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SAFETY CULTURE OF APPROVED TRAINING ORGANIZATIONS: BASIS FOR AN EMERGENCY RESPONSE PLAN MANUAL

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Abstract

Every Approved Training Organization (ATO) follows the safety standards imposed by the Civil Aviation Authority of the Philippines (CAAP). As per the FAA (2023), safety culture is essential to the effectiveness of safety performance, and it will inevitably be a requisite to the general output of the organization. However, in the Philippines, there is little to no studies relating to such topic. The paper aims to find out the level of engagement and implementation of the Approved Training Organization in the Philippines (ATO). Moreover, to look into the relationship of the ATOs Safety Management System process engagement and implementation towards safety motivation, safety compliance, safety participation, and safety reporting behavior. Lastly, to find out the differences and also the variations in safety culture perception. It made use of a concurrent-embedded mixed method approach, in which the researcher presents both quantitative and qualitative data collected. In summary of the findings, there is a positive agreement resulting to a positive practice of safety culture within the surveyed aviation schools, with a strong commitment to safety policies, reporting, compliance, and participation. While, the high R-squared values for Safety Reporting Behavior and Safety Participation signified strong model fits. These results imply that the model effectively shows the difference in safety-related behaviors and participation, highlighting its reliability. Moreover, there is no significant differences in perceptions among demographic variables as to gender and functional group for safety reporting behavior, safety compliance, and safety participation across all three aviation schools. The variations or differences in perceptions among demographic variables were generally not significant, signifying a consistent safety culture regardless of gender or functional position. With the results of the study, it served as a basis in proposing a SMS policy implementation for the selected aviation schools in the Philippines.

Keywords: Approved Training Organizations (ATO), Safety Management System (SMS), Concurrent Embedded Mixed Method

INTRODUCTION

The FAA (2023) states safety culture as essential to an entity's safety performance, and it will inevitably be applied on the overall performance of the organization. The safety culture cannot be purchased easily nor can be added instantaneously but there should be holistic organizational leadership and continuous learning. In this manner, the FAA classifies effective leadership as a necessity of implementing a pro-active safety culture.

All organizations have its own safety culture, whether reactive or proactive, or observes it due to just compliance or for the sake of utmost safety. However, with all this said, it can be exemplified that leadership and management's goal should be able to imbibe the positive effects of a good safety culture through open reporting, just culture, non-toxic environment, commitment to continuous improvement, flexibility and learning.

Upon the addition of the Annex 19: Safety Management by ICAO, the Collegiate Aviation or Approved Training Organization (ATO) had incrementally been abiding on the standard and recommendations. The Annex 19 of ICAO emphasizes the importance of

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overall safety performance and its overall purpose is to improve all concerned aviation safety regulations and infrastructure developments.

However, with other ATOs that might be practicing some SMS recommendations reactively, there might likely be a wide input needed to improve SMS implementation here in the Philippines, the same as the study of Adjekum (2017) where their paper had focused on finding out the safety effectiveness and safety implementation of ATOs but the research population is from the United States.

With the inevitable issues in safety within the Philippine Aviation Industry and with it growing year by year, the support from the Philippine Civil Aviation in instilling a satisfactory safety culture or system within an organization is much more needed. The communication between civil aviation inspectors and the Approved Training Organization (ATO) staff should be maintained as well. In this manner, the means of improvement would be continually discussed. Moreover, all ATOs should have in-depth understanding of the factors that make a good safety performance of the organization.

As a summary of the implications and potential benefits of the study, it would seek to focus on finding out the level of the overall SMS through the group of ATOs. The results will allow the researcher to have a good perspective of the ATOs current safety management level. If there are fields that are low then this will be tackled through the manual designed by the researcher. Moreover, the study also seeks to find out the differences and variations in safety culture according to demographic. The data gathered will be necessary to come up with interventions and suggested changes on the approach of the ATOs that will be inputted through the safety manual as well.

In this regard, the output of this research would be a prominent basis for institutions to observe a holistic safety culture.

LITERATURE REVIEW

The literature review focused on providing background and reviews pertaining to safety culture, and assessing the results of other journals and studies about SMS policy implementation, SMS process engagement, transformational safety leadership, and safety participation, compliance, and reporting behavior.

Safety Culture is a broad aspect, and SMS under it can be implemented in different ways. As such, these differences will be discussed, compared, and its synthesis to the researcher's study are presented. Moreover, the recent literature and studies was reviewed which became the foundation of this study.

Foreign Literature

Safety Culture

The area of safety had been traced back since the creation of the Great Pyramind in Egypt, where the best approach in piling all the bricks together with greatest efficiency and safety was studied. Up to the modern times, where safety had been the priority in handling radioactive matter in Chernobyl, but still had lead to a disaster in 1968 (Stolzer et al., 2018).

