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A conviction in marine operations – a step back in aviation safety?

How is the just culture in the Norwegian aviation industry influenced by the Norwegian court conviction against a single operator on the bridge of KNM Helge Ingstad?

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Abstract

December 2023, the Norwegian court convicted the Officer On Watch on KNM Helge Ingstad after a collision with the tanker Sola TS. This study investigates how a conviction of an operator in naval industry might influence the *just culture* in the Norwegian aviation industry. A questionnaire was sent to 180 persons January 5th, 2024. The questionnaire was designed to gather data on how the operators in the Norwegian industry felt about the challenge posed when convictions like this happens. Theories on *just* -and reporting culture are presented. This dissertation will also include theories on the Safety-I and Safety-II-paradigms to safety.

The 33 participants in this study were asked questions regarding their knowledge of *just culture* as a characteristic of an industry or an organization. It seems that all participants agree with the Civil Aviation Authority Norway (2024), Eurocontrol (2018, p.5) and Pellegrino (2019, p.46) on the most common keywords used to describe what one calls *just culture*. Keywords such as *improve, learn from mistakes, no-blame, prevention,* and *safety* were used by the participants, correlating with what the authority and earlier research highlights as important factors in a *just culture*.

All though most of the participants had strong negative feelings towards the conviction of the Officer On Watch onboard KNM Helge Ingstad, over 80% of the participants agreed on the importance of reporting safety-related issues in a *just culture*. Over 75% of the participants observed the Norwegian aviation industry to be *just,* both as an industry and on an organizational level.

It seems accidents like the KNM Helge Ingstad and Sola TS-accident might present an increased feeling of worries by the participants in the Norwegian aviation industry, mentioning consequences regarding willingness to report, a step back in safety, fear of potential consequences and, for some, feeling of unfairness. All though participants stating these concerns, it seems that the general agreement is that the Norwegian aviation industry is *just,* and most operators are willing to report safety-related issues for the industry to enhance safety, mitigate accidents and remain as safe as possible for the future.

Foreword

This is my master's dissertation in aviation science. After studying aviation at master's level part-time at University of Tromsø over the last three years, I found that the aviation industry is both more complex and interesting than I previously thought. It has been challenging juggling both private life, full-time work, and studies, but I feel proud to present my master's thesis *"A conviction in marine operations – a step back in aviation safety?"*.

I would like to thank my supervisor Karina Mesarosova for feedback and information throughout this process. I would also like to thank all my participants for answering the questionnaire and making this an interesting process.

Enjoy the reading and feel free to continue the research in the future.

Mads Waltersdorph Hjemmen

Ski, 30.05.24

1 Introduction

1.1 Background

Aviation is considered one of the default references when describing High Reliability Organization (HRO) (Sutcliffe, 2011, p. 134). The industry share some safety related values and operational challenges with both the medical field, military, and maritime industry. A High Reliability Organization can be defined as an organization that operates on a daily basis in inherent risky operations, but have mitigated the risk factors and incident/accident occurrence to the minimum (Sutcliffe, 2011, p. 134). HROs are often characterized as organizations that operates with an outstanding work and task design with highly trained personal (Sutcliffe, 2011, p. 137). Safety in aviation is an essential part of how the industry is able to connect the world through both cargo and passenger transport. The safety and *just culture* in an organization relies in large degree on the sharp-end crew to be able to report on the safety issues and errors made in day -to-day operations. Through both voluntary and mandatory reporting, without the fear of consequences, they make a vital part of the *just culture* in aviation (Pellegrino, 2019, p. vii).

Recently, it seems that the principles of *just culture* in some HROs might be challenged (Kaalaas, 2023). December 2023, the Officer On Watch (OOW) on the Norwegian frigate KNM Helge Ingstad was convicted by the Norwegian court after a collision with the tanker Sola TS. The accident made headlines and seems to have brought life to a discussion regarding *just culture* in several industries, including aviation. Research has shown that up to 80% of accidents and incidents in HROs are contributed to human factors. Researchers and psychologists highly agree that humans are likely to make mistakes regardless of levels of experience, skills, and expertise (Crichton, Flin, & O'Conner, 2008, p. 1). It is therefore interesting to investigate whether the humans operating in the Norwegian aviation industry are influenced by an uncommon conviction of a naval operator after an accident. This master's dissertation will present theories on safety and *just culture*, present data from a questionnaire and discuss findings and potential problems in the recent challenging of the *just culture* in the aviation industry.

1.2 Presentation of thesis

To highlight the potential challenges on convictions in HROs and the potential implications on *just culture* in the Norwegian aviation industry, this thesis of this study is presented below:

> *How is the just culture in the Norwegian aviation industry influenced by the Norwegian court conviction against a single operator on the bridge of KNM Helge Ingstad?*

It is of hope that this master's dissertation can contribute to further discussions on the importance of *just culture* both in maritime and aviation operations. The *just culture* and the consensus of reporting without being afraid of being "blamed" is considered an important aspect in High reliability Organizations and the safety systems within (Civil Aviation Authority Norway, 2024). Will a conviction of a naval officer be considered a step back in safety? Will operators in the Norwegian aviation industry think twice before choosing to report discrepancies, due to fear of being blamed? How will the conviction influence the *just culture* in the Norwegian aviation industry?

1.3 Literature review

In 2011, Solomon and Relles presented cases from early 90s regarding criminal charges against air operators and their implications on the safety (Solomon & Relles, 2011, p. 424). The article presents what seems to be an increased criminalization after aviation disasters, both against sharp-end such as pilots and ATC but also against maintenance crew (Solomon & Relles, 2011, p. 409). The article highlights challenges when it comes to air disasters, showing results of air crash investigations being halted due to criminal investigators "closing the scene" and stopping the safety investigation (Solomon & Relles, 2011, p. 433). Solomon & Relles (2011, p.441-456) presents proposed solutions for improvement against criminal charging of operators, and mentions the need for establishment of a global standard for criminal liability as one of many solutions.

Sidney Dekker published an article discussing the same problem, the increasing criminalization in both aviation and healthcare (Dekker, 2011). The article presents both problems regarding crimes as a construct and the implications a criminalization might have on the honesty and incident reporting in aviation and healthcare (Dekker, 2011, p. 122). According to Dekker, some research has shown that due to the non-binary definition of "criminal", it might

leave little room for critical reflection on the social causes of criminalization. It is argued that a common response to criminalization is that the sharp-end crew become better in hiding errors by omitting to report them (Dekker, 2011, pp. 122-123).

In 2018, two Swiss air traffic controllers were convicted after operational incidents involving aircrafts and ground structures (ECA & IFATCA, 2018). No personal involved were injured and nothing was damaged in regards to aircrafts or structure. European Cockpit Association and The International Federation of Air Traffic Controllers' Association highlights the complex system of aviation and ATC and argues that the system fails rather than the individual (ECA & IFATCA, 2018). The press release from ECA & IFATCA shows that convictions against operators might in fact reduce safety and *just culture*, thus creating "… a climate of fear amongst aviation professionals and result in reluctance to submit reports" (ECA & IFATCA, 2018).

The media coverage of the KNM Helge Ingstad-accident was widespread both before, under and after the court case. According to Norsk Flygerforbund, the conviction of the Officer on Watch on KNM Helge Ingstad may contribute to fear amongst operators and influence the safety culture negatively (Hauge-Eltvik & Heyerdahl, 2023). According to both Norsk Flygerforbund and the Naval Military Foundation (NOF), the accident is considered a systemic fault and that both agree that one operator is not to blame in such an accident. The prosecution in the court case argued that the length of the sentence was not important, but that it was important to establish responsibility of the accident (Kaalaas, 2023). Expert on maritime naval operation and hybrid warfare Hans Petter Midttun (2023), tries to explain how these kinds of accidents can happen. With his 23 years of experience with frigate operation in the Norwegian Navy, Midttun (2023) points to the Norwegian navy's unique way of operating their frigates and the work towards efficiency in frigate-operation. According to Midttun, the challenges in the naval operation started all the way back in the 90s, where the focus was to save money and resources while also maintaining NATO-qualifications. Officers in the Norwegian navy had to overcome structural and economical unbalance and at the same time be able to engage in war (Midttun, 2023). Meanwhile, the operational systems meant to support the frigate operations was built down in order to save even more resources. According to Midttun, this meant that more administrative tasks were given to the officers on board the frigates, without the necessary training. Midttun (2023) also states that the Norwegian navy, due to cost savings and the work

to efficiency, accepted higher and higher risks in operation – the consequence being a major accident like KNH Helge Ingstad (Midttun, 2023).

2 Theoretical framework

This chapter will present theory on *just* and reporting culture, safety I and II, accident investigations, regulations and resolutions established by both maritime and aviation organizations. The accident between KNM Helge Ingstad and Sola TS will be presented in short.

2.1 Just culture and reporting culture

Just culture may be described as "…an atmosphere of trust in which people are encouraged, and even rewarded, for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behavior" (SKYbrary.aero, 2024).

In aviation, the term *just culture* has been widely accepted in both international, European, and at national level. The aviation industry is considered to be one of the safest transports globally (Eurocontrol, 2018, p. 5). In order for the industry to remain safe and to mitigate incidents and accidents, it is necessary to create a culture and environment within so that errors and minor occurrences are reported voluntarily (Pellegrino, 2019, p. 13). When operators report discrepancies or errors made in their sharp-end such as flying an airplane, the effect of these reports will depend on the handle of blame and punishment in the organization (Pellegrino, 2019, p. 45). According to the CAA Norway, a *just culture* in aviation is affected by the non-blame of the operators' errors, actions, or mistaken decisions. It is based on thrust between both operators, organizations, and the authority. In order to enhance the aviation safety, reporting must be done in order to improve (Civil Aviation Authority Norway, 2024). Pellegrino (2019, p.46) also considers the conditions of a *just culture* as the concept of no-blame or punishment for errors or mistakes made in the sharp-end. Safety related information shared in the organization should be promoted and encouraged in order for the organization to actively work towards a safe operation (Pellegrino, 2019, p. 69).

