger launch program was facing significant financial constraints. It lasted almost 20 years, with direct U.S. involvement ending in 1973. The Vietnam War took place during the Cold War. There were 540,000 American combat troops were stationed in Vietnam and the huge financial burden forced the US to withdraw from the Vietnam. At the same time, Thicket won the contract to build the Sorbs because they asked for lower remuneration than their competitors and Provides uniform transport for NASA. This saved NASA a huge amount of money, so they were bound to win the game. They didn't want to give up the opportunity. To some extent, Thicket's low cost relieved the US of a huge amount of money and they were able to complete this launch programme at a low price. So NASA didn't want to miss this opportunity. So at the beginning of the group's decision making, the manager's subjective thinking received influence. Because the enormous financial pressure makes managers' decisions ignore unimportant risks. The war has increased domestic tensions and the US desperately needs an uplifting project to cleanse media opinion. To give the public confidence in the country. They put profit maximisation at the centre of the Challenger project.

2.1.2 Time pressure

NASA needs to launch without any delays so that launch pad could be restored in time for the next mission. This puts time pressure on teleconference. The shuttle was due to be launched the next morning, after having had its launch delayed by 24 hours because of strong winds. The Vietnam War and economic pressures within the US nation forced NASA to make sure the rocket was launched on time. This has led to a shift in national media and public opinion. The highly competitive European space program has forced NASA to launch Challenger quickly. Prove their spaceflight capabilities with Challenger.

2.1.2 NASA: Chasing Publicity

The lift-off of the Space Shuttle will bring huge leverage to NASA. To extend its reach, NASA advertises that it will make space voyages the norm [1]. So a large number of space shuttles lift off, putting pressure on NASA. It promised to make space flight a regular occurrence. NASA has focused on diversifying its astronaut corps to include roles such as scientists, women and teachers. But this still does not interest the public. Although space activities are ambitious, they are relatively infrequent and the population believes that space shuttle launches are part of the national mission that should be carried out. So many people do not care. Also, any delay in the mission would only result in negative result on public through the media. First of all, the launching procedure brought great pressure to NASA. It is the first time when NASA chose a civilian astronaut named Christa McAuliffe, who used to be a teacher. She will go into space to teach her students a science lesson about space and flight, making the rocket launch also attract publicity. However, the publicity goal is even heavier. According to the mission plan, Christa will teach her class live on her fourth day in space, and if the launch is delayed then this will mean that the radio class is postponed from Friday to Saturday. The school cannot prevent students from watching the radio propaganda together during the Saturday break. Another political factor is due to President Ronald Reagan's mention during Tuesday night's meeting about the first teacher trip into space. If the launch is delayed, NASA will miss the perfect time to promote it in a public setting. So there is enormous time pressure on NASA to ensure that Challenger launches on time and to get the government and people to invest more attention and money in aviation.

2.1.4 Regarding previous launches

A group decision-making process is one in which decisions are made by a group rather than by individuals, and where each individuals' opinions are different, for example between Morton and the others [2]. Even though he was allowed to express his opinion, the managers made the call. This exhibits 'Group think and the 'Conformity. During the teleconference, the framing of the conversation shifted, from not being able to launch Challenger to proving that it could not be launched. The engineer was asked to prove his concerns, but he did not have enough data to do that. In fact, after the last rocket launch, engineers discovered this potential pitfall. They reported the data to NASA, but NASA did not give detailed advice on how to change it. This is a problem

caused by NASA's failure to take the engineers' report seriously. And the escape system was not designed into the space shuttle at that time. Also on the part of managers, the data are seen as faulty and the engineers' conclusions are questioned. Some people may be sidelined if their views deviate from the intended goal. They should not see engineers as troublemakers. They have doubts about their leadership and the influences and pressures from all sides have contributed to the decision to launch. The final question about group decision making reflects the lack of information from the team throughout the meeting. It is necessary to communicate and share information between all levels, and if managers point out problemsthen the disaster could have been avoided [3].