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The concept of graceful extensibility pertains to a system that performs well or degrades when it is operating on system limits, and sustained adaptability refers to the organization's capacity to produce sustained adaptability over a longer timeframe (Woods, 2016). As such, it describes dynamics and adaptability are not automatically existent in an organization but it is incrementally assessed and revised until there are lesser errors and waste.

As for the FAA (2023), the agency states safety culture as an essential to an entity's safety performance, and it will inevitably be applied on the overall performance of the organization. The safety culture cannot be purchased easily nor can be added instantaneously but there should be holistic organizational leadership and continuous learning.

All organizations have its own safety culture, whether reactive or proactive, or observes it due to just compliance or for the sake of utmost safety. However, with all this said, FAA (2023) exemplifies that leadership and management's goal should be able to imbibe the positive effects of a good safety culture through open reporting, just culture, non-toxic environment, commitment to continuous improvement, flexibility and learning.

Safety Behavior

The reporting culture of is effective if there is a strong willingness from the organization to participate and contribute to compiling safety data through risk management or hazard systems. The literature by Robertson (2016) had explained that there is a strong connection between SMS implementation, confidential reporting system, and safety culture.

Just Culture. There are pertinent materials in regards to just culture (Dekker & Breakey, 2016; Lawrenson & Braithwaite, 2018) that significantly discusses its connection towards overall safety culture. The concept of just culture as an atmosphere of trust in people are encouraged even rewarded but in coming up with safety-related information, a line must be drawn between acceptable and ineffective behavior.

While just culture had been shown as a means to improve organization practices by encouraging employees to bring up faults and flaws within a system, complexity of national culture would be a direct issue on this (ICAO, 2019). According to Lawrenson & Braithwaite (2018), just culture often focuses on the challenges behind comparing the acceptable against unacceptable behavior, and those that cross the line and are only reactive goes into the realm of unacceptable behavior.

Learning Culture. Every organization tries to learn from its mishaps, and the idea behind learning culture is to create an effective system based from the past gathered errors. Liao (2018) had defined this process as an approach that changes the perception of accidents and incidents from potentially being perceived as ineffective but encourages the organization to see mishaps as an opportunity to learn instead. When safety is incrementally improved, the learning from the data could potentially be the key in reducing risk and be an asset for profit in some businesses.

Informed Culture. An informed culture is where employees and staff know the organization's safety status and priority. According to Wang (2018), an informed culture is

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gathered through the following steps; a. know the difference between acceptable and unacceptable behavior, and mischievous behavior can be easily corrected if there is no fear of reprisal.

Safety Cultural States

There are various sources that discussed the culture states or organizations, where a distinct safety culture works depending on the overall operations (Shubham, 2018). It is suggested that most or all organizations have its own safety culture, based from prior reviewed literature. However, the FAA (2023) had further explained that safety culture is a continuum, and some safety system can be applied positively or negatively depending on the operations. Some cultural states may work better with a balance of negative culture such as blame and secretive culture. But widely, majority of the organizations work better if there is a positive environment, and overall culture.

Organizations can be pertained as a spectrum, where it can defined as generative, bureaucratic, and pathological. As such, the researcher decided to review this to further understand the leadership and organizations and its connection in implementing effective safety management (Shubham, 2018).

Generative Organization. The generative culture is stemmed from the idea that concentration on the goal and mission rather than people and position should be the agenda (Shubham, 2018). In such culture, it could instill a positive environment as opposed to power-affiliated and rule-oriented culture.

Bureaucratic Organization. Autocratic and Rule-oriented organizations can be recognized as a bureaucratic culture (Shubham, 2018). Some of the institutions, especially a collegiate aviation follows a bureaucratic culture, where it follows a systematized process of operations to ensure abidance of civil aviation policies. As opposed to generative organization, a bureaucratic organization does not seek an overall fix, but it would only focus on fixing the issue related within only the company's scope. Rather, this type of organizations are rules and position-based, and responsibilities are compartmentalized by department with little regard to the general mission of the organization.

Pathological Organization. These organizations are linked towards autonomy but there is low-level of cooperation across the groups and often there is a little percentage of a blame culture internally. Moreover, there are tendencies, wherein information are withheld for personal gain (Shubham, 2018). When anomalies occur, the organization tends to react negatively as a while and initiates to suppress it. The entities under this spectrum actively punish individuals that seeks to deviate from the usual suppressing culture of the company. Afterward, often no treatment is provided.

