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Evaluating the Reporting and Safety Culture of an Airline According to Patankar and Sabin's Safety Culture Pyramid

Seda Mumlu Karanfil
Assistant Professor, Istanbul Gelisim University/ Aviation Management, sedamumlu@gmail.com

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Aviation is an international, dynamic, and operationally complex industry that strives to meet safety standards. In addition, the civil aviation sector requires technical expertise in the work performed (Görlich & Stadelmann, 2020). To ensure the continuity of safety, employees need to report safety-related violations or illegal practices to the authorized units to ensure safety. Reporting illegal events and unsafe actions to a higher authority is referred to as whistleblowing (Miceli et al., 2008). In this context, whistleblowing, which contributes to the reporting culture, is an important issue in the civil aviation sector in terms of safety. Safety culture, which is developed to ensure safety, consists of attitudes, values, beliefs, and practices related to safety (Glendon & Stanton, 2000) and is important for preventing occupational accidents. Safety culture refers to the development of an organizational culture that will encourage employees to recognize the risks and potential hazards that may arise from their own or their company's activities, to report them to the relevant places, and to behave in a way that will increase safety. In this context, it is possible to say that safety culture offers the opportunity to learn from mistakes and aims for continuous improvement (Reason, 1997). Employees contribute to the safety culture through reporting but should be able to report adverse safety incidents without fear of being penalized. Such an effective mechanism allows for the anticipation of potential hazards (Dekker, 2014), the improvement of operations by learning from mistakes (International Civil Aviation Orogranization [ICAO], 2013) and the establishment of open communication to ensure safety within the organization.

The DC-10 accident in the 1970s shows that the safety culture was not very common at that time. In the DC-10 plane crash, it was observed that the English instructions on the door of the aircraft were not understood by an Algerian baggage handler, and the hinges were bent by the hard closing of the baggage door. As a result, it is known that the plane door could not be closed and the accident occurred. It is known that approximately 1000 incidents related to the cargo door were reported six months before the accident (Dien et al., 2020). In this context, it is seen that the notifications about the door that threatened safety before the incident were not taken into consideration and the incident occurred. In the Alaska Airlines 261 accident, it was revealed through investigations that the aircraft crashed as a result of maintenance violations (Woltjer & Hollnagel, 2007). Another example is the TWA Flight 800 accident. It is thought that the failure to report previously recognized problems with the fuel tank caused the accident. After such accidents, the Aviation Safety Action Program (ASAP) voluntary safety reporting system was further developed to encourage employees to report unsafe events without fear of punishment (Federal vaition Administration [FAA], 2002). One of the recent accidents related to reporting is the Boeing 737 Max accident. The automatic control system (MCAS) of the aircraft in the Boeing 737 Max was noticed by

engineers but was not reported. The accidents that have occurred reveal the consequences of not reporting unsafe incidents (SHGM, 2015).

As mentioned in the examples above, incidents of danger, negligence, or misconduct, such as professional misconduct or incompetence, that threaten safety are reported. It is known that in some cases, reporters face the risk of retaliation from their employers, sometimes demotion, reassignment, or dismissal (Ray 2006; Bruce Hoover, 2018). In some past incidents, employees have been fired, mobbed, or discriminated against. It is known that between 1996 and 2004 when reporting issues were considered as a betrayal when they were related to information disclosure, reporting individuals were fired, forced to resign, or significantly changed their responsibilities in their workplaces (Dyck et al., 2010). In this context, it has become necessary to protect employees to be able to report on such a vital issue as ensuring safety. The Federal Aviation Administration (FAA), through the Wendell H. Ford Aviation Investment and Reforms Act of the 21st century (AIR21), has introduced a program to protect employees who provide information related to airline carrier safety from discrimination (FAA, 2024).

Similarly, the International Civil Aviation Organization (ICAO) recommends the protection of whistleblowers (ICAO Doc 9859, 2018). Furthermore, the Fair Culture approach adopted in the European Union ensures that employees are not penalized for reporting unsafe incidents (EU Regulation 376/2014). It is important to create a just culture for employees to report unsafe incidents. A just culture promotes individual accountability, trusting relationships, open communication (Reason, 1997) and shared responsibility for safety (Dekker, 2007). In the absence of a just culture, employees avoid taking individual responsibility for safety in order not to be penalized or labeled as whistleblowers. In Turkey, employees are protected under the Labor Law and Civil Aviation Legislation. To protect employees, the Directorate General of Civil Aviation (SHGM) has initiated the implementation of Safety Management System (SMS) to ensure safety (SHGM, 2012). The SMS has made it mandatory for airline companies to identify, report, and manage unsafe incidents, risks, and reported incidents, and has also enabled employees to report safety-related incidents without penalty. In this context, SHGM has issued instructions on a Voluntary Reporting system where employees can report unsafe incidents with or without hiding their identities, as well as protecting the reporting persons, avoiding penalties and finally identifying misconduct and correcting deficiencies (SHGM, 2016).