The European Union acknowledged *just culture* as term in the 2000s. In 2003, the Council of the European Union published the 42/EC directive on occurrences reporting in civil

aviation. (The European Parliament and The Council of the EU, 2003). The directive was meant to contribute to an enhanced aviation safety and according to the directive the sole purpose of occurrence reporting is to prevent accidents and not to attribute blame (The European Parliament and The Council of the EU, 2003, p. 2). By defining the *just culture* as a term, EU contributed to a practice meaning that no prosecution is allowed within the European Union against actions or decisions made by a reasonable person – unpremeditated or by mistake (Pellegrino, 2019, p. 54).

All though the term *just culture* is often used to describe some characteristics within the safety culture of an organization, it is also important to establish the line between acceptable and unacceptable behavior. In order for the *just culture* principles to maintain and work towards a safer aviation, one must also clarify the line between what is acceptable and unacceptable. (Pellegrino, 2019, p. 69). Eurocontrol establishes in their model:

> Both rail and civil aviation have built an enviable reputation as safe and efficient methods of transport. Within all high-risk industries, a large contributor to this achievement is the ability of practitioners to report errors that have led to, or could have led to, incidents or accidents, in the interests of safety, without the fear of prosecution action resulting from actions, omissions or decisions taken by them which are commensurate with their experience and training. Gross negligence, willful violations and destructive acts are, of course, not tolerated.
>
> Where possible under national criminal law, the policy foresees that no prosecution be brought against individuals for actions, omissions or decisions which reflect the conduct of a reasonable person under the same circumstances, even when those actions, omissions or decisions may have led to an unpremeditated or inadvertent infringement of the law.
>
> Nothing in this Policy should prevent criminal prosecutions in the event of intentional wrongdoing or gross negligence (Eurocontrol, 2018, p. 5).

Gross negligence is a term included in their model and Eurocontrol argues that it does not seem to be a commonly agreed definition on the term. However, it seems that the general agreement regarding the term implies a certain degree of severity, serious disregard to procedures and

risks, and doing something extremely out of the ordinary during a circumstance (Eurocontrol, 2018, p. 5).

2.2 Safety-I

Safety-I is a concept of approaching safety that heavily relies on some important assumptions. In Safety-I, one assumes that safety systems are made up by several individual parts and that they either work or fail (Braithwaite, Hollnagel, & Wears, 2015, p. 13). The concept of safety-I assumes that the system could be broken down and understood by its individual parts and that by taking it apart one can study a single component of that system. This does include both hardware and software components. Hardware meaning machines and assets and software meaning people in an organization (Braithwaite, Hollnagel, & Wears, 2015, p. 13).

By approaching safety related issues using the safety-I-paradigm, one also assumes that a human interacting in a system will make mistakes no matter how skilled. This way of looking at safety theory is based on a reactive approach *–what went wrong and why?* (Hollnagel, Leonhardt, Licu, & Shorrock, 2013, p. 3). It is argued that humans may adapt in a high degree, but one must enhance the system as a whole in order to mitigate accidents (Hollnagel, Leonhardt, Licu, & Shorrock, 2013, p. 3).

2.3 Safety-II

Safety-II is considered a newer paradigm on safety. By researching human factors and technology, the safety-II-way of seeing things is based on the argument that one works towards *making as much as possible go as planned* rather than focusing on *what went wrong and why* (Hollnagel, 2013, p. 5). In safety-II, one assumes that our knowledge is flaw, and that the variation and complexity of systems sometimes is too big to understand (Hollnagel, 2013, p. 6). The safety-II approach argues that the performance and actions of humans in a system may reduce the risk of air accidents with feedback and quality of training (Hollnagel, 2013, p. 6). The safety-II-approach is considered proactive, meaning that organizations focus on being resistant to errors and air accidents (Hollnagel, Leonhardt, Licu, & Shorrock, 2013, p. 3).

The focus when working with safety using the newer safety-II-approach is to look at regularity rather than severity. By doing this one might improve everyday human performance rather than being reactive when things have gone wrong (Braithwaite, Hollnagel, & Wears,

2015, p. 28). Some aspects are considerably different when transitioning from safety-I to the safety-II-approach (Hollnagel, Leonhardt, Licu, & Shorrock, 2013, p. 31):

- Look for what goes right

  Do not wait until something goes wrong. It is important to understand normal situations in order to evaluate abnormal situations. In order to understand abnormal situations or events, one must be aware that errors or malfunctions is a combination of unexpected everyday human performance.
- Focus on frequent event

  Focus on things that happens regularly and focus on their frequency rather than severity. Small improvement in all aspects of operations may enhance the safety. There is a tendency to focus on serious incidents or accidents and overlook the things that went right. These things might be small, but a lot of small improvements may in the long run enhance the safety.
- Remain sensitive to the possibility of failure

  Safety-II focus on things that go right. It might still be necessary to be aware that things can go wrong either way. In safety-I, the focus is often that something has to malfunction or brake in order to fix it, but the safety-II approach would focus more on why things succeed
- Be thorough as well as efficient
- Invest in safety

2.4 Aviation and maritime resolutions

International Civil Aviation Organization (ICAO) was established by the UN in 1947. The organization is made up of 193 contracting states and the goal and mission of the organization is to adopt standards, practices, and policies for the international civil aviation (ICAO.int, 2023). The countries are contracted by The Convention on International Civil Aviation which is made up by 18 annexed that stipulates why and how the countries organize their aviation industry. Annex 13: Aircraft Accidents and Incident Investigations, describes the requirements and objective of an accident or incident investigation (ICAO, 2019). According to ICAO Annex 13, the objective of an investigation of an accident or incident is to prevent and mitigate future accidents. The objective is not to apportion blame or liability (ICAO, 2019, p. 9).

Similar to The Convention on International Civil Aviation Annex 13, the International Maritime Organization (IMO) also publishes resolutions regarding maritime operations. The IMO Resolution MSC.255(84) chapter 16: Principles of Investigation, describes maritime operators how an investigation should be conducted. Chapter 16.2 states:

> 16.2 Safety focused: It is not the objective of a marine safety investigation to determine liability, or apportion blame. However, the investigator(s) carrying out a marine safety investigation should not refrain from fully reporting on the causal factors because fault or liability may be inferred from the findings (International Marine Organization , 2008, p. 16).

2.5 KNM Helge Ingstad and Sola TS accident

KNM Helge Ingstad was a frigate of the Royal Norwegian Navy. On the night of 8th November 2018, the ship crashed with the tanker ship Sola TS in Hjeltefjorden outside Bergen. The frigate sailed without Automatic identification system (AIS). The bridge team on the frigate had informed Fedje Vessel Traffic Service (VTS) before entering the fjord and resumed their sailings southbound. The VTS had not followed the frigate's passage south through the Hjeltefjord (AIBN & DAIBN, 2019, p. 12). According to the Accident Investigation Board Norway (AIBN), KNM Helge Ingstad collided with Sola TS after failing to maneuver in time. The frigate suffered massive damage on the starboard side and was later scrapped (AIBN & DAIBN, 2019).

The investigation concluded that the accident was made possible by a number of technical, systemic, organizational, and operational factors. In the summary of Part 1 of the accident report, four factors are mentioned (AIBN & DAIBN, 2019, pp. 6-7):

- Due to shortage of navigators in the navy, the Officer on Watch (OOW) was granted clearance sooner than normal. As a consequence, the OOW had less time and experience than usual. The OOW, since he was the responsible on the bridge, was also then made responsible for training of other crew members. Overall, the AIBN attributes the lack of efficient crew management, human and technical resources, and situational awareness as a factor in this accident.

- The use of forward-pointing deck lights on SOLA TS made it difficult for the bridge team on the frigate to identify the object as a moving ship.
- The Vessel Traffic Service (VTS) lacked sufficient monitoring systems and therefore made it harder to maintain the situational awareness and overview of the area. Because of this, the Fedje VTS did not provide relevant information to Sola TS before departure.
- KNM Helge Ingstad did not use AIS – it was set to passive mode. The frigate did not send signals for immediate identifications. According to AIBN, "None of the involved made sufficient use of available technical aids" (AIBN & DAIBN, 2019, pp. 6-7).

3 Methodology

This chapter contains explanations and reflections on the method used in this dissertation. The chapter will explain how and why the questionnaire was conducted, reflect on questions regarding validity and reliability, explain the sampling process and present analyzing tools and potential errors in this study.

In academic research one usually differentiate the method into qualitative and quantitative methods of research. Before choosing the method of research, it was established what kind of questions needed answering and in what way it would best be answered by the participants (Johansen & Toft Sundbye, 2019). It was found that combination of qualitative and quantitative method was best in order to best answer the thesis. The combination of qualitative and quantitative methods made it possible to include the positive aspects of both methods. The goal was to collect thoughts and meanings from the participants – one of the characteristics of the qualitative method (Grønmo, 2023). By combining open-ended text questions and also gathering statistical data using quantitative methods, the questionnaire was designed in order to establish trends in the group of participants.

3.1 Validity and reliability

The terms *validity* is defined as the accuracy of a measurement in research (Severin & Tankard, 1979, p. 24). The validity is considered high when the data from a survey is relevant and valid in order make assumptions about a hypothesis or phenomenon (Grønmo, Validitet, 2024). According to Severin & Tankard (1979, p. 25), the internal validity of research raises questions on whether the conclusions may be explained only by the research or by other external factors. This in mind, the questionnaire used in this research is designed trying to mitigate external factors from the survey. All questions are asked in order to measure traits, feelings, or level of agreement from the participants.

Reliability of the data is important in research because it explains how consistently the method measures what it is supposed to measure (Middelton, 2019). High reliability in research suggests that the data and research can be reproduced in a new study using the same methods as the original study (Steward, 2024).

3.2 Sampling

In November 2023, Flyoperativt Forum (FOF) hosted a *just culture* seminar. Approximately 180 people attended the seminar, and it was considered beneficial to let all of them be able to answer the questionnaire. Examples of persons attending the seminar are administrative leaders, pilots, drone pilots, air traffic controllers, leaders in the oil, railway, and military industries.