Expansion of the Three Models. The three cultural models (i.e., generative, bureaucratic, and pathological) was expanded by Hudson's cultural ladder where two more were conceptualized namely, proactive and reactive (Britton, 2019).

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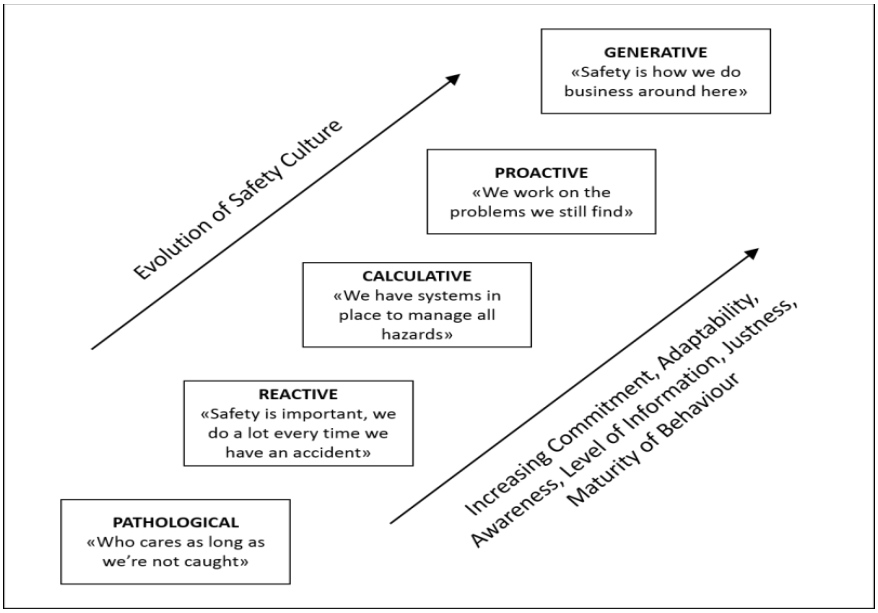

Figure 1. Safety Culture Maturity Levels (SMICG, 2019)

As such it became a spectrum of five models and there is a defined progression as follows; pathological, reactive, bureaucratic or calculative, proactive, and generative. With the said models, the term calculative was used by Hudson instead of the Bureaucratic, and under this context, it refers to organizations with already defined risk management system and uses this tool in anticipating safety complexities and problems.

Meanwhile, reactive organizations are the type where there are only implementations but not compliance at all. In the outside, it seems the entity abides with the standard but internally the organization is hanging on the pathological approach. These type of organizations deploy resources only when there are accident, incident, and safety issues arise (Britton, 2019).

In retrospect, a predictive model are highly deployed as a means to reduce risk and exposure to damage with the use of past performance data. In this regard, predictive companies have a management of change, risk analysis in hypothetical situations, and a forecasting performance data from its stakeholders (Britton, 2019).

The ICAO had tackled the concepts of reactive, proactive, and predictive organizations as part of its implementation phases. In the phase II of the SMS Implementation under the guidance, an entity would deploy its safety process in response to accidents, incidents, and threats but not to the extent it has a prediction model (Skybrary, 2021)

The phase III practices both proactive and reactive traits, where the organization tries to predict outcomes through the use of data collection and analysis tools. The best analytical used on this process would be the flight data analysis (FDA), it is not a holistic model that could potentially predict an incident but it can provide insight for the organization (Skybrary, 2021).

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Assessment of Safety Culture

The researcher reviewed the safety culture in the aspect of effectiveness and find out its benefits objectively. In this regard, the SMICG (2019) framework became a vital reference in further looking into the safety culture of organizations in the whole world.

Safety Culture Framework

The SMICG (2019) defines safety culture as the organizational behavior, values, and attitudes. When a culture is positive, there is a sense of willingly participation and shared responsibility in achieving the mission and objective of the organization. Moreover, the members are willing to adapt the standards in facing complexities and willing to observe changes.

In this regard, a positive culture balances trust and respect among the employees and management. Hence, an effective safety culture process compose of lending the ears between the managers and staff.

The SMICG (2019) emphasizes that an effective Safety Management System empowers a positive safety culture and a positive safety culture empowers an effective Safety Management System.

Safety Culture Characteristics

According to SMICG, the safety culture is composed of six high-level characteristics, which makes up the overall safety of an organization namely; Commitment, Justness, Information, Awareness, Adaptability, Behavior. Wherein, the characteristics make up the foundation of the safety culture of a company.

The figure 6 shows the six characteristics of the overall safety culture of an organization.