In the civil aviation sector, reporting is of great importance in detecting unsafe events and related risks in terms of early detection, improving safety, and preventing accidents. In Turkey, it is seen that the SMS application established by SHGM to ensure safety is of vital importance. Ensuring sustainable operations with SMS is important to adopt the safety culture in the company and to transfer the mission, vision, and strategies of the organization to the attitudes and behaviors of

its employees. Patankar and Sabin (2010) explain the safety culture in organizations with the help of a pyramid. According to this pyramid, factors such as the core values, mission, leadership strategies, organizational history, and the attitudes, ideas, and behaviors of employees regarding safety constitute the safety culture of the enterprise. The Safety Culture Pyramid developed by Patankar and Sabin (2010) has safety values at the base, leadership strategies, employee attitudes and observable safety behaviors at the top. Reaching the top of the pyramid, i.e. the highest level of observable safety behaviors, indicates that organizations have a strong safety culture. However, the realization of this process depends on effective reporting processes. Reporting refers to the existence of a system where employees can openly report violations, errors, risks or hazards. This process shows us that key elements in the pyramid such as values and leadership strategies are effective. The existence of a reporting culture and a culture of fairness in the organization allows employees to identify and report individual mistakes and even systemic problems at an early stage without fear of punishment. This study aims to identify the importance of reporting in terms of safety culture and the critical role that reporting plays in achieving safe behaviors at the top of Patankar and Sabin's safety culture pyramid.

As a result of the literature review, it is seen that the safety management system in airline businesses is mostly evaluated through Reason's fair culture model. The fact that there is no research on Patankar and Sabin's (2010) safety culture pyramid on the airline business, except for a study conducted in-ground services (Poçar et al., 2022), constitutes the importance and unique value of the research. As stated by Poçar et al. (2022), Patankar and Sabin's (2010) safety culture pyramid is not sufficiently included in practice and this model is important in terms of drawing attention to the effect of employees' safe behaviors on safety culture. In this direction, the SMS instructions, reporting policies and SMS reports of the airline subject to the research were obtained and analyzed as documents. Another stage of the research, it is aimed to evaluate the SMS reports of the airline according to Patankar and Sabin's safety culture pyramid. With this evaluation, content analysis was performed to determine the airline's stage in the safety pyramid.

Unlike previous studies, this study is thought to contribute to the literature by explaining the relationship between reporting culture, safety culture and safety management system and evaluating the reporting in the organization according to Patankar and Sabin's safety culture pyramid.

Literature Review

A culture in which employees can admit mistakes and report them honestly is referred to as a fair culture. Reporting culture refers to an environment where employees feel comfortable sharing and reporting unsafe situations without worrying that they will be penalized. Reporting culture enables employees to report unsafe incidents, errors, violations, or non-compliance with rules to improve the

safety culture and safety system. Reporting, which is also referred to as information disclosure in the literature, is defined as reporting the ethical and illegal practices of the organization to the authorized persons or institutions by a person who has worked or works in the organization in order to reach a solution (Near & Miceli, 1985). Disclosure aims to correct unethical activities or behaviors in the organization and to prevent these unethical actions (Cemaloğlu & Akyürek, 2017).

King (1999) defined whistleblowing as the reporting of unethical behaviors in the organization by employees. In another definition, whistleblowing is defined as the reporting of illegal, harmful, or unethical practices in the organization in which the employee works by placing the public interest above the interests of his/her organization (Near & Jensen, 1983). Jobb (1999) stated that the person making the disclosure has a strong suspicion of unethical activities but is not certain about these activities. Whistleblowing, which is reporting another person's unethical behavior to third parties, means righting a wrong for some people, while for others it is called a grave betrayal (Dasgupta & Kesharwani, 2010).

Reporting is called internal reporting if it is made to higher units within the organization and external reporting if is made to institutions outside the organization (media, public, or regulatory authorities) (Hoffman et al., 2001). In addition, anonymous reporting is referred to as open reporting and anonymous reporting is referred to as confidential reporting. If the reporting is communicated to the higher authority through official channels within the organization, this is a formal structure, but if the employee reports unethical practices to a close friend or someone he/she trusts outside of official channels, this refers to informal reporting (Park et al., 2008).

Individuals can report many unethical behaviors such as violation of human rights, psychological violence and harassment, failure to pay taxes, embezzlement, discrimination, and illegal practices (Near et al., 2004). In addition, they can report many organizational actions or practices such as the organization acting outside its current objectives, all activities aimed at harming the health of the public or employees (Celep & Konaklı, 2012). In this context, the issues mentioned above include the actions subject to reporting.

Reporting is important to ensure safety in the aviation industry. The recent Boeing 737 Max accidents show how important reporting is for safety. The automatic control system (MCAS) of the aircraft in Boeing 737 Maxes was recognized by engineers but not reported. These accidents show how big the consequences of not reporting unsafe incidents are (SHGM, 2015).