According to the seminar attendance list, a sizable portion had experience from the Norwegian aviation industry. The Norwegian aviation industry employ approximately 14 000 flying personnel and it was concluded that it would be nearly impossible to reach all 14 000 flying personal as one whole population (Solvoll, 2024). The 180 seminar-attendees was considered the *sample frame* of which my questionnaire was done, hoping persons involved with aviation chose to answer (Fox, Hunn, & Mathers, 2007, p. 12). *Sample frame* is used to describe a group of people representing the population (Fox, Hunn, & Mathers, 2007, p. 12). The sampling would be considered *quota sampling*, meaning the questionnaire was sent out to persons with a key characteristic – the attendance of the *just culture* seminar, experience from the aviation industry and safety, and their interests in *just culture* as a phenomenon (Fox, Hunn, & Mathers, 2007, p. 15). The manager of FOF was contacted after the seminar and agreed to forward the questionnaire to all the attendees on January 5th, 2024. In order for most possible participants to complete the questionnaire it was available to complete for 5 weeks until 9th February 2024. Out of the approx. 180 persons receiving it, 33 persons completed the questionnaire (n=33). The percentage of completion was 18.3%. The relatively low percentage of participants may be attributed to the fact that many of the 180 persons in the *sample frame* were involved in other industries than aviation.

By distributing the survey electronically, it was considered that the threshold for responding was lower among the respondents. This is because the survey could be answered on a mobile phone, tablet, or computer without any further effort to submit it afterwards. The current software and technology provide the opportunity for good analysis and presentation of results without having to enter all responses manually. This was judged to reduce analysis errors in post-processing.

3.3 The questionnaire as a method

Conducting a questionnaire is a way of gathering data to do a survey (Fox, Hunn, & Mathers, 2007, p. 6). It consists of questions organized in different forms and in an order chosen by a researcher. The parameters in the questionnaire were decided in order to gather the best data possible related to the thesis, considering the *validity* of the research (Berg, Grønmo, & Tjernhaugen, 2020). The questionnaire used in this study was made using the web-based tool called Nettskjema (Nettskjema.no, 2023). Nettskjema is survey tool made my University of Oslo and is free to use for students at University of Tromsø. The tool was used due to its simple design and good privacy policy in order to maintain the participants anonymity. No questions asked made it possible to identify individuals. The survey done in this dissertation is considered cross-sectional. Cross-sectional surveys are surveys that provide a here-and-now snapshot for a sample group (Fox, Hunn, & Mathers, 2007, p. 6). By doing a cross-section survey, it is possible to track results in time if one is to conduct a similar survey later on.

The questionnaire consisted of 19 questions and was designed to take about 5 minutes to complete. All information and questions in the survey were presented in English due to the overall use of the language in the aviation industry. All participants were informed about consent and the ability to withdraw from participating at any moment (see appendix). The questions were presented in different formats such as open-ended questions, close-ended questions, and partially closed questions. The open-ended questions provided the participants with a textbox for them to freely respond with their own words. Open-ended questions were chosen because it may provide detailed information from the participants (Boussalis, 2012, p. 9). All though these kinds of questions are likely to provide detailed information, according to Boussalis (2012, p. 9) open-ended questions are also more likely to be skipped by participants. This method of presenting questions often requires intensive post-analysis (Boussalis, 2012, p. 9).

The closed-ended questions used were questions that provided one or more answers using ordinal scale (Boussalis, 2012, p. 10). Examples of this may be questions with alternatives in a continuum or rate of agreement (Yes, No, Not sure) (Boussalis, 2012, p. 10). Two of the questions told the participants to rate their value of agreement on statement on a linear scale from 1-9. The scale went from *completely agree* to *completely agree* with several values of agreement in-between. This was done to get an accurate rating of the agreement to statements.

Five of the questions in this survey were questions only shown to participants that answered a specific alternative in the previous question. Example of this was question 6, 7 and 8 regarding trust and handling of reports. When the participants answered "Yes" on the question 6: "Have you filed a safety report on human factors, issues or incidents the last 12 months?" they were presented with additional questions on the trust and handling of the report. If answering "Yes" on the question "Do you trust the organization in regard to handling of your report" one more open-ended textbox was presented for the participants to openly supply more detailed information. By being able to design the questionnaire to be dynamic, it was considered a way to getting as accurate data as possible from the participants.

3.4 Analysis of the data

After the questionnaire was conducted the data was exported from Nettskjema.no as an Excel-file. It was imported into Microsoft Excel and analyzed. The integrated presentation/analysis tool in Nettskjema was also used in order to gain an initial oversight of the data. Some of the questions did not need further analysis because it was included to give demographic information about the participants. Examples of this is age and experience in the Norwegian aviation industry. According to Tjora (2021, p. 216), the goal of analyzing the data is to give the reader enhanced knowledge of the data without needing to read through all of it (Tjora, 2021, p. 216).

Table 1 Color-coding explanation

Color code and letter	**Keywords, descriptions, phrases**
A	Improve, improvement
B	Learning from mistakes, learning
C	No-blame, non-punitive
D	Prevention of incidents and accidents
E	Safety

Some of the questions were open-ended, meaning the participants could answer in text boxes. Questions like this was more time consuming to analyze because it was necessary to translate some answers from Norwegian to English, interpret their answers and use coding

systems to organize the answers. One question asked the participants to, in their own word, describe what keywords comes to mind regarding the term *just culture.* The coding of the open-ended questions was done by reading through their answers, establishing keywords native to the participants' answers. In table 1, *improve, learn from mistakes, no-blame, prevention,* and *safety* is presented. Coding in this way remains the nearness of the data and direct link to the participants' answers (Tjora, 2021, p. 218). The submissions were color coded in a table, making their answers more understandable.

Color coding the open-ended questions gave an oversight on how people subjectively felt and made it possible to categorize the participants feelings and ideas on the topics. Many of the participants did mention more than one keyword, at times making the color coding quite challenging to keep track on. Regardless, the color coding made the results interesting enough that it needs to be discussed later in the dissertation. In hindsight it could have been beneficial to let the participants chose between predefined keywords, making it a little easier to analyze. On the other hand, by doing it in an open-ended textbox actually provided more specific and natural data from the participants (Tjora, 2021, p. 218).

3.5 Errors

In order to mitigate the possible negative impact on validity, it was important to reflect on the types of errors in the sampling process. Considering Boussalis (2012, p. 2), there are four distinct types of errors that needs to be mitigated in order to achieve a valid interference in a survey: *Coverage error*, *sampling error*, *non-response error* and *measurement error* (Boussalis, 2012, p. 2). In a perfect coverage of this survey, all operators in the Norwegian aviation industry would have submitted an answer on the questionnaire. Out of the population of which this research hopes to achieve knowledge (the entire Norwegian aviation industry), only approximately 180 persons was selected to participate due to reduced time and resources. The questionnaire was sent out via e-mail in order for as many as possible to answer. All though it would be optimal for as many participants as possible, Boussalis (2012, p.5) states that the *coverage errors'* - inability for this survey to contact all operators in the Norwegian aviation industry may influence the results. When only asking a small sample of people, it was also important to be aware of the possibility of biases in the results (Boussalis, 2012, p. 7). The persons not included or not responding in this survey might differ substantially from the people included (Boussalis, 2012, p. 7). Examples in this study might be asking the participants

questions regarding the influence of KNM Helge Ingstad court conviction on the *just culture* in aviation industry. Persons not included might answer negatively, but the persons actually participating answered positively. This bias might influence the results.

3.5.1 Confirmation bias

Confirmation bias is a term often used in both research and safety theory regarding aviation and human errors. Conformation bias in human factors theory is often described as a tendency to look for information that confirms one's own perceptions (Martinussen & Hunter, 2018, p. 288). In this master's dissertation, it is important to be aware of the confirmation bias in the data, because of the nature of the thesis - since I have already talked to several people about the topic, and I attended a seminar on *just culture*. My impression was that the operators in the Norwegian industry were worried and afraid of potentially safety culture-consequences and negative trends in the aftermaths of the KNM Helge Ingstad accident. I felt it important that I, through this dissertation, maintained an objective analysis of data and the findings. All though trying to maintain objective, some of the data gathered from the questionnaire needed to be analyzed and may in fact include subjective analysis from my part.

4 Empirical data

4.1 Results

This chapter will present the results from the questionnaire. The questionnaire was sent to approximately 180 participants and 33 participants concluded the questionnaire. That gives the percentage of participants to 18,3% (n=33). Some of the questions are shown only to people answering “Yes” or “No” on previous questions. Table 8, 10, 11 and 15 shows all subjective written answers from my participants, and will be analyzed and categorized in chapter 5.1

Table 2 Age of participants

Age:	**Count**	**Percentage**
20-29	1	3,0 %
30-39	5	15,2 %
40-49	12	36,4 %
50-59	10	30,3 %
60-69	5	15,2 %
70+	0	0,0 %
n=33	33	100,0 %

Table 3 The roles of participants

Roles	**Count**	**Percentage**
Pilots only	10	30,3 %
Admin. functions only	10	30,3 %
Pilot + Admin	9	27,3 %
Others only	4	12,1 %
n=33	33	100,0 %

Table 4 Active years in the Norwegian aviation industry

Years of experience	**Count**	**Percentage**
<5	3	9,1 %
5-10	2	6,1 %
11-15	5	15,2 %
16-20	5	15,2 %
21-25	5	15,2 %
26-30	5	15,2 %
31-35	5	15,2 %
36-40	3	9,1 %
n=33	33	100,0 %

Table 5 Knowledge of procedures in handling of safety reports

	Count	**Percentage**
Yes	33	100,0 %
No	0	0,0 %
Not sure	0	0,0 %
n=33	33	100,0 %

Table 6 Have you filed a report?