Moreover, the framework by SMICG (2019) was reviewed by the researcher to further solidify the hypothetical model of this study that effective safety culture is connected to the tenets of implementation, engagement, motivation, participation, compliance, and behavior.

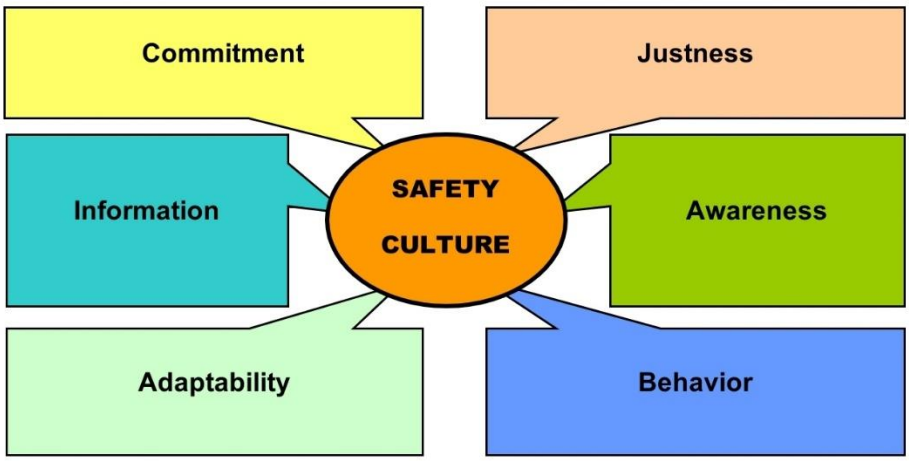

Figure 2. SMICG (2019) Safety Culture Characteristics

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Commitment. This is the extent of which the organizations have a positive attitude in safety culture and understands its importance. The executives of the organization's commitment to the mission and goals itself and implementing it with the staff can ensure a high level of safety and motivating the workforce as well.

Justness. As explained in the past reviews, the justness considers the extent to which safe behavior and the efficient reporting of problems and incidents are encouraged and can be awarded while actions in compromise of safety are discouraged. In this regard, this can be aligned with compliance, wherein, an organization's proactive observance of the safety implementation mediated with motivation can result to safety compliance.

Information. This characteristic describes the extent or effectiveness of information relay to those parties concerned. If there are safety issues and implementations thereafter, the new information must be relayed.

Awareness. The management and staff should keep high-level of alertness and awareness from risks and potential scenarios brought by the operations. Moreover, there is a need to maintain observation of vigilance.

Adaptability. The willingness of the organization to learn from their mistakes, and makes sure it would be taken as a requisite data to prevent the same problem. The actions necessary are performed efficiently with utmost flexibility.

Behavior. The extent in where the organization makes sure to observe proper etiquette and internal system in maintaining the acceptable level of safety. Moreover, the same principle of behavior should go down the ladder not only practiced by the management.

Local Literature

The aviation safety culture in the Philippines are not widely reviewed and studied. Wherein, institutions rely on the standards set by International Civil Aviation Organization alone, where some guidelines does not apply to the level of operations in the Philippines as opposed to the first world aviation industry. Some operates in a small level, where the runways are not paved. It may be in the case that Philippine training schools are widely reactive, and at the worst case, a pathological organization in nature.

Hence, the local literature would focus looking into prior output that discusses safety in focus of the Philippine safety culture.

The National Occupational Safety and Health Congress (NOSH) of the Occupational Safety and Health Administration (OSHC) of the Philippines had setup a conference for safety practitioners, where the organization seeks to facilitate compliance of enterprises to the OSHC standards, and spread awareness on the importance of safety management (TUV, 2019)

According to OSHC (TUV, 2019), there is a need to incrementally increase the number of occupational safety hazard professionals to a million with in depth knowledge of the OSHC value and standards. There are stated factors that makes up a safe and healthy workplace as follows; a. work environment measurement services, b. workplace risk assessment services.

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With an in depth look into the Philippine safety literature, the researcher had heavily reviewed CAAP civil aviation regulation safety management and its implementing standards (CAAP, 2019).

The primary aviation legislation seeks to provide those concerned with safety oversight functions access to the operational facilities such as aircraft, facilities, and also includes the associated personnel records and safety providers. Moreover, the authority or the CAAP shall promulgate regulations in address of the national requirements and standardized operational procedures in conformity of the Annexes of the Conventions of the ICAO (CAAP, 2019).

State System and Functions. The CAAP should establish the necessary measures to ensure that there are qualified workforce in instituting the safety oversight and safety management within the overall operations in the Philippines. Moreover, there should be an assurance that the workforce are monitored and provided with the ethics, professional conduct, and are trained to address potential conflicts within the authority (CAAP, 2019).