To ensure safety, there are elements that businesses should pay attention to. Safety refers to the reduction of risks in aviation activities and the elimination of death or damages. Aviation safety is defined as the identification of risks in all aviation activities and reducing them to acceptable levels (Gerede, 2005). SMS, on the other hand, refers to taking decisions to reduce risks in the daily operations of

the organization and improving safety by continuous monitoring. In addition, SMS is a system in which safety is ensured by receiving, implementing, and managing safety-related ideas and by providing a feedback mechanism after the actions taken (Transport Canada Civil Aviation Communications Centre, 2020). SMS collects and analyzes safety-related data and aims to ensure the safety performance of the organization by minimizing risks (ICAO, 2018). To ensure safety, it is necessary to ensure a safety culture consisting of attitudes, values, beliefs and practices related to safety (Glendon & Stanton, 2000). Safety culture, which is expressed as positive safety culture, refers to the organizational culture that is ensured by each individual in the organization knowing the risks and potential dangers that may arise from their own or their company's activities, engaging in behaviors that will increase safety, being willing to notice and report safety-related problems, and being able to evaluate their safety-related behaviors (Önen, 2016). According to the well-known Reason (1997) model of safety culture, there are four sub-components to ensure safety. These are reporting, fair, flexible and learning culture (Çoban & Bükeç, 2021). Fair culture means that employees report their mistakes honestly, reporting culture means sharing safety-related situations without worrying about criminal sanctions, information culture means keeping organizational information up to date, and finally learning culture means that the organization learns from its mistakes and corrects itself through corrective actions.

According to the safety culture model proposed by Patankar and Sabin (2010), it is emphasized that there are two main aspects of safety culture. The first one is the company's values, leadership strategies, attitudes and behaviors of the employees. The second is the relationships and interactions of individuals, groups and organizations that can be flexible in compensating for latent problems or errors that cause failure. The authors also explained the components of safety culture with the help of a pyramid. At the bottom of this pyramid are the core values and, above that the mission of the company, leadership practices, norms. Above that are attitudes and ideas, and above that are behaviors. According to this pyramid, if the company's goals and strategies are created correctly in terms of ensuring safety, it will affect attitudes and behaviors within the company, and a safety culture will be ensured.

Figure 1
Patankar and Sabin Safety Culture Pyramid

Note. From Patankar & Sabin (2010).

Safety values are essential for the efficient operation of the entire system. This ensures that all safety-related issues are integrated into the day-to-day business of the organization. Strategies include policies, procedures, or leadership practices to ensure the safety of the organization. In the evaluation of safety performance, employees' attitudes towards safety are evaluated. In addition, national or international accident reports and daily reports of the organization are evaluated in the evaluation of safety performance (Salas et al., 2010).

The horizontal layers of safety culture are defined by Patankar and Sabin as a concealing culture where mistakes are hidden, an accusatory culture where the person who made the mistake blames another person, and a reporting culture where employees report their mistakes and undesirable situations. In the horizontal layer, there is also a fair culture in which employees act by ethical principles but are not penalized if they cause undesirable situations (Patankar, 2012). As a result, the strategies and leadership practices created to ensure the safety culture of the company affect the process specified in the horizontal layers.

Methodology

Purpose of the Research

Safety culture in the aviation industry is defined by the dynamic interplay between values, leadership strategies, attitudes, and behaviors that influence the safety performance of individuals, teams, and organizations. This interaction is extensively modeled in Patankar and Sabin's (2010) Safety Culture Pyramid. This pyramid examines safety culture through four key components: safety values, leadership strategies, attitudes and behaviors. Safety values are at the base of the pyramid, while individual and collective behaviors are at the top. The purpose of this study is to examine the reports made by employees within the scope of SMS

and evaluate them in terms of Patankar and Sabin's safety culture pyramid. For this purpose, in light of the company's safety and reporting policies and the information presented in SMS reports, it is aimed to determine where the company is in the safety culture pyramid and whether they perform safe behaviors, which is the last stage of this pyramid. In addition, within the scope of the research, analyses were carried out on which topics and by whom the company's SMS reports were made the most. In this context, the SMS reports of an airline operating in Turkey for the year 2023-2024 were analyzed.

The following questions were sought to be answered in this research;

- What are the company's SMS policies?
- Which policies are in place in the company for a healthy reporting?
- Which issues are mostly reported within the scope of SMS?
- Where is the company in the safety culture pyramid when SMS reports are evaluated?

Research Methodology

In this study, document analysis, one of the qualitative research methods, was used and primary data were utilized. Document analysis is obtaining data by examining existing records and documents (Patton, 2002). Sources in document analysis can be printed and electronic sources (Bowen, 2009). Document analysis can sometimes be a stand-alone research method and sometimes it can be used together with other qualitative methods (Yıldırım & Şimşek, 2018). In this study, an interview was conducted with the SMS manager of the airline to support the document analysis.

Before starting document analysis, the researcher needs to answer some questions. These questions are why the documents are needed, how these documents can serve the research, and whether the right documents are selected (Sak et al., 2021). In this context, since SMS is the subject of the research, the airline's SMS policies, reporting policies, and SMS reports were utilized. Document analysis takes place within a systematic framework. The process consists of accessing documents, checking the authenticity of the documents, coding and categorizing the findings, and analyzing the data (Forster, 1994).

Data Analysis

Content analysis was used to analyze and interpret the data, and the data were coded, categorized, and finally interpreted. Content analysis can be used to systematically analyze explicit or hidden meanings in the analysis of written and visual content (Bowen, 2009). The data subject to the research consisted of 2023-2024 SMS reports of airline employees. The research data were divided into main themes and then into sub-themes and categorized. Finally, the data were evaluated according to the safety culture pyramid with the information obtained from the reports.