	Count	**Percentage**
Yes	19	57,6 %
No	14	42,4 %
n=33	33	100,0 %

Table 7 The trust towards organizational handling of reports

Only shown to participants Answering “YES” in table 6	**Count**	**Percentage**
Yes	14	73,7 %
No	1	5,3 %
Not sure	4	21,0 %
n=19	19	100,0 %

Table 8 How the safety reports was handled by the organization

Please explain, if you know, how your safety report was dealt with (n=7)
Reports are seen to be improve not punish
Read, risk assessed, implemented, and feedbacked to the community
It was sent to CAA and was dealt with by the responsible in the company
The report was handled by the Compliance Monitoring Manager/Safety Manager (CMM/SM) of the company, according to the procedures described in our Management System Manual (MSM). This procedure involved a root cause analysis performed by the manager(s) responsible for the relevant department(s). This analysis leads to one or more corrective/mitigating measures being taken. The finalized report is anonymized (though that is extremely hard to do in a small organization) and published for all employees to study and learn from.
It was handled according to internal procedures, and I got a response of the result.
A phone call to get further details, and then the report was added to the statistics
The report issued were managed by different experts depending on the issue at hand, then the management of the report was evaluated by personnell responsible for safety management

Table 9 Are you afraid of consequences when filing or consider filing a safety report?

	Count	**Percentage**
Yes	4	12,1 %
No	21	63,6 %
Sometimes	8	24,2 %
n=33	33	100,0 %

Table 10 Concerns when considering filing a report

Cause for concern regarding filing report (n= 9)
"Can make damage to the company or operations"
"Reporting an incident is not popular"
"It seems to me that the threshold of regarding" the cause" of an incident or an accident to be" incorrect human behavior" has been significantly lowered in recent years. Even though safety experts and professionals advocate more and more for systemic approach, organizations and the society in practice want to appoint blame to individuals. For me as an operator this is very concerning and makes me question if I should report incidents which could lead to scrutiny of my actions."
"Norwegian Aviation Law §6-11 equates tiredness and fatigue with intoxication. The penalty is the same. With the current FTL, it is difficult to set personal limits as to levels of tiredness"
"We have proof that the employer has taken negative action based on reports"
"Because the safety report may be used at a witness report if someone outside of the organization files a lawsuit, I never write anything other than describing information. Never admit doing anything wrong ore blaming other. Just describe what happened."
"If the occurrence that led to a report was due to own mistakes it can be quite uncomfortable to report. In this case you are placing all your trust in your employers correct handling of the report according to just culture."
"Could this report be self-incriminating, i.e. could the information be used against me later?"
"Outing colleagues that did not perform as they should have.?"

Table 11 Participants keywords on just culture

Keywords regarding the term *just culture* (n=30)
Non punitive, intended for learning
Improve not punish.
A fair handling of my case. I know that it is not a no-blame culture, and that I will have to answer for willful violations or misconduct.
Learning by other mistakes
Learn from mistakes without fear of consequences
Learning, justice, improving, honesty
Realization of risk, human factors, lack of barriers, this is how we do things around here, responsibility, leadership.
Improved safety, Trust in reporting and learning, The hunt for learning trumps the hunt for scapegoats
Just Culture is the cornerstone of reliable safety data. Keywords: confidentiality, learning-focused, non-punitive, encouraging, openness.
Learning by mistakes, prevent major accidents, sharing is caring
Learning is more important than penalties and punishment.
Læring, sikkerhet, ikke-straff, erfaringsdeling
No penalty for reporting as long as the error is not deliberate
Evaluation, retraining, improvement, reflection, organization,
Problem focused, not person focused
To me, a just culture is a company culture where you are not punished for slips, lapses, or mistakes (though willful violations should still be eligible for punishment). Instead, it is accepted that errors are a normal part of the human condition. Resources are directed towards finding the root cause(s) of

the error and addressing these. In most cases that I have been involved in, one or more organizational factors are the real reason(s) that the error has occurred.
Safety
First point the blame where the blame belongs (System or organizational) Second, we learn from honest mistakes, and we are vocal about our shortcomings
Honest describing of facts. Internal information. Learning is the intention.
No blame culture.
Just Culture is the "key factor" for improving safety. To file a report should not be considered as something negative, it is the most important tool for safety improvement. Most of the times when weak spots are detected it is a "system-error", Just Culture comes from the TOP and DOWN.
Trust
Fairness, non-punitive for mistakes but consequences for gross negligence or willful sabotage, focus on organizational factors
Just, Learning, Reporting and flexible
An open culture where reporting is done in good faith without fear of consequences.
Human failures are tolerated, but not gross neglect or willful errors.
Protection, trust, and responsibility
Transparency, openness, and safety.
Learning, honesty, responsibility.
Sharp end

Table 12 The feeling that Norwegian aviation industry is considered a just culture

	Count	**Percentage**
Yes	25	75,8 %
No	3	9,1 %
Not sure	5	15,2 %
n=33	33	100,0 %

Table 13 Participants' observations of just culture in the organizations

	Count	**Percentage**
Yes	26	78,8 %
No	3	9,1 %
Not sure	4	12,1 %
n=33	33	100,0 %

.

Table 14 Knowledge of the accident between KNM Helge Ingstad and Sola TS

	Count	**Percentage**
Yes	33	100,0 %
No	0	0,0 %
n=33	33	100,0 %

Table 15 Participants' thoughts on the KNM Helge Ingstad court case

What are your thoughts on the court case against the Officer on Watch on KNM Helge Ingstad in regards to just culture? (n=29)
Exceptionally interesting
Too many errors in the system which lead to punish on person
I strongly disagree with the outcome. Especially since the case highlighted a complex chain of events and latent issues
Scary due to which consequences this could have on willingness to report
Very bad signal effect for prosecuting one person for failure in the system
Just culture have and are still being practiced in the Royal Norwegian Navy in this case as the officer have had the leaders in his back the whole time, and the Norwegian Armed Forces have never blamed him in any way. The Public prosecutor's offices however don't consider this, and Just Culture will not protect anyone outside the organization in any way.
Very concerned that the bad apple theory will ruin what they are trying to do something about – fixing their safety culture. It's meaningless to prosecute a single person in a complex systemic accident. And no one even got seriously hurt!

1) He should never have been brought to the court 2) He has been made a scapegoat of systemic failures 3) The public prosecutor should not have pressed charges - and has poor knowledge of human limitations and knowledge from the safety area4) The court had no/poor knowledge of human limitations and knowledge from the safety area 5) He should have been acquitted
I think the prosecutor (and the court) took us back some 20+ years in time in regards to safety culture. The verdict and he prosecutors' public announcements/comments in media clearly show that the prosecutor (and/or the judiciary) lack relevant knowledge and understanding of how safety critical systems work. For me it is beyond comprehension that the systemic view was completely discarded, and an individual got prosecuted and sentenced in a case where it is clear that multiple mistakes happened along the line in multiple organizations/units. This devastates me as an operator and makes me question the competence and trustworthiness of both the prosecutor and the courts. I just simply cannot understand how this was possible and how the prosecutor showed no interest in the benefit of the public. This will without question worsen the safety level in safety critical Norwegian branches by making operators worry about the repercussions of reporting and making mistakes.
Damaging to the trust needed in just culture
Outrageous and very detrimental to just culture
It shows that the term just culture is not implemented as a term in maritime operations such as in the aviation sector. It also shows that there is a "upper limit" to what is considered neglect.
Though. Especially given the openness of the Watch Officer on the KNM Helge Ingstad versus the closeness of the Captain on the other ship. Also, difficult that the Sjøforsværet did not support their Watch Officer better.
It is horrible - clearly systematic fault in the military
It makes it harder for operators to develop and maintain a just culture.

From my personal perspective, as well as from an aviation perspective, this court case has been preposterous and a large step in the wrong direction. What has been done her is exactly the opposite of what we are trying to achieve within the aviation business. It would appear like a major purpose of the Ingstad case was to find a scapegoat. From what I have heard, many other chiefs of the watch could have made the same mistakes as this individual. Therefore, in my view, it would have been much more constructive to look for organizational, cultural and/or procedural errors instead of trying to pin so much on an unfortunate individual.
I have to read the result before I can say anything about the outcome. I think that all aviators, both management and pilots must know that we all are members of our society, and that the prosecution will look into what happened if the society is touched by our action.
It takes the safety reporting and acting back to the old days when you could face serious consequences when reporting occurrences. It jeopardizes the openness and willingness to report occurrences.
It is the system that should have been tried, not the officer. Safety work is set back 30 years, and might result in another incident because the system is not corrected.
Wrong to put the blame on one person when an entire organization failed.
I am not familiar with all the details of the incident or the court verdict, but I find it scary that the court verdict goes this far in placing blame on a single individual for errors that I'm sure can also be attributed to inadequate organizational factors. The verdict certainly does not seem to comply with just culture as we understand it in aviation, where the bar for punishment for errors is quite high. As I understand it the official accident report also focuses on a long chain of errors and organizational factors, and does not single out any one member of the crew, as this court case has done. It seems there is a mismatch between punishment within just culture and within the legal framework that is used in this case.
To little focus on the safety systems in the Norwegian Army as an underlying cause. The same weakness could also be found in the Norwegian Air Force. Referring to the Mosken-accident.
Very bad understanding of the term just culture

Really, REALLY unfair. He made some mistakes, but they were understandable and part of a chain of events ("Swiss cheese"), i.e. no gross negligence. Other principal participants should bear responsibility as well. This case on its own, let alone the verdict, will reverse years of safety work both in aviation and in the maritime sector. It is impossible to overstate how serious these consequences will be.
A disaster for safety! I will be very reluctant giving details or elaborate on my thoughts in my report and interviews if I believe it will go further than my company
It is a tragedy that one person is made responsible for an accident like this.
Unfortunate that the blame is put solely one person.
In my opinion (I know the case from media only), there were several mistakes made, from both of the involved vessels. I feel the officer in charge on the bridge at the time made some mistakes, but I from what I've read, I feel that the mistakes should have been anticipated and that the shortcomings of the training were an acceptable risk by the navy, given the training he had received and the procedures they had in place. The officer made mistakes, but it seems to me the accepted risk level corresponding to his level of training and experience included the possibility for mistakes like this. I feel a single person have been charged for risk accepted by the organization