Qualified Technical Personnel. The CAAP should establish the minimum qualifications for the personnel in charge of safety oversight and provide the standard and recurrent training in prusuit of enhanced competency and reach the level specified by the Annex 19 of the ICAO (CAAP, 2019).

Resolution of Safety Issues. The CAAP should document the process in taking appropriate actions that includes the enforcement measures to treat the determined safety problems. Additionally, there should be an assurance that there is a method to identify safety issues in a timely manner.

With the above specified functions of the CAAP, it would be used as a reference by the researcher to compare the results of the study and seek to look further if there is lacking on the aviation authority of the Philippines.

METHOD

In this study, the mixed method research design using concurrent embedded approach was employed to assess the safety culture within aviation-approved training organizations. The researcher corroborated quantitative results with qualitative findings to derive new insights, particularly when concurrent embedded methodology was applied. The quantitative analysis played an important part in the study process, concentrating on determining the degree of engagement with the ATO's SMS process as well as assessing the extent of SMS policy implementation through the steps on safety risk management procedure.

The examination of the significant relationships, strengths, and differences among the variables at the heart of this inquiry was approached comprehensively. This complex phenomenon necessitated a thorough exploration not limited to surveys or quantitative assessments alone, such as Analysis of Variances (ANOVA) and Multi-Regression Analysis.

The study recognized the importance of qualitative techniques in describing various aspects, hence the adoption of a mixed method approach. This approach aimed to provide a

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more nuanced and comprehensive understanding of the safety culture within aviation training organizations.

The type of mixed method research design to be used in this study is the concurrent-embedded mixed method. This design is particularly useful when a researcher needs to embed a qualitative component within a quantitative design, as in the case of an experimental or correlational design (Wittink, et al., 2006), and since this study is a correlational analysis, hence, concurrent embedded mixed method will be used.

The primary purpose of the concurrent embedded strategy is gaining a broader perspective than could be gained from using only the predominant data collection method. It is also used to address different research questions or garner information from different groups or levels within an organization. The strength of this approach is that researcher is able to collect two types of data simultaneously getting advantages of both methods (Creswell & Plano, 2011).

A concurrent embedded model may be employed when a researcher chooses to utilize different methods to study different groups or levels (Creswell & Pablo-Clark, 2011). Also, concurrent-embedded mixed method design seeks to compare different perspective drawn from the quantitative and qualitative perspective which will be done simultaneously or collecting responses using the same or parallel variables, construct and concepts concerning safety culture in ATO institutions. With the purpose of corroboration and validation, the researcher aims to triangulate the methods by directly comparing the quantitative statistical results and qualitative findings.

The point of interface is the stage of integration, in this study it is a point within the process of research where the quantitative and qualitative responses of the safety personnel, instructors and students are mixed and determine the degree of similarity of opinion and experiences as well as its dissimilarities. For mixed methods designs that keep the two strands independent, this is the only point in the research process where mixing occurs (Morse & Niehaus, 2009).

In considering the ethical aspect of related consequences as a complex problem, a mixed methods study would enrich understanding of the research questions, by using the qualitative findings to enhance understanding of the quantitative findings on the safety culture of aviation approved training organizations thru a correlational analysis. The figure 3 below presents the mixed methods research design adopting concurrent embedded mixed method design by Creswell & Plano Clark (2011).

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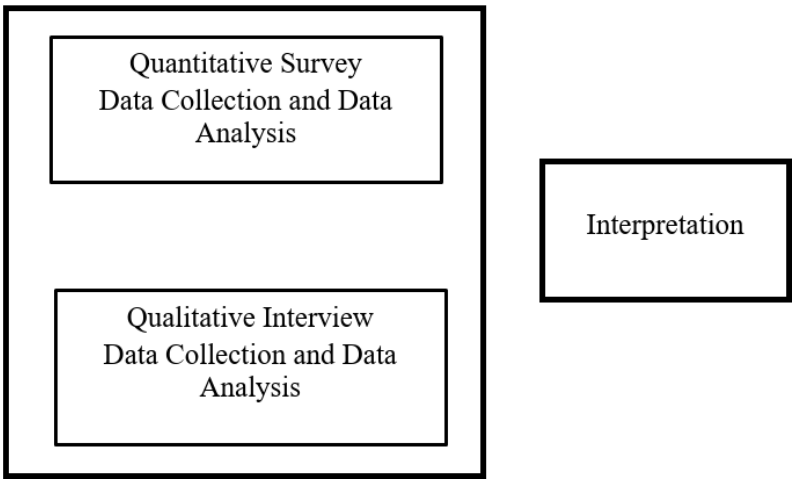