Validity and Reliability

The following processes were followed regarding the validity and reliability of the research. Creswell and Miller (2018) suggest eight strategies for validity in qualitative research and state that the presence of at least two of them in research is sufficient for validity (Creswell, 2018). One of them is the triangulation approach (triangulation), which is preferred to ensure reliability. Triangulation refers to the practices of researchers to expand the diversity of the data collected during the research and to provide various perspectives on the study (Denzin, 1978; Yaşar, 2018). In this study, the analyses, codes, and themes were evaluated with the help of another researcher. In this context, with the triangulation method, external control of the research process was carried out by peer review, and the study was analyzed free of researcher bias. In order to support the SMS reports, documents related to the company's SMS policies were obtained, the SMS manager was interviewed when necessary, and his/her opinions and comments on the data obtained were requested. In this way, the researcher was able to decide on the accuracy and credibility of his/her explanations. Reaching the same results with an observer in data analysis and evaluating the results of the analysis with interviews and literature review show that the internal reliability of the research is ensured (Yıldırım & Şimşek, 2016).

In order to ensure reliability, Miles and Huberman stated that coding reliability should be at least 70% in studies involving more than one researcher. According to the formula P = Consensus / (Consensus + Disagreement) X 100, they determined that the reliability level should be at least 70% (Tutar, 2023). The 95% reliability level reached in the research results shows the validity of the research.

In this context, the triangulation method in the research shows that the validity and reliability of the research are ensured with the results obtained from the analysis of a different researcher and coding reliability. In addition, the use of rich language in the description for the readers to understand the information in the research also shows that the validity of the research is ensured.

Findings

Below, firstly, the SMS and reporting policies obtained from the airline are mentioned. Then, the analysis of the documents obtained from the airline is presented and information about the reporting is given. Then, the company's SMS and reporting policies and SMS reports are evaluated according to Patankar and Sabin's (2010) safety culture model.

Airline Safety Policies

Safety is one of our core business functions. Management is responsible for ensuring the highest level of safety performance of all levels and all employees. Senior Management continuously promotes the safety policy to all personnel and demonstrates their commitment to it, provides the necessary human and financial resources for its implementation and sets safety targets and performance standards.

Our commitment to support safety management by providing all appropriate resources to create an organizational culture that promotes safe practices and encourages effective safety reporting and communication. Safety policies;

- Promote effective safety reporting and communication throughout the company.
- Ensure that safety management is the primary responsibility of all managers and employees.
- Clearly define accountability and responsibilities for all staff, managers and employees.
- Establish hazard identification and risk management processes that consider all risks together and present the result holistically, supporting decision making and allocating the resources needed to mitigate risks effectively.

Airline Fair Culture and Reporting Practices

The Company has a "Culture of Fairness" and no action will be taken against any employee who discloses a safety concern through the hazard reporting system unless the disclosure demonstrates beyond reasonable doubt an illegal act, gross negligence, or willful or deliberate non-compliance with regulations or procedures that are considered unacceptable behavior according to the Disciplinary Committee Procedures SW-FL-PR-002. Other than these unacceptable acts, disciplinary action will not be taken against individuals who disclose information. The purpose of safety reporting and internal investigations is to improve safety, not to place blame on individuals.

Creating an environment of mutual trust between staff and management is key to the continuity of safety. Our priority is to emphasize and implement a "just culture" process to ensure mutual trust.

If any employee discloses a safety concern, no action will be taken against that employee unless the disclosure shows gross negligence or willful or conscious disregard for regulations or procedures. A Just Culture is a culture in which all employees are encouraged and comfortable providing safety-related information. A just culture creates an environment where employees understand that in the event of positive and negative safety events, they will be treated fairly based on their actions rather than the consequences of their actions.

Airline Just Culture Process

If individual failure prevails after the just culture process, the sanction should be determined according to the following:

- Gross negligence and criminal offenses are well defined, intentional in nature
- Omissions, defects, errors, and violations fall into the category of honest mistakes.

However, while there is no hard and fast dividing line between these two main categories (intentional on one side and unintentional on the other), each incident needs to be examined to determine which category it falls into. Culture is defined as the beliefs, values, prejudices, and resulting behaviors shared among members of a society, group, or organization. Understanding these cultural components and their interactions is important for safety management. The fair culture components of a safety culture include an informed, flexible, reporting, and learning culture.

Informed culture is a culture that provides a positive perspective on human, technical, organizational, and environmental factors, influences/contributes to the organization and does not allow mistakes to occur.

A flexible culture is based on "learning from experience" and a solid safety culture that prioritizes safety and is open to change.

A culture based on an open organizational climate, where people are encouraged to report all incidents, hazards, and errors that deviate from known standards and requirements without retaliation *reporting culture*.

A culture that is willing to take proactive and corrective actions, to make appropriate actions and decisions based on the results from relevant information is a *learning culture*.