Table 16 The contribution of reporting in just culture

Scale	**Count**	**Percentage**
Completely disagree - 1	0	0,0 %
2	0	0,0 %
3	1	3,0 %
4	0	0,0 %
Neutral -5	1	3,0 %
6	1	3,0 %
7	4	12,1 %
8	9	27,3 %
Completely agree - 9	17	51,5 %
n=33	33	100,0 %

Table 17 Fear of repercussions when filing a report

Scale	**Count**	**Percentage**
Completely disagree - 1	9	27,3 %
2	9	27,3 %
3	2	6,1 %
4	1	3,0 %
Neutral - 5	5	15,2 %
6	2	6,1 %
7	4	12,1 %
8	1	3,0 %
Completely agree - 9	0	0,0 %
n=33	33	100,0 %

Table 18 The court conviction's influence on just culture in Norwegian aviation

	Count	**Percentage**
Yes	27	81,8 %
No	4	12,1 %
Not sure	2	6,1 %
n=33	33	100,0 %

Table 19 Negative, positive, or neutral influence on just culture in the Norwegian aviation industry

	Count	**Percentage**
Positively	0	0,0 %
Negatively	27	87,1 %
Neutral	4	12,9 %
Not sure	0	0,0 %
n=31	31	100,0 %

5 Discussion and analysis

This chapter will contain analysis of the most relevant data and will discuss the implication on the perspective of *just culture* in the Norwegian aviation industry. The source of data gathered in this study is the questionnaire sent out to the 33 participants (Hjemmen, 2024).

5.1 Analysis of the data

5.1.1 Years of experience

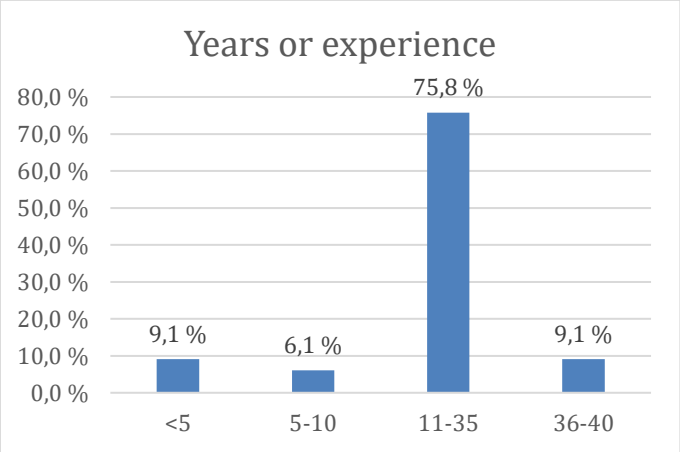

Figure 1 Analysis - Years of experience

Due to the fact that the questionnaire did not give the participants the option of stating their own specific experience, it was logic to compress all 8 options into blocks of 4 for visual representation. The options to choose from was made in increments seen in table 3, chapter 4.1. Figure 1 shows that 75.8% of participants has experience between 11-35 years. It seems to be no correlation between the years of experience and feelings towards *just culture*.

5.1.2 Roles in aviation

The roles of participants in the aviation industry was an interesting parameter to study. It was interesting because it would highlight the potential differences within the Norwegian aviation industry. The participants could choose between 5 categories. Since none of the participants had roles as *mechanics* or *student*, it is not included in figure 2. 57,6% of all participants had a role as a pilot and/or pilot with administrative tasks. 30,3% of the participants have administrative functions only. Examples of

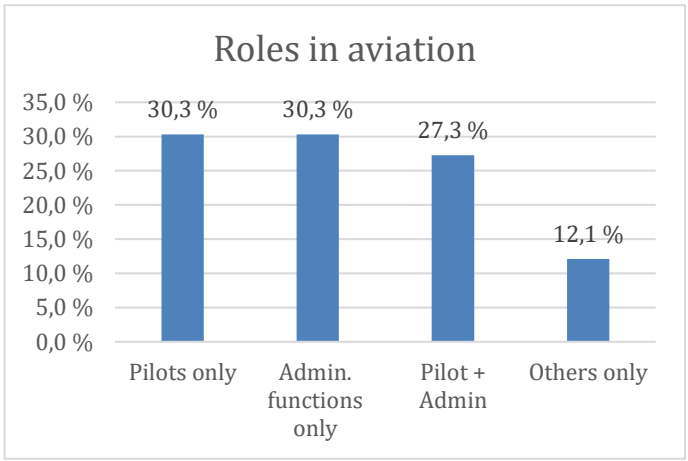

Figure 2 Analysis - Participants role in Norwegian aviation

the roles categorized in the section *other* (12,1%) are air traffic controller and persons working in the Civil Aviation Authority Norway.

5.1.3 Filing a report and the fear of consequences

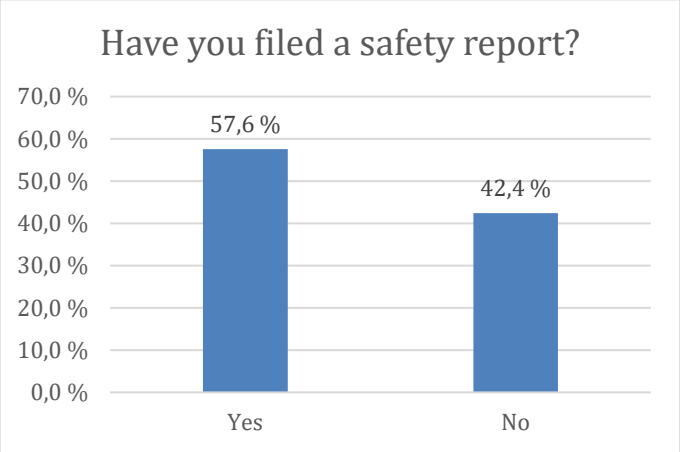

Figure 3 Analysis - Have you filed a report?

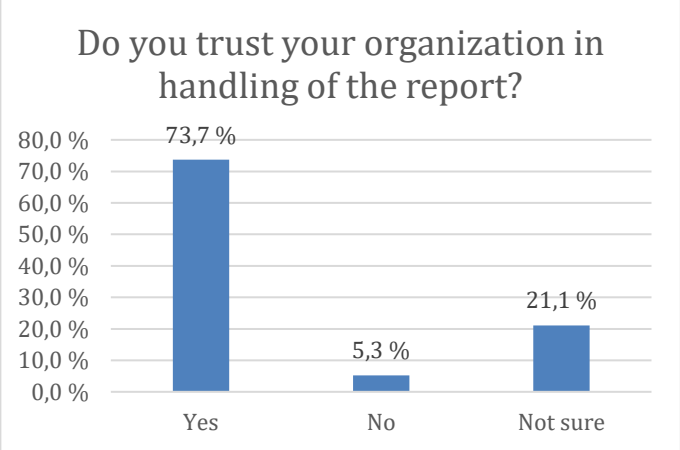

Figure 4 Analysis - Trust in organization on handling reports

Table 6, 7 and 8 are related to each other. The questions on *have you filed a report (*figure 3*)*, was asked in order to differentiate between those who had and had not filed a report. The participants who answered that they had filed a report, was presented with questions meant to investigate further their trust towards how their reports was handled. The next question was therefore *Do you trust the organization in regards to handling of your report?* Out of the participants that had filed a report, 73,7% had trust in the organization and 26,3% was not sure or did not trust their organization in the handling of reports. The persons being *not sure* would give little to none influence on the result, therefore only the persons stating "*Yes"* or "*No"* on trust would have the opportunity to explain how their report was dealt with. Unfortunately, the one person answering "No" did not elaborate, but a sample of the elaborations are presented underneath (Hjemmen, 2024):

> *"It was handled according to internal procedures, and I got a response of the result"* - Participant nr. 30111479, Safety and Compliance Manager

> *"Reports are seen to be improve not punish"* - Participant nr. 30097567, Pilot and flight operation manager

The quotes above are directly taken from the open-ended question regarding how their report was dealt with. The quotes will be discussed in later in the chapter.

Regarding question on fear of consequences when filing or considering filing a report, figure 5 shows that 63,6% of the participants have no fear of the consequences, while 12,1% of the participants are afraid of consequences. 36,3% of the participants answered *yes* or *sometimes*, giving 12 persons an option to explain why they experience a fear of consequences. While analyzing the data, it could perhaps have been beneficial to ask the persons answering *no* to elaborate further why they were not afraid in order to establish a pattern on both negative and positive sides.

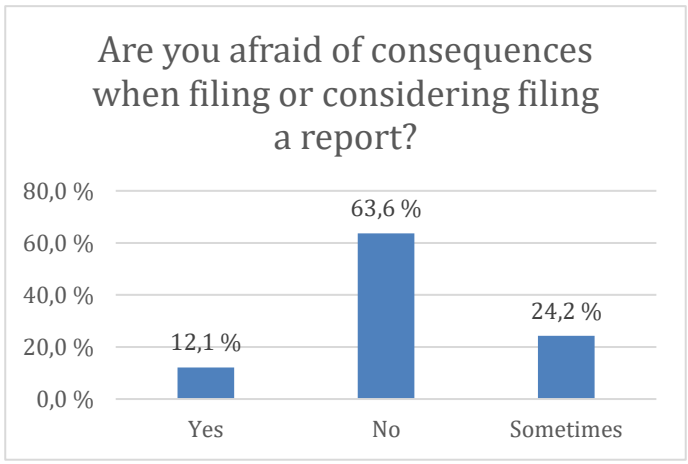

Figure 5 Analysis - Fear of consequences when filing report

When the participants were asked to state their cause of concern regarding filing a report, 9 out of the 12 people presented with the textbox chose to elaborate. A sample of their answers are presented here and will be discussed in chapter 5.2 (Hjemmen, 2024):

> *"We have proof that the employer has taken negative action based on reports"* - Participant nr 30111088, senior operational management

> *"Because the safety report may be used at a witness report if someone outside of the organization files a lawsuit, I never write anything other than describing information. Never admit doing anything wrong ore blaming other. Just describe what happened"* - Participant nr. 30111347, commercial pilot and regulator in military aviation

> *"Could this report be self-incriminating, i.e. could the information be used against me later?"* - Participant nr. 30120134, Pilot and safety manager

5.1.4 *Just culture* - a quite wide phenomena?