Figure 3. Embedded Mixed Method Research Design Procedure

All analyses were assessed for statistical significance at the 0.05 alpha level (2-tailed) unless otherwise specified. Given the use of previously validated scales in the present study, Confirmatory Factor Analysis (CFA) was used to determine whether scale items that measured various latent constructs such as SMS and Safety Participation (SPB) are consistent with the researcher's understanding of the nature of that construct. CFA specifically, relies on several statistical tests to determine the adequacy of model fit to the data. The chi-square test indicates the amount of difference between expected and observed covariance matrices. A chi-square value close to zero indicates little difference between the expected and observed covariance matrices. In addition, the probability level must be greater than 0.05 when chi-square is close to zero.

Research Instrument

The main data gathering tool to be utilized in the research is a set of questionnaire and an interview guide.

For quantitative part, the researcher will be referenced the questionnaires of Foster (2020) and Adjekum (2018), specifically on SMS Process engagement and SMS policy implementation measured through safety motivation, safety compliance, safety participation, and safety reporting behavior. The SMS Process engagement questionnaire consists of 30 items distributed into 7 sub-scales (See Appendix B).

The tool was modified and aligned to aviation institution setting. To determine the SMS policy implementation, the questionnaire utilized by Foster (2020) with reliability test, where all items assessed were above the 0.70 thresholds except for SRB ($\alpha = .60$).

For the qualitative part, the interview guide was also from the questionnaire of Foster (2020) but presented in question form in line with the perceptions of the three group of respondents on safety behavior and safety reporting. It was validated by the dissertation adviser and authorized personnel expert in the field of aviation.

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The instrument made use of a five-point likert scale (1 = strongly disagree to 5= strongly agree) or (1 = never to 5=always);

After the data collection, the researcher assessed the questionnaire through Cronbach Alpha, wherein the computed value is $\alpha = 0.891$ which is above the considered acceptable value is $\alpha = 0.70$ (Field, 2018). Moreover, the reliability test consists of 30 non-respondents.

Moreover, the questionnaire was validated by aviation experts, safety and quality managers, pilots, and aviation research professionals with was deemed very satisfactory and with a descriptive equivalent of very functional. Hence, with the following reliability and validity result, the instrument was proven sufficient for floating to the target respondents.

Design of the Instrument

The instrument of the study is heavily based from the study of Foster (2020), where some of the questions were adopted and matched into the Training Organization context, and original questions are constructed regards to Transformational Safety Leadership.

The construct of the instrument is designed according to sections, where the first section (Q1.1 – Q.1-6) seeks to get the respondents' demographic details. The second section (Q2.1 –Q2.6) compiles the questions regards to SMS policy implementation. In questions regard to transformational safety leadership designed by the researcher, this is on the third section (Q3.1 – Q3.6). Meanwhile, the last of the scale is on the fourth section, where it focused on SMS process engagement.

As for the variables (i.e., safety reporting, safety compliance, and safety participation) this was laid out on subsequent sections, with four questions each, respectively. While, the last section (Q7.1 – Q7.4) was related to safety motivation.

Data Gathering Procedure

The researcher obtained first the approval of Research Ethics Committee (REC) to allow the researcher to initialize the said study. Upon approval, the paper was then endorsed to the Dean and GPC through endorsement letter and meeting was set with the adviser for consultation and deliberation about the study before data gathering.

The researcher prepared a letter asking permission from the institution heads. The first phase was a proposed meeting with the school director or the VPAA or Operations Heads with prospective respondents and participants of the respective ATO to describe the purpose and aims of the research and their permission was sought. Survey questionnaire and interview guide was attached to this letter for their approval. After obtaining the ethical review and permission to conduct, the researcher looked for the potential respondents for the study. The researcher was then endorsed by the school director or the VPAA or Operations Heads and there was an arranged time to meet all the target respondents and participants and inform them about the conduct of the study on the assigned date and time. Upon identification of the respondents and the participants, the researcher provided them the informed consent and explained the purpose of the research study. The ethical consideration

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was raised by this research concerning obtaining informed consent and maintaining participants' confidentiality.

Quantitative Phase: After obtaining consent, the researcher asked the respondents the most convenient time for them to answer the survey questionnaire and at the same time to support and clarify any information that they may not understand. The questionnaire was handed to the respective respondents. The completion of the questionnaire would mean that the respondents agreed to participate in the study. The respondents will be instructed not to write any names or any information on the questionnaires that would indicate their identity. Respondents will be left alone to give them privacy during completion of the questionnaires but will be gathered after the specified time. Data will be tabulated, analyzed and interpreted.