The ideal safety culture is one where personnel and systems work together in a supportive and constructive way. There is no blame culture behind an environment where discovered mistakes are recognized and used positively and constructively. Therefore, the culture adopted aims to learn from experiences and failures and to foster an open reporting culture aimed at addressing all deviations from the "Just Culture" for all involved in the system.

The Just Safety Culture will ensure that human error is recognized as "normal and non-recurring". This culture will seek to resolve and improve all factors that threaten safety while making a clear distinction between human error, negligent behavior, reckless behavior, and intentional violations.

The characteristics of a positive safety culture are:

- Managers and staff want to make decisions and take action individually and collectively.
- They promote safety,
- Individuals and groups constantly criticize their behaviors and processes and welcome this change.

Airline Reporting Policies

Reporting is vital for effective data flow. The effectiveness of reporting kept in a reliable environment is unquestionable. Our reporting system is designed to ensure a continuous flow of data and to be user-friendly for the reporting person. Our company is committed to operating to the highest safety standards. To achieve this goal, all accidents, incidents, hazards, risks, and other information that could

jeopardize the safe conduct of our operations must be freely reported. To this end, every member of staff is encouraged and responsible for reporting safety and fatigue-related information.

The main purpose of reporting is risk control and accident and incident prevention, not attribution of blame. Our safety reporting system is fundamentally non-punitive. This means that no disciplinary or criminal action will be taken against any staff member who discloses a safety concern through the reporting system unless it is disclosed beyond a reasonable doubt.

However, violations of rules, and procedures, endangering the safety of passengers, personnel, or cargo, team resource management (CRM) issues, receiving 3 or more warning letters within a 6-month period, intentional political or racist discussions and dialogues, intentional delays to operations, intentional delays to mandatory reports and substance abuse are culpable misconduct.

Airline Reporting Process and Reporting Incentive Practices

The importance of reporting is explained to company employees through training and office policies are posted in every visible place within the company. Persuasion activities are carried out on a unit basis for employees to report. Reporting is important for auditing and is controlled by international authorities. International authorities control the number of reports and the realism of the number of reports is controlled depending on the annual number of flights and personnel. If the number of reports is low despite the high number of flights during the year, the company thinks that it cannot convince its employees to report and repeat the training. However, there is a reporting system in the company and employees are trained on the types of reports. As a result of the reporting efforts, the number of annual reports of the company has reached up to 300.

The company has 3 types of reporting systems for information disclosure. Confidential reporting, mandatory reporting and reporting of issues other than flight safety.

1. Confidential reporting

Confidential reporting consists of two parts, the first of which contains no name, while the second contains a name. However, only the SMS manager can see this name, provided that it is not legally deciphered. If there is a situation that threatens flight safety, a risk analysis is required and the results are also provided to the SMS manager. As a result of the examination of the reports, it is decided whether there will be a warning or retraining. In case of false reports, a one-on-one interview is conducted with the person, and the confidentiality of the person who is found not to have made a true statement is not protected. It is a practice to prevent false reporting.

2. Mandatory reporting

Incidents that civil aviation authorities require to be reported regarding flight safety are mandatory reports. These are the reports made in situations that

threaten safety such as bird strikes, vehicle collisions, or hard landing. In addition, any situation that threatens flight safety other than these items must be reported. Every unsafe incident is reported to SHGM. The persons who caused the unsafe incident are retrained. Conducting risk analyses related to the reports made is another dimension of the studies.

3. Reporting of situations other than flight safety

This is the reporting where people who want to send a report to the department they work for report issues other than flight safety such as salary, fringe benefits, missing materials, boarding expenses, and hotel comfort on boarding. These reports are checked every day and if there are any accidental reports in these reports, they are transferred to the mandatory report. Thus, the SMS department provides a control mechanism at the top. In addition, Article 7-8 of the SMS policies, when there are situations such as doing illegal business, using alcohol and drugs, having language sect discussions on board, deliberately damaging the aircraft, damaging the operation, deliberately disrupting CRM, the fair culture is disabled and sanctions are imposed on employees.

SMS applications aim to conduct risk analysis and strengthen safety. Risks are analyzed with the 5 WHY? Method to find the root cause of reported incidents. 5 WHY? Method refers to reaching the root cause as a result of asking the question of why the incident happened and then asking the question of why it happened again five times. The root cause is found and solved and the risk is eliminated. In addition, departments track their unsafe events numerically. According to the number of reports, the number of times a given unsafe event has occurred is determined. Every month, the reports are used to show the alarm levels for an engine failure, for example. Another issue that is monitored by SMS is the flight data monitoring system (FDM) in the aircraft, which is used to track all actions that take place in the aircraft and to identify errors. The SMS department is responsible for providing and monitoring SMS training for all personnel. In addition, the rest periods of flight personnel and all shift personnel are controlled. In light of this information, the SMS department also manages processes such as tracking unsafe events, assessing risks, meeting in emergencies, and managing crises.