Figure 6 shows the completed color-coding scheme of the keywords on the term *just culture*. All data is presented in table 11. 40% of the participants used the word *improve* to describe their meaning of the term *just culture.* 56,7% of all the participants used *learn from mistake* in some sort of way in their description. 33.3% of the participants stated that *no-blame* or *non-punity* comes in mind when talking about *just culture*. *Prevention* was only mentioned by 10% and *safety* by 20% of the participants. The keywords for the coding were chosen from their open-ended text answers in order to remain a direct link to the participants' answers (Tjora, 2021, p. 218). It is interesting to note that 56,7% (n=17) of all the participants mentioned more than one of the keywords. The results of color-coding the data indicate that the keywords used might in fact be a commonly agreed way of defining the *just culture* term from the participants' point of view. The Civil Aviation Authority Norway seems to highlight the same keywords as the participants, using terms such as *improve, trust and non-blame* (Civil Aviation Authority Norway, 2024).

Participants (N-=30)	Improve	Learn from mistakes	No-blame/punity	Prevention	Safety
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					TRUST
23					
24					
25					
26					
27					TRUST
28					
29					
30					

Figure 6 Analysis - Keywords on just culture color-coded

5.1.5 Is the Norwegian aviation industry *just*?

Most of the participants (75,8%) considered the Norwegian aviation industry to be a *just culture* as seen in the figure below. There seem to be a correlation between the answers on *just culture* in the Norwegian aviation industry (figure 7) and the subjectively observed principles of *just culture* seen by the participants in their organization (figure 8). This might suggest that most of the participants actually feels that the *just culture* principles are present in the Norwegian aviation industry in a high degree.

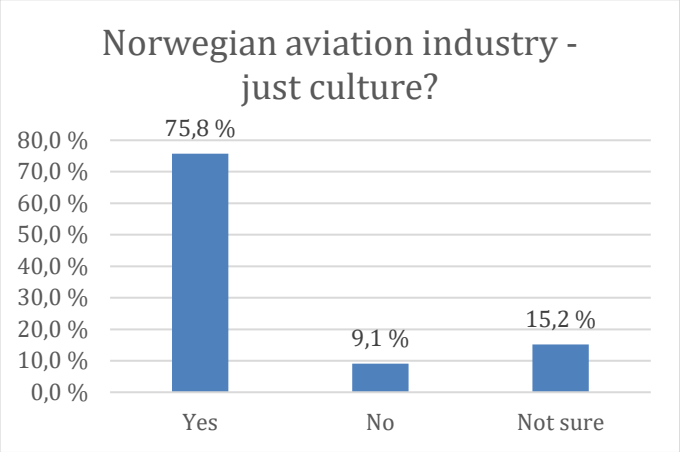

Figure 7 Analysis - Norwegian aviation a just culture?

2 out of the 3 participants answering *no* when asked if the Norwegian aviation industry is a *just culture* (figure 7) also stated that they did not observe these principles in their organization (figure 8). This might show that there is a relation between the subjective observation of *just culture* in the industry in general and in the organizations.

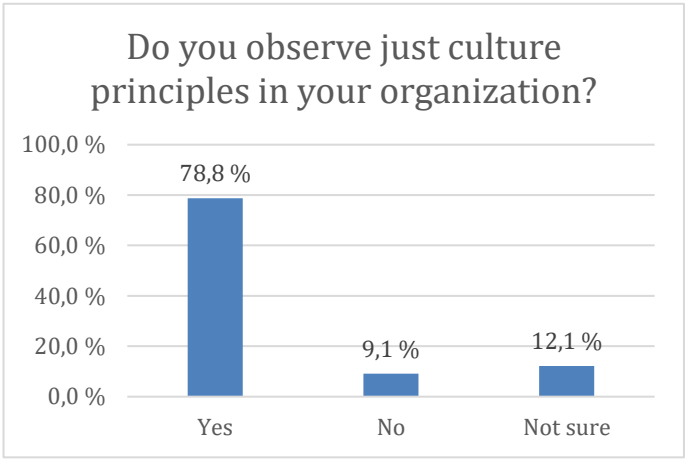

Figure 8 Analysis - Observed just culture in organizations

5.1.6 Reporting - a *just culture?*

The participants were asked in what degree the reporting culture contributes to a *just culture* in the Norwegian aviation industry. Figure 9 shows that over half of the participants reported that they are completely agree on this fact with an average of M=8.09 (SD=1.35), showing smaller dispersion in the answers compared to figure 10. According to both Pellegrino (2019, p 13) and CAA Norway (2024), the reporting of incidents is crucial in order to maintain *just culture* principles in aviation.

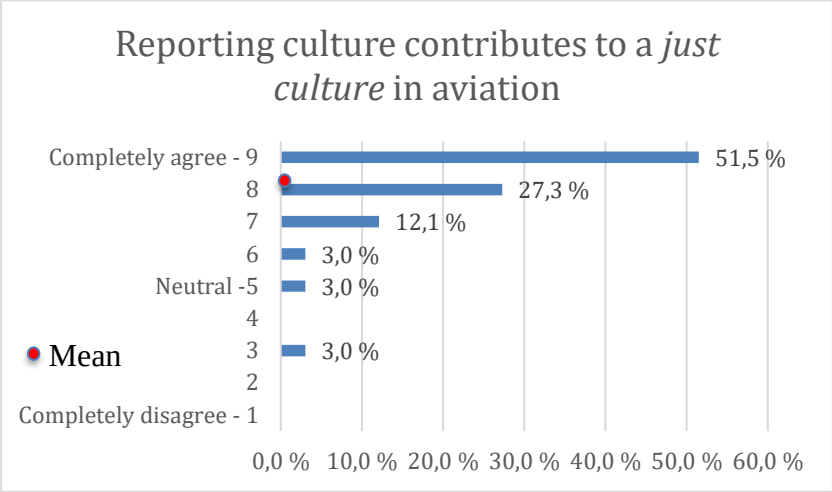

Figure 9 Analysis - Reporting culture in just culture (1-9)

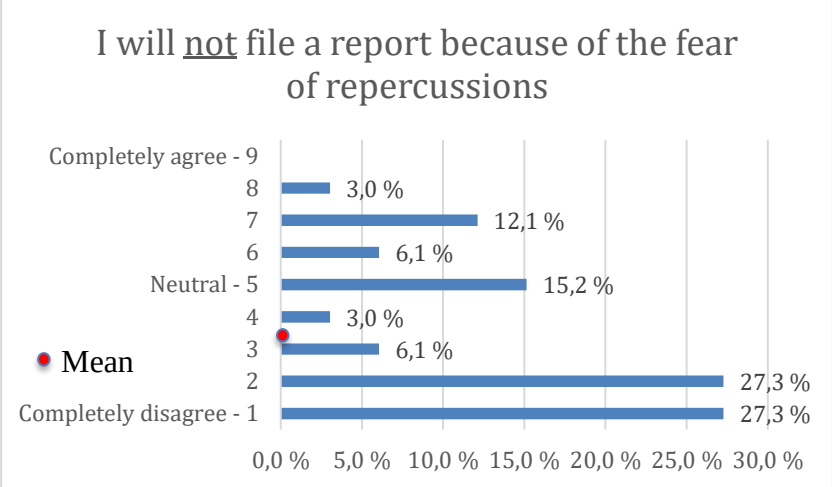

Figure 10 Analysis - Fear of consequences (1-9)

When asked if the participants will refrain from reporting because of the fear of repercussions, the answers are distributed (SD=2.3) all the way from *strongly agree* to *completely disagree* around the average of M=3.33. 54,6% of the participants answers that they would submit reports without the fear of consequences and with the assumption that the safety management works.

5.1.7 KNM Helge Ingstad/Sola TS accident – an attack against a just culture?

All participants (n=33) have knowledge of the accident between KNM Helge Ingstad and Sola TS. In order to investigate how this accident might influence the aviation industry in Norway, all participants (because they answered *yes*) was asked to freely present some of their thoughts on the conviction of OOW on KNM Helge Ingstad. 29 out of the 33 participants chose to convey they thoughts. A sample of the statements from the participants will be presented in the analysis, but all the data is shown in table 15 in chapter 4.1.

Participant nr. 30098438, working in flight safety states (Hjemmen, 2024):

> "*Just culture have and are still being practiced in the Royal Norwegian Navy in this case as the officer have had the leaders in his back the whole time, and the Norwegian Armed Forces have never blamed him in any way. The Public prosecutor's offices however don't consider this, and Just Culture will not protect anyone outside the organization in any way*"

Participant nr. 30120134, pilot states (Hjemmen, 2024):

> "*Really, REALLY unfair. He made some mistakes, but they were understandable and part of a chain of events (""Swiss cheese""), i.e. no gross negligence. Other principal participants should bear responsibility as well. This case on its own, let alone the verdict, will reverse years of safety work both in aviation and in the maritime sector. It is impossible to overstate how serious these consequences will be*"

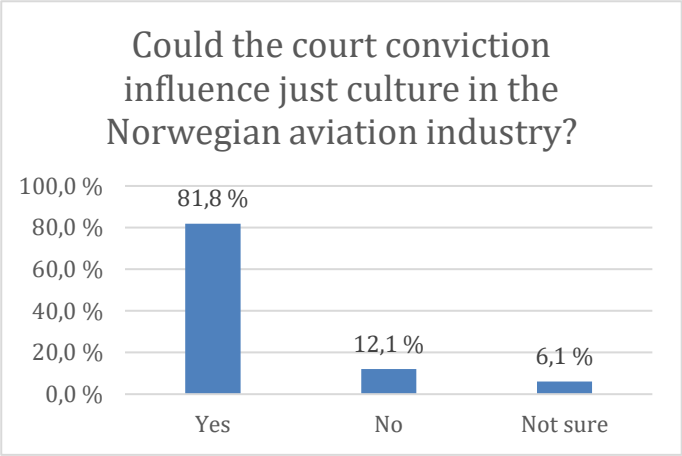

Figure 11 Analysis - Court conviction on just culture

81,8% of all participants felt that the court conviction against the OOW on KNM Helge Ingstad would influence the *just culture* in the Norwegian aviation industry. All though the court case convicted an operator in the naval military, the data might show that a substantial portion of the participants feels that it might blur into other industries such as aviation.