Qualitative Phase: The interview for qualitative approach was conducted through a Focus Group Discussion (FGD) from the selected ATO institution using the structured schedule of questions. The interviews were completed in 1 to 2 hours, on average. The ATO institution was informed for the schedule and the assistance of the school director or the VPAA or Operations Heads was sought to identify those who will be available for the FGD.

The researcher conducted three (3) focus groups, one for each school. The participants will be selected to represent the supervisor level employee, flight instructors and students. Krueger and Casey (2000) advise researchers to follow the rule of the thumb, which is to plan for three or four focus groups with any one type of participant with six to twelve participants in each group. Morgan (1997) also suggests that there is the minimum number of focus groups that are necessary for a credible research project, as one or two focus groups are vulnerable to the possibility of being idiosyncratic and may bear no relation to any wider social reality.

Participants in the focus groups was informed that the debriefing sessions will take place in the conference or meeting rooms and will be recorded. The researcher started the interview by collecting background information about the respondents such as age, sex and other professional profile and work-related experiences. The researcher used three types of field notes during the research process: the transcript file, personal file, and analytical file. The transcript file contained raw data from the interviews. The personal file contained a detailed chronological account of the participants and their settings, other people present and reflective notes on the research experience and methodological issues. The analytical file contained a detailed examination of the ideas that emerged in relation to the research questions as the research progresses. It will also contain reflections and insights related to the research that influenced its directions.

With the purpose of corroboration and validation, the researcher aimed to triangulate the methods by directly comparing the quantitative statistical results and qualitative findings. In the research process, two datasets have been obtained, analyzed separately, and compared.

Statistical Treatment of Data

The following statistical tools was used to tabulate and analyze the results of the survey and interview approach.

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a. Quantitative Approach

Descriptive and inferential statistics will be utilized for analysis of quantitative data. Specifically, to determine the ATO's SMS process and their extent of engagement, the mean shall be used such that:

5	4.20 – 5.00	Strongly Agree
4	3.20 – 4.19	Agree
3	2.61 – 3.20	Neither Agree nor Disagree
2	1.81 – 2.60	Disagree
1	1.00 – 1.80	Strongly Disagree

To determine the strengths relationship exist between the ATOs' SMS process engagement and SMS policy implementation measured through safety motivation, safety compliance, when safety participation and safety reporting behavior are considered, the Pearson Correlation Coefficient was deployed. Meanwhile, the Analysis of Variances (ANOVA) were used to determine the differences in perceptions among the demographic variables on safety behavior and safety reporting.

After data collection, the researcher prepared the collected survey data for analysis. The data was tabulated and analyzed using Statistical Packages for Social Sciences (SPSS software) on a password-protected laptop. The responses to all questionnaires were entered into an Excel sheet that will be converted later into an SPSS dataset. The researcher made double data entries to ensure the accuracy of the data. The manual checking and testing of frequency distribution was done to examine for data error that may have occurred during coding and transformation. The missing responses or unfilled part of the questionnaire will be replaced by expectation maximizing (EM) (Hedderley & Walking, 1995).

b. Qualitative Approach

To collect qualitative data, the researcher conducted an interview with the participants about their perceptions on safety behavior and safety reporting and the variations in safety culture perceptions since the researcher will adopt concurrent embedded design. In this design, qualitative and quantitative data are collected at the same time or in parallel within the same study and one method (qualitative or quantitative) dominates while the other is embedded or "nested" within (Creswell, Klassen, Plano Clark, & Smith, 2011).

The qualitative method for the most part, intended to achieve depth of understanding while quantitative methods are intended to achieve breadth of understanding (Patton, 2015). Qualitative method place primary emphasis on saturation that is obtaining a comprehensive understanding by continuing to sample until no new substantive information is acquired (Miles & Huberman, 1994).

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The researcher utilized a modification of Sorah's (2012) method of analysis, as follows: reading all transcript files to acquire a feeling for them, reviewing each transcript file and extract significant statements, spell out the meaning of each important statement, organizing the formulated meanings into domains and variables leading to the relationship between the ATOs' SMS process engagement and SMS policy implementation which will be the basis in formulating safety manual for aviation institution in the Philippines that could be appropriate to sustain, maintain an

RESULTS AND DISCUSSION

Contents Results and Discussion

This section presents a detailed presentation of the collected data which is systematically presented and conduct in-depth analysis of the results. The study focused on presenting the gathered responses from both respondents and participants specifically in line with safety culture of aviation approved training organizations through a correlational analysis. The presentation includes a concurrent-embedded mixed method approach, in which the researcher presents both quantitative and qualitative data collected concurrently based on the sequence presented in the problem statement; quantitative responses will come first, followed by the qualitative part, in which the researcher included coding and a thematic approach in presenting all of the gathered data and information from the respondents and participants. Results served as basis in proposing a SMS policy implementation for the selected aviation schools in the Philippines.