Analysis of SMS Reports

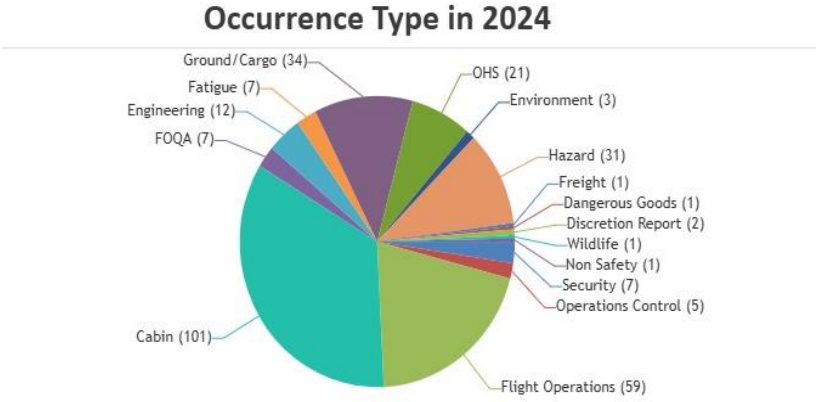
Table 1

Research Themes on SMS Reports

Main Theme	Subtheme	Code
Flight Safety	Cabin crew	Introducing medical equipment into the airplane Relocation of emergency bags in the cabin Items in overhead compartments create congestion Illegal passenger on board (vaping passenger) Difficulty accessing protective respiratory equipment Disruption of crew resource management by flight control personnel Mental illness of team members Lack of post-flight brefing Double seat sale The presence of safety-threatening materials in flight kits and easy access to them Incorrect timing of the Call Out (prepare) call.
	Cockpit crew	Adverse weather conditions (crosswind, crosswind, turbulence) Acting in accordance with Flight Operation Documents GPS signal failure Disabling autopilot, manual route generation
Safety Other	Cabin crew	Yacht payments and loss of motivation Pick-up and delivery service issues (late arrivals, exceeding speed limit, not sharing location, etc.) Rest periods Long flights and fatigue
Other Reports	All employees	Lack of information about cameras in the office (in accordance with KVKK) Cluttered office desk Office layout Disagreements within the office Ventilation problem Cabin cockpit special relations Failure of the replacement part to pass tests Operational problems (heavy lifting and health problems) Employees' summer clothing problem

Figure 2

Percentages of SMS Reports



As can be seen in Figure 2, the highest number of reports were made by cabin crew, followed by flight operations. The last reporting was related to unsafe incidents.

As seen in Table 1, SMS reports of airline employees are categorized under three different main themes: flight safety, other safety reports, and other reports. The main themes were divided into sub-themes and then the topics related to the sub-themes were categorized.

Sample reports on the themes of the research are presented below and the reports are evaluated according to the safety culture pyramid. The model includes four key components and is presented in the form of a pyramid:

1. Safety Values: As the foundation of the organization, values express that safety is a priority and at the center of all operations. Safety values should be supported by leadership strategies and daily practices.

2. Leadership Strategies: Includes factors such as organizational mission, policies, procedures, leadership practices, and reward and punishment systems. Leadership plays a critical role in shaping the safety culture.

3. Attitudes and Opinions: Reflects employees' perceptions of safety policies, procedures, and leadership practices. This component is usually measured through surveys and provides a snapshot of the safety climate.

4. Safety Performance: Determined by observable behaviors and results. It is associated with outputs such as successful correction of errors, safety system improvements, or accident prevention.

Airline Sample SMS Reports and Evaluation of the Reports According to the Safety Culture Pyramid

Main Theme 1- Flight Safety

Below are examples of reports made by the cockpit crew and cabin crew to ensure flight safety.

Subtheme 1: Cockpit and Safety Reports

- The flight was diverted due to adverse weather conditions and with the captain's authorization.
- A sudden left bank of the aircraft was reported during landing due to crosswind.
- During landing, the captain's instruction to the co-captain could not be implemented and the co-captain reported himself.
- The flight Operation Document Management system gave an error message.
- It was reported that the GPS signal was lost during the approach but a safe landing was achieved.
- Due to turbulence and strong crosswind, some techniques were used and the landing was accomplished without anything unusual.
- It was reported that the autopilot was deactivated during the flight and the correct route was established manually.

Evaluation Recommendations According to the Safety Culture Pyramid

- Safety Values: Technical safety procedures should be implemented more strictly and all systems should be checked regularly.

- Leadership Strategies: Alternative scenarios for situations such as weather should be created and enhanced training programs for captains should be organized.

- Attitudes and Opinions: Collect employee opinions on critical infrastructure issues, such as document management systems, and implement solutions quickly.

- Safety Performance: Flight performance data should be analyzed and measures should be taken to prevent the recurrence of turbulence, crosswinds and technical problems.

Subtheme 2: Cabin and Safety Reports

- It is reported that a passenger on board the aircraft has medical equipment and is taken on board without being identified at the airport, posing a potential threat to safety and security.
- The call-out call given by the cockpit is delayed. This creates operational confusion and affects safety.