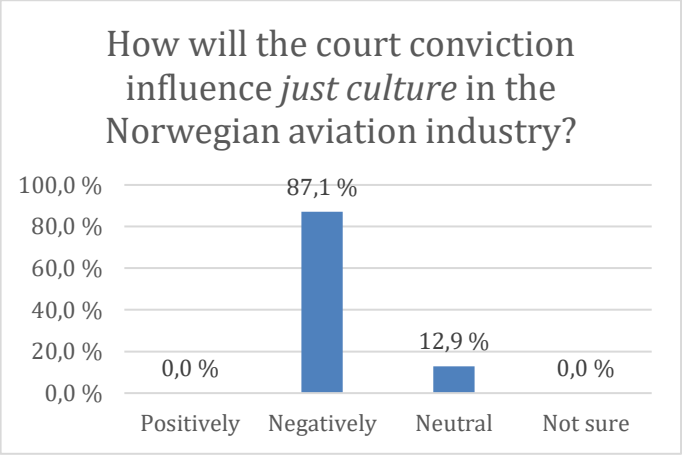

Figure 12 Analysis - Influence of court conviction on just culture

It is an interesting fact that while most participants answered that the court conviction in the KNM Helge Ingstad/Sola TS accident could influence other industries, there seem to be a general feeling that it would not influence positively in any way. 87,1% of the participants stated that it would influence the *just culture* negatively.

5.2 Discussion

The thesis this study hope to answer is

How is the just culture in the Norwegian aviation industry influenced by the Norwegian court conviction against a single operator on the bridge of KNM Helge Ingstad?

This chapter will discuss the data using the theories on safety and *just culture* in order to try answering the thesis. Conclusions will be presented in chapter 6.

5.2.1 Reporting culture and the fear of consequences

When approaching the complex systems of accidents and incidents in the aviation industry, The Convention on International Civil Aviation, Annex 13: Aircraft Accidents and Incident Investigations uses non-blame and non-liability to describe the objective of investigations an accidents or incidents (ICAO, 2019, p. 9). In order for CAA Norway to be able to investigate incidents and errors made by operators, it is of utter importance that operators submit reports, but also without being afraid of getting blamed or face negatively consequences (Civil Aviation Authority Norway, 2024). 63,6% of the participants in this study stated that they are not afraid of consequences when filing or considering filing a report. When asked how reports was handled in their organization, 7 people chose to elaborate A participant, a safety and compliance manager with 10-15 years of experience stated:

> *"It was handled according to internal procedures, and I got a response of the result"*

Another, a pilot, and flight operation manager with 20-25 years of experience wrote:

> *"Reports are seen to be improve not punish"*

The answers show that the participants knew how the handling of their report was done, showing signs of transparency and trust in their organization. According to both CAA Norway (2024) and Pelligrino (2019, p.13), trust and transparency should be present in a *just* culture-environment. It is important to mention that both participants also states that they do observe the *just culture*-principles in their organization. This might indicate that the participants' organization and/or the aviation industry experiences the principles of *just culture*. By only

getting the elaboration of 7 people, it might have been beneficial to focus on greater detail around this topic for the results to be conclusive.

9 out of 12 participants (36,6%) was not sure or was actually afraid of the consequences. The safety-II way of approaching the report culture - being proactive and focus on resistance to errors (Hollnagel, Leonhardt, Licu, & Shorrock, 2013, p. 3), might suggest that if operators in the Norwegian industry may choose to refrain from reporting issues it would be harder for the organizations and the authority to investigate and uncover frequent issues considering the safety. One participant, a senior operational manager with 36-40 years of experience stated (Hjemmen, 2024):

> *"We have proof that the employer has taken negative action based on reports"*

Whether the stated 'proof' refers to the participants' own organization is not known, but the same person observed the Norwegian aviation industry to actually be *just.* The same participant did not observe principles of *just culture* in the organization. This might indicate that this participant subjectively feel that the organizational environment is not considered as *just* as it should. When operators' experiences fear and/or lack of thrust in regards to filing reports, Pellegrino (2019, p.69) highlights this as a troubling factor in the enhancement of safety in operations, thus influencing the overall safety in the organization.

Another participant, a commercial pilot and regulator in the military aviation with 36-40 years of experience stated (Hjemmen, 2024):

> *"Because the safety report may be used at a witness report if someone outside of the organization files a lawsuit, I never write anything other than describing information. Never admit doing anything wrong or blaming other. Just describe what happened"*

If the statement above is actually the case, operators might in fact have to think about what, if, and how to report safety-related issues. The operators might choose to omit information out of fear, contributing negatively to the safety environment of the industry. This again might be damaging, because reports must be in order to actually investigate or improve safety (Civil Aviation Authority Norway, 2024). In the case of KNM Helge Ingstad and the conviction of the Officer on Watch, it might seem that the Norwegian court in many ways convict on the basis of *gross negligence*. Gross negligence is mentioned both by Eurocontrol (2018, p. 5) and

IMO (2008, p. 16) as a deviation from the rule of no-blame and no-punish. The Norwegian court also stated that the most important think was to convict *someone*, not the length or severity of the conviction (Kaalaas, 2023).

A third participant, a pilot with 20-25 years of experience stated:

> *"Could this report be self-incriminating, i.e. could the information be used against me later?"*

The statement might highlight the importance of trust and transparency as important factors, giving operators the feeling that they are able to report issues without getting blamed. Dekker (2011, pp. 122-123) highlights the response to criminalization being that sharp-end crew might become better in hiding errors and omitting to report. This, according to both Pellegrino (2019, p. 46) and CAA Norway (2024), might in fact reduce the principles of *just culture* to a state that most operators might not want. Also, considering the paradigm of Safety-II, one works towards making as much go right (Hollnagel, 2013, p. 5). For this to be done, errors and issues must be reported.

5.2.2 Just culture

Just culture as a characteristic of the aviation industry is considered one of the key factors when working towards enhancing and/or maintaining the safety of operations (Civil Aviation Authority Norway, 2024). The term is not entirely defined, making it sometimes difficult to fully understand *how* and *when* your culture is considered *just.* Pellegrino (2019, p. 13), CAA Norway (2024) and Council of the European Union (2003, p.2) all agree on some main properties that should be present when taking about *just culture*. Trust, transparency regarding safety in the organization, reporting of safety-related incidents and the organizational willingness to share information are some key features that are mentioned.

The participants in this study seemed to agree with Pellegrino, CAA Norway, and The Council of the European Union when it comes to defining of the term *just culture*. All though not all of the participants used the same keywords as researchers or authority, *improve, learn from mistakes, no-blame, prevention,* and *safety* were used by the most of the participants, indicating that the operators in the Norwegian industry have a reasonable knowledge of the term and phenomenon. When most of the participants agree on the definitions, it may also

indicate that they are capable of actually identifying the *just culture* characteristics, both in the industry and their organizations. This was in some ways expected, since the participants had attended a *just culture*-seminar about 2 months in advance. It did, however, present a unique possibility for the study: Participants with recently 'new' knowledge of *just culture* and that they were willing to participate in this study.

3 out of 33 participants (≈ 9%) did not characterize the Norwegian aviation industry as a *just culture*. One of these 3 participants answered in a way not initially logic, stating that the Norwegian aviation industry is NOT *just,* but observes the principles in his/her organization. This might indicate some ambivalence in the participants' subjective feeling of *just culture*. Does this participant in fact suggest that his/her organization exhibit more *just culture* than the industry as a whole? With only 3 participants in this study answering that the Norwegian aviation industry is not *just*, it is safe you assume that the greatest part of the industry might experience the same.

5.2.3 Importance and willingness to reporting

All 33 participants were asked to convey their thoughts on the conviction against the officer on watch on KNM Helge Ingstad. 30 out of 33 chose to elaborate. 21 out of the 33 participants in this study either operate airplanes or work as Air Traffic Controllers (ATC), thus being in the so-called sharp-end of aviation. The participants agree on the fact that the court conviction against the OOW on KNM Helge Ingstad is interesting, scary and in fact damaging in such ways that one might assume people will think twice before actually reporting. It seems all participants also agree that the accident was a product of a systemic failure, and that one person is not to blame.

Even though it seems, in their open-ended text questions, that the court conviction might negatively impact the *just culture* and reporting culture, the participants still find reporting issues and errors important in a *just culture*. On a scale from 1-9, *compleyely agree* to *completely disagree*, with a mean value of M=8,09, it shows that the participants attribute great value to the reporting in the *just culture.* Over 50% of the participants also states that they will report issues with no fear of repercussions. This too is highlights by Pellegrino (2019) and CAA Norway (2024), stating reporting-culture as one of the most important factors in *just culture*. All though most participants see the importance of reports, it is interesting to note that almost

1/3 of the participants either feels they have to report anonymously or report with consequences of some sort of blame. In cases like this, one might assume that not all incidents will be reported – safety-related issues will not be investigated in as high degree as wanted. This might make it harder for the organizations and/or the industry to establish safety-related patterns which might need to be mitigated – thus might make it harder to enhance the safety (Pellegrino, 2019, p. 13). This though, cannot be directly attributed to the court conviction, because this might already have been the participants' feelings all along.

5.2.4 KNM Helge Ingstad and just culture

The accident involving KNM Helge Ingstad and Sola TS and the court case against the OOW on the bridge of the frigate was widely covered by media. All participants in this study have heard of the accidents. They were asked whether the conviction of the OOW would influence the *just culture* in the Norwegian aviation industry and, if so, in what way.