2.2 Course of events

2.2.1 High-pressure environments

During the teleconference, the main theme was about the O-rings which cannot work properly under low temperature. Roger Boyishly advised that no launches should take place below the standard temperature because cold weather can cause launching failures and can damage propellers. But the majority of the participants felt they should keep the mission ongoing. The reason was that there was insufficient experimental data and the engineer had no way to prove the potential risk, which is mentioned above. NASA managers believed that there was no reason to cancel the plan without sufficient data [4]. Larry Morley, MASC: Larry Morley, the solid rocket booster manager responsible for the launch, The data problem was first identified, but there was a constant fluke. He faced different pressures than the engineers. The reasons for this included experience factors, political pressure and time pressure [5]. And the rapid progress of the European Space Agency posed no small threat to NASA. They had to launch the space shuttle to prove their strength and potential in aeronautical space. During this meeting Jeered Mason said to Bob: "Take off your engineering hat and put on your management cap." [6] Of course it was very problematic to say words like "management hat" -- The conversation should take place with participants to be treated equally. If they have enough experience to be in the conversation then they should be heard equally. In fact, after the last rocket launch, engineers discovered this potential pitfall. They reported the data to NASA, but NASA did not give detailed advice on how to change it. This is a problem caused by NASA's failure to take the engineers' report seriously [7]. And the escape system was not designed into the space shuttle at that time. In the end, Roger Boisley and the team of engineers had to compromise as a result. Pressure from management and a lack of information made him go along with the flow. He did not stick to his views because he did not have enough evidence to prove his point. This made communication in team meetings ineffective. And management was unwilling to take responsibility; they ignored the engineer's comments. Despite the engineer's strong objections, the decision makers continued to exert pressure to make him lose his voice [8].

2.2.2 The impact of the event context on the group's decision making

1.Individuals under pressure to make decisions

After the accident, the head of the Marshall Aviation Flight Centre (William Lucas) claimed that someone in senior management had indeed seen the document about the safety hazards of the launch [9]. But it was not passed on up the chain of command, apparently in the decision-making process, as the information was passed all the way up the chain of command and no one suggested that the safety issues should be discussed. The person at the top who saw the document on the safety issue instinctively wanted to be a team player. In order to be collegial, he prefers to remain silent rather than express his true views, and people will compromise under such pressure

2. Individual decision makers are vulnerable to outside interference

Their decision was the right one. In their view the decision was the right one at the time and the only solution. In this meeting, the manager with the power to decide was distracted by external financial and public opinion factors [10]. This upward and downward pressure on completely negated all dissenting opinions. This eventually led to those who held different opinions choosing to remain silent. There is a surprising amount of agreement. They did not realise that their decision had gone terribly awry.

1. Encourage dissenting views

Although the presence of cumbersome opinions in a group to some extent makes group decision making slow. There is a tendency for decision makers to compromise in order to show that they are in agreement. Views that reflect minority agreement are often not valued. This leads to a weakening of the differences that exist in group decision making. The small number of opinions or ideas that are ignored may be the key to the success of the

decision. Therefore, in group decision-making, participants should be encouraged to express their views rather than remain silent in the face of group consensus.

2.3 Impact

Because managers believe that everything is a risk, designing security systems involves risk. Because of group thinking and group decision making, the arguments of the meeting shift to a struggle between conservatism and risk. The conclusions receive the influence of the managers' thinking. This is when a clear head is needed to organise the meeting. The key to the problem is presented. And while the engineers do not receive outside influence at this point, the managers do not listen to them, which makes them out of step. Under the pressure of these background factors, NASA did not find the right direction. The mood and personality of the decision-maker will influence the decision and others will compromise as a result. Managers and engineers had different viewpoints for decision making, The two companies were not on the same side. This paper believe that the engineers' perspective is focused on the launch mission itself, while the manager is more concerned with the impact that the launch will have. This led to a lack of consensus in the group's decision making, which made the process more complicated as well as leading the result to completely different ways.

3. Conclusion

A review of the literature revealed that the historical context of the time brought economic, temporal and public opinion influencing factors to the Challenger launch. These external distractions completely overshadowed the dissenting opinions that existed in the decision making. Shifting the focus of company managers from the launch of the shuttle itself to the consequences of the failure to launch. And put this external pressure on the engineers. It led to misguided thinking by the other team decision makers. This eventually led to everyone believing that the decision was the right one. The second point is that individual decisions are divorced from the group decisions themselves. This is because someone at the top had read the document about the safety risks of the launch. But the information was not shared. And they are reluctant to speak up in the face of pressure from the top, preferring to remain silent and compromise. In group decision-making, the process can be very long because there are many differences of opinion. But it is all the more important to encourage the expression of different opinions. There is no point in having a group if only the top echelons, such as the decision makers, have an opinion. Because the views of the minority are not taken into account. This can lead to a polarisation of the group. So in group decision-making, participants should be encouraged to express their views, rather than being pressured to compromise. And information needs to be shared. In this case, one of the factors that led to a poor decision was the engineer's inability to prove his point of view due to insufficient information. By examining and analysing the literature, we can improve the vulnerability of group decision making to interference from external factors. Remind decision makers that they can take external factors into account and still have the event itself as the primary decision point. It is beneficial for each decision-maker in the group to be able to express his or her point of view and not be distracted by external pressures. But not only is there interference from factors such as social context in group decision-making, but also inadequate communication of information within the group can affect decision-making. This requires more cases and literature. Better results can be obtained in order to avoid as much as possible mistakes in group decision-making.

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