- The presence of piercing and cutting instruments in emergency bags in a place directly accessible to passengers poses a safety threat.
- It was reported that the items in the overhead compartment create congestion and may fall out. A request was made to distribute the items in this compartment.
- It was reported that a passenger smoked an electronic cigarette on the flight and the smoke detector was alarmed and necessary actions were taken.
- Flight crews have difficulty accessing protective respiratory equipment.
- During the flight, the Line-Chek attendant asked questions to the crew members during the flight and the flight was carried out without team resource management. The attendant's lack of distance from crew members, error-seeking attitude, gestures, facial expressions, and harsh mannerisms were reported and the negative impact of this situation on flight operations was reported.
- Passenger check-in procedures were not paid attention in the Gate area and two xx seats were noticed during the flight. Therefore, a check-in error occurred.
- It was reported that the mental state of one of the crew members on the flight changed very quickly and necessary precautions were taken.
- During the flight, it was understood that there was no briefing at the end of the previous flight. It was noticed and reported that the emergency exit cards at the doors and emergency exits were not on the seat backs.

Evaluation Recommendations According to the Safety Culture Pyramid

- Safety Values: Ensure that safety equipment in the cabin (emergency bags, overhead compartments) are regularly checked and secured.

- Leadership Strategies: Coordination should be increased by improving cabin crew communication processes (e.g. call-outs).

- Attitudes and Opinions: Problems experienced by cabin crew in operational processes should be measured through surveys and solutions should be implemented quickly.

- Safety Performance: Regular maintenance and inspections of items such as emergency bags, overhead compartments and safety kits should be carried out according to reporting results.

Main Theme 2: Other Safety Related Reports

Subtheme 1: Cabin-Service, Recreation and Yachting

- It was reported that the fact that the delivery service of the flight crew was carried out with the pick-up service caused a loss of time and reduced rest time for the personnel.
- It was reported that the location information of the shuttle was not shared with the flight crew and the delay caused by the shuttle arriving 20 minutes late affected the flight operation.
- It was reported that the flight crew delivery service exceeded the safety limits by increasing the speed limit from 80 to 120 km.
- It was reported that rest periods were reduced to less than 12 hours, vacation days were changed with critical notifications a few hours in advance, and also times when the crew allocation unit could not be reached.
- Long flights and problems with accommodation were reported to cause fatigue and jeopardize flight safety.
- Personnel reported problems with late payment of overnight payments and reported that their flight motivation was negatively affected.

Evaluation Recommendations According to the Safety Culture Pyramid

- Safety Values: Policies should be developed to protect workers' rest periods. Review vehicle design for safety and comfort.

- Leadership Strategies: Improve planning of distribution and collection services to ensure operational order.

- Attitudes and Opinions: Regular feedback from employees should be obtained to improve these processes.

- Safety Performance: Audit and reporting mechanisms should be developed for late services and exceeding speed limits.

Main Theme 3: Other Reports

Subtheme 1: All employee reports

Other reports were mostly made by office employees. These are; protection and informing employees about Personal Data Protection Authority (KVKK) camera recordings, office layout, not allowing personal jewelry, odors in the office environment and lack of ventilation, clothing, conflicts within the office, cabin-cockpit private relations. In another report, it was reported that a replaced part did not pass operational tests. Regarding the operation, it was reported that the loads carried were heavy and that the problems experienced in accommodation caused loss of motivation and fatigue.

Assessment according to the Safety Culture Pyramid

- Safety Values: KVKK policies, ventilation arrangements, ergonomic solutions, and accommodation improvements should be provided to enhance employee well-being.

- Leadership Strategies: Office layout, dress policies, and quality control processes should be managed effectively; leadership should develop proactive solutions to operational issues.

- Attitudes and Opinions: Regular feedback from employees should be obtained to support improvement processes and participation in reporting processes should be encouraged.

- Safety Performance: Inspection systems should be strengthened to prevent technical issues and operational processes (heavy lifting, fatigue) should be optimized.

These issues indicate the need for a more systematic approach to improve safety culture at all levels of the organization. Measures should be taken under each heading by the safety pyramid, and safety values should be more strongly embraced by employees and supported by leadership strategies.

Conclusions

The company's safety values, leadership strategies, employee attitudes and opinions, and the company's safety performance were evaluated according to the safety culture pyramid, taking into account the company's SMS and reporting policies and employee reports. The situation of the company in the safety pyramid is first explained and then solutions to the problems, if any, are proposed.

1. Company's Safety Values Due Diligence: The company has adopted the principle of fair culture and encourages employee contribution to safety through mechanisms such as confidential and mandatory reporting. However, issues such as ventilation, office layout, and accommodation problems reported by office workers may indicate that insufficient attention is paid to the physical and psychological well-being of employees.

Recommendation: Policies to improve employee welfare should be established and problems such as ventilation and comfort should be solved quickly. Commitment to safety culture should be adopted as a value throughout the entire organization, not just operationally.

2. Due Diligence on the Company's Leadership Strategies: The company has put in place leadership, reporting systems, and risk analysis processes and involves employees in the process through training. However, there are gaps in developing proactive solutions to operational and office-level issues (e.g. heavy lifting and CRM disruption).

Recommendation: Leaders should create fast and effective solution mechanisms for operational problems. Reward and feedback mechanisms should be made more active to increase employee motivation.

3. Due Diligence on Attitudes and Opinions in the Company: Employees participate in reporting mechanisms and reporting is increasing every year (300 reports annually). However, some employees are still not convinced to report on

safety and complain about physical conditions (e.g. office odors, insufficient rest periods).