Over 80% of the participants stated that they feel the conviction could damage the *just culture* in the Norwegian aviation industry. When asked what kind of way the *just culture* in aviation would be influenced, 87,1% of the participants stated that the court conviction would influence negatively to *just culture* in the aviation industry. This seem to contradict the participants' feelings of fear towards consequences of reporting. This would be interesting to study further again in the future to see if this changes over time.

In an article by Salomon and Relles (2011, p. 424), they argue that there seem to be an increasing criminalization of operators after aviation disasters. They also highlight safety issues regarding closing of scenes in order for the criminal investigators to gather evidence. Participant nr. 30098438, 30-39-year-old working in flight safety for 5 years states (Hjemmen, 2024):

> "*Just culture have and are still being practiced in the Royal Norwegian Navy in this case as the officer have had the leaders in his back the whole time, and the Norwegian Armed Forces have never blamed him in any way. The Public prosecutor's offices however don't consider this, and Just Culture will not protect anyone outside the organization in any way*"

Indicating intimate knowledge of the court case, it seems this participant acknowledges that while the Norwegian Navy exhibits principles of *just culture*, the *just culture does* not protect anyone outside the organization. If this is true, one might think that operators might not actually know for sure where *crime vs. error* -line goes, in some ways concluded by Dekker (2011). Dekker (2011, p. 122) argues that due to the non-binary definition of "criminal", the room for critical thinking and knowledge of the social causes blur.

Participant nr. 30120134, 40–49-year-old pilot with 20-25 years of experience states (Hjemmen, 2024):

> "*Really, REALLY unfair. He made some mistakes, but they were understandable and part of a chain of events (""Swiss cheese""), i.e. no gross negligence. Other principal participants should bear responsibility as well. This case on its own, let alone the verdict, will reverse years of safety work both in aviation and in the maritime sector. It is impossible to overstate how serious these consequences will be*"

Unlike participant nr. 30098438, the participant above makes statements regarding *gross negligence* and the chain of events leading up to the accidents. The way the participant explains his/her meaning regarding the accident might indicate that the sharp-end operator understand the principles of events and that errors might occur in a stressful or when situational awareness is challenged. The participant also is in strong belief that this accident will reverse years of work in safety for the aviation and maritime industry. The safety-II-paradigm suggests that being proactive in the meeting with safety related issues, one might mitigate incidents and accidents by feedback and quality of training – thus closing the different layers of the mentioned Swiss Cheese-model (Hollnagel, 2013, p. 13).

6 Conclusion: A step back on safety?

This study is meant to investigate how a conviction of an operator in the Norwegian navy influences the *just culture* in the Norwegian aviation industry. The term *just culture* can be difficult to directly measure in numbers, but results from a questionnaire reveals some influencing factors that the participants seem to agree on. Trust, no-blame culture, reporting culture and transparency is often used to describe a *just culture* in the aviation industry (Pellegrino, 2019, pp. 13, 45). Sutcliffe (2011, p.134) argues that the aviation industry is considered one of the industries which over the years have exhibited most of the *just culture* principles and by doing so have become one of the safest High Reliability Organizations.

By receiving data from 33 participants including administrative managers, ATC, and pilots, it is fair to say that even though some of the participants actually experiences fear of reporting safety-related issues to their organization or the authority, the majority seem to understand that these reports are important in the safety work in aviation, regardless of the court conviction or not. ¾ of the participants stated that the Norwegian aviation industry is considered a *just culture*, with even more of the participants experiencing this in their own organization. This might indicate that even though court convictions like the one regarding the KNM Helge Ingstad-accident might damage the general principles of *just culture*, the aviation industry seem to stay *just* and transparent.

However, it seems that the accident between KNM Helge Ingstad and Sola TS triggers feelings of unfairness and fear with some of participants, stating that the *just culture* does not protect outside of organizations. Some of the participants actually questions whether they would report discrepancies or not, which might damage some of the core principles of *just culture.* It seems most of the participants indicate towards a damaging of *just culture* as a principle, and not directly the *just culture* in the Norwegian aviation industry. All though 87,1% of the participants in this study agree that the court conviction could influence the *just culture* in the Norwegian aviation industry negatively, most of results of this study indicate otherwise. The Norwegian aviation industry seem resilient to convictions like this, with a few people feeling otherwise.

6.1 Limitations and future research on topic

When conducting the questionnaire, it had been less than a month since the court conviction of the OOW on KNM Helge Ingstad. One might assume that the conviction could have influenced the participants in a way not controllable. Due to this fact, it might be beneficial to conduct a new study in the future, when the court case might be further from the participants' minds. This said, it gave an important opportunity to investigate the here-and-now implications of a court conviction like this.

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Appendix

7.1 Questionnaire

MSc Aviation - Filing a report or outing yourself?

Dear participant

This questionnaire is voluntary and by completing the survey you will provide information that will be used in my master's thesis.

This questionnaire is made to collect data regarding just culture and reporting culture in the Norwegian aviation industry. The dataset will be analyzed and used as empirical data in my master's thesis in aviation at University of Tromsø. In my master's thesis I will discuss the implications of KNM Helge Ingstad court case up against the aviation just culture principles:

"How is the reporting culture in Norwegian aviation industry influenced by the Norwegian court case against a single the bridge of KNM Helge Ingstad?"

The questionnaire will take about 5 minutes. The data will be handled as confidential according to guidelines stipulated by UiT (Retningslinjer UiT). I encourage you to answer as honest and truthfully as possible.
The anonymity of participants will be maintained throughout the process. The overall statistics and findings will be presented and discussed in the paper. After submission of the paper, the data will be deleted from both Nettskjema.no and UiT-Onedrive
Thank you for participating

Mads Waltersdorph Hjemmen

Student - master's in aviation

1 Please state your age

20 - 29
30 - 39
40 - 49
50 - 59
60 - 69
70 and above

2 What are your role in the aviation industry?

Administrative functions
Pilot
Pilot student
Aviation mechanic
Other

3 Please describe your role in the Norwegian aviation industry

This element is only shown when the option 'Administrative functions or Other' is selected in the question 'What are your role in the aviation industry?'

4 How long have you been working in the aviation industry?

Under 5 years
5 - 10 years
11 - 15 years
16 - 20 years
21 - 25 years
26 - 30 years
31 - 35 years
36 - 40 years
41 - 45 years
46 - 50 years

5 Are you familiar with procedures and systems for filing safety report in your organization?

Yes
No
Not sure

6 Have you filed a safety report on human factors, issues, or incidents the last 12 months?

Yes

No

7 Do you trust the organization in regards to the handling of your report?

This element is only shown when the option 'Yes' is selected in the question 'Have you filed a safety report on human factors, issues or incidents the last 12 months?'

Yes

No

Not sure

8 Please explain, if you know, how your safety report was dealt with

This element is only shown when the option 'Yes or No' is selected in the question 'Do you trust the organization in regards to the handling of your report?'

9 Are you afraid of consequences when filing or consider filing a safety report?

Yes

No

Sometimes

10 Please explain, if any, concerns you have regarding filing a safety report

This element is only shown when the option 'Yes or Sometimes' is selected in the question 'Are you afraid of consequences when filing or consider filing a safety report?'

11 In your opinion, what keywords comes to mind regarding the term *just culture?*

12 The Norwegian aviation industry is considered a *just culture* in your opinion?

Yes

No

Not sure

13 From your perspective, do you observe the *just culture* principles within your organization?

Yes

No

Not sure

14 Have you heard of the collision between KNM Helge Ingstad and Sola TS?

KNM Helge Ingstad and Sola TS collided in Hjeltefjorden 8th of November 2018. The Officer on Watch
was found guilty of neglect and lack of situational awareness (among other things) on 20th of December 2023.

Yes

No

15 What are your thoughts on the court case against the Officer on Watch on KNM Helge Ingstad in regards to just culture?

This element is only shown when the option 'Yes' is selected in the question 'Have you heard of the collision between KNM Helge Ingstad and Sola TS?'

16 In your opinion, reporting culture contribute to a *just culture* in aviation

1 - Completely disagree: Reporting culture does not contribute at all to safety culture in aviation

2 - Strongly disagree: Reporting culture contributes very little to safety culture in aviation

3 - Disagree: Reporting culture contributes little to safety culture in aviation

4 - Somewhat disagree: Reporting culture has a limited negative contribution to safety culture in aviation

5 - Neutral: Reporting culture neither contributes nor detracts from safety culture in aviation

6 - Somewhat agree: Reporting culture makes a moderate contribution to safety culture in aviation

7 - Agree: Reporting culture contributes positively to safety culture, but there is room for enhancement.

8 - Strongly agree: Reporting culture plays a vital role in promoting safety culture in aviation

9 - Completely agree: Reporting culture makes the most significant possible contribution to safety
aviation

17 I will not file a report because of the fear of repercussions

1 - Completely disagree: I would not feel afraid at all and would file a report without being afraid of the consequences. The safety management system works!
2 - Strongly disagree: I would file a report and assume that the safety management system works
3 - Disagree: I would file a report and hope that the safety management system works
4 - Somewhat disagree: I would file a report and the report would be as simple as possible
5 - Neutral: I would feel neither afraid nor not
6 - Somewhat agree: I would file a report, but the report would be anonymous
7 - Agree: I would feel conflicted in filing a report, but the report needs to be filed
8 - Strongly agree: I would feel afraid of getting convicted, but would maybe file a report if it is absolutely necessary
9 - Completely agree: I would feel terrified of getting blamed and convicted and will never file a report

18 Could the court conviction against the OOW on Helge Ingstad influence the *just culture* in Norwegian aviation?

Yes
No
Not sure

19 How do you think it would influence *just culture*?

This element is only shown when the option 'Yes or No' is selected in the question 'Could the court conviction against the OOW on Helge Ingstad influence the just culture in Norwegian aviation?'

Positively
Negatively
Neutral
Not sure

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