Respondents' Assessment on ATO's SMS

Table 1.a to Table 1.g presents the gathered responses of the three group of respondents from the Approved Training Organization who assess the SMS when viewed as to policy implementation, process engagement, transformational safety leadership, safety motivation, safety compliance, safety participation and safety reporting behavior. The responses gathered from the commercial pilots, private pilots, certified flight instructors or ATPL, staffs, faculty and students from the three group of respondents wherein 75 of the respondents are from WCC ATC, 40 from Company 2 and 51 from Company 3.

Table 1.a
Assessment of the Respondents on Approved Training Organization's SMS as to Policy Implementation
N=166

SMS POLICY IMPLEMENTATION	Company 1 (n=75)		Company 2 (n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	DE	WM	DE	WM	DE	WM	DE
The safety policy is signed and approved by the College President, Dean and other executive like the accountable	4.11	A	4.13	A	4.61	SA	4.28	SA

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manager who demonstrate a commitment to safety through active and visible participation in the SMS.								
The results of safety performance reviewed are used by the program leadership as input for safety improvement processes.	4.07	A	4.25	SA	4.63	SA	4.32	SA
There is a process that provides for the capture of information on hazards, incidents, accidents and other data relevant to SMS.	4.01	A	4.23	SA	4.45	SA	4.23	SA
Safety professionals with appropriate skills, knowledge, and experience conduct SMS training	4.11	A	4.38	SA	4.49	SA	4.33	SA
There is a high emphasis on providing adequate financial and technical resources to improve the SMS	3.71	A	3.95	A	4.22	SA	3.96	A
Policies and procedures in SMS manual are easy to understand	3.80	A	4.05	A	4.39	SA	4.08	A
Overall Mean Rating	**3.97**	**A**	**4.16**	**A**	**4.46**	**SA**	**4.20**	**SA**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

SMS Policy Implementation. Table 1.a presents the assessment made by the three groups of respondents on the Approved Training Organization's SMS Policy Implementation with an overall mean rating of 4.20 or a descriptive rating of strongly agree. The results indicate an generally positive perception of SMS policy implementation in all three aviation schools wherein Company 3 stands out with the highest overall mean rating of 4.46 that indicates a strong agreement with their staffs, faculty and students of a high implementation of their SMS policy.

In the assessment made by the respondents from Company 1, respondents generally express positive opinions regarding the SMS policy implementation. The safety policy, signed and approved by top executives, receives the highest mean rating (WM=4.11), and safety performance results being utilized for improvement processes also gathered a

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favorable response (WM=4.07). But there appears to be a slight disagreement regarding the emphasis on providing resources for SMS improvement (WM=3.71). Nevertheless, the overall mean rating for Company 1 falls under agree with an overall mean rating of 3.97, suggesting a general agreement with SMS policy implementation.

From Company 2, the respondents exhibited a positive assessment and evaluation on the implementation of their SMS policy implementation. Safety performance results influencing improvement processes receive highest mean rating of 4.25, same with the safety training conducted by professionals (WM=4.38) while the safety policy, signed and approved got the average mean rating of 4.13. The overall mean rating for Company 2 is 4.16 (A), signaling a robust agreement with the SMS policy's effective implementation.

The Company 3 got the highest mean ratings across various aspects of SMS policy implementation. The safety policy's approval (WM=4.61) reflects a strong commitment of the school to SMS policy implementation at the executive level. Safety performance results actively inform improvement processes (WM=4.63), the emphasis on providing resources for SMS improvement (WM=4.22), policies and procedures' clarity in the SMS manual (WM=4.39) got an impressive overall mean rating that portrays a robust agreement with the SMS policy's comprehensive implementation. This was supported by the interview conducted by the researcher among selected respondents, the responses from participants at Company 3 shed light on why the institution scores high in Safety Management System (SMS) implementation, according to the participants, the institution provides regular SMS training, not only for new entrants but also for regular employees and recurrent training. The Safety Department is actively involved in delivering these training sessions, indicating a proactive approach to ensuring that all staff members are well versed in safety protocols.

The analysis made across the three aviation schools shows a generally positive assessment of SMS policy implementation, which indicates a strong agreement among respondents. This suggests a high level of agreement regarding the effectiveness of the Safety Management System across the surveyed organizations. The result also underscores the commitment to safety practices and continual improvement within the realm of aviation training organizations.

Moreover, the qualitative insights