Recommendation: Employees' views on safety policies should be regularly surveyed and improvements should be made. Incentive programs for reporting should be increased and employees should be given more confidence.

4. Company's Safety Performance Due Diligence: The company monitors and tries to improve its safety performance through FDM (Flight Data Monitoring) and risk analysis methods. However, reported incidents (e.g. parts not passing tests, operational fatigue) indicate that safety performance still needs to be improved.

Recommendation: To improve safety performance, testing processes should be more stringent, and technological infrastructure should be improved. Better planning and optimized processes are needed to address issues such as operational fatigue and heavy load handling.

Regarding the company's position in the safety culture pyramid, the company is in a transition between reporting culture and just culture. However, gaps need to be addressed to reach the level of informed culture and learning culture. Accordingly, safety culture should be strengthened by closing gaps in employee welfare and leadership strategies, and systems should be made more proactive. These steps will help move the company's safety culture to a more mature level.

Final Thoughts

The accidents that occurred in the 1900s, when civil aviation started, and the investigation of accidents contributed to safe operations. The national and international increase in accidents and incidents has led to the development of some standards and systems and made them mandatory in operations. With this approach, SMS has become mandatory in the whole system for the sustainability of safety and it has been requested to be adopted by the personnel. Thus, some standards and procedures have been established to minimize operational risks and are expected to be actively implemented in companies. The success of the SMS system depends on the existence of a safety culture embedded in the organizational culture and the acceptance of all personnel as part of this culture with a sense of responsibility (Poçar et al., 2022). Fair culture, which contributes to the improvement of safety, enables employees to report on safety in aviation organizations to identify risks, reveal latent conditions, and take measures for these risks. In a fair culture environment, the ability of employees to recognize and share their mistakes or report unsafe incidents improves safety (Önen, 2017). Companies are expected to motivate employees to ensure the continuity of a fair culture.

According to Patankar and Sabin's safety culture model, organizations adopt values, strategies, and some leadership approaches to realize these strategies and try to ensure the safe behavior of all employees. It is known that human

performance is important to ensure safety and technology-human cooperation affects safety (Kharoufah et al., 2018). Fatigue, stress, time pressure, and shift work can cause individuals to experience burnout and deteriorate their mental health. Although mental health has been ignored in aviation in the past, the importance of mental health was recognized with the Germanwings 9525 flight crash in 2015 (Matschnigg et al., 2022). To reduce accidents caused by physical and mental problems, aviation authorities have issued some regulations to remove people with such disorders from flying (European Commission Regulation, No 216/2008; No 1178/2011). In this context, a person with mental problems may pose a danger to flight safety. The company is expected to frequently assess its employees for mental health.

Irregular work schedules, long working hours, and night work (Ono et al., 1991; McNeely et al., 2018) cause employees in the industry (cabin crew, pilots) to experience sleep problems, depression, anxiety, and fatigue (Barton, 1994). Fatigue can cause complex and difficult-to-identify accidents that threaten safety (Matschnigg et al., 2022). In this context, the company is expected to make some arrangements regarding fatigue and rest periods. In addition, it is important to implement a safety culture not only in operations but also throughout the company to ensure safety (Cooper, 2016). Some of the employees mentioned that they lost their motivation due to boarding problems and others due to problems in the office. In this context, some motivational activities should be carried out to increase the attitudes and behaviors of not only the flight crew but also all other personnel regarding safety. The effect of work motivation on performance is known (Clark, 2003). Therefore, intrinsic (social support at the workplace, encouragement) and extrinsic (salary, achievement certificates, performance scores) motivation of employees can contribute to their performance (Chang, 2003).

The importance of leadership practices in increasing motivation and safety culture is well known. Implementation of leadership practices in terms of organizing operational processes and finding effective and fast solutions to problems is important for safety. Because leaders are people with open communication who enable employees to show positive attitudes and behaviors at the point of reaching the desired performance and creating a team spirit (Nalbant et al., 1997). In a study, it was determined that employees who are satisfied with their jobs adopt transformative and interactionist leadership (Korkmaz, 2021). This research shows the importance of leadership in terms of task performance.

In addition, the materials in some passenger kits in the cabin have the potential to be used as criminal tools by passengers in the aircraft. This situation jeopardizes flight safety and security. The attitudes and behaviors of passengers who do not comply with the instructions and general aviation rules before or during the flight are defined as unruly passengers (Goldsmid et al., 2016). The discovery of syringes and medical equipment in a passenger's bag on the airplane shows that

the presence of unruly passengers threatens safety and security. In addition, it is seen that there are still deficiencies in ensuring security at some airports.

Finally, this research has some limitations. The research data consists of analyzing the documents of a single airline and the data obtained covers a specific period. In addition, the airline did not share all reports with the researcher due to company policies and confidentiality. This constitutes another limitation of the study.

The study has some suggestions for other researchers. Analyzing and comparing the SMS practices and SMS reports of airlines from different countries according to the safety culture pyramid can be presented as a suggestion for future researchers. In future research, a survey study can be conducted to determine the perceptions of employees regarding fair culture practices in the company, and SMS reports can be analyzed with the data obtained from the surveys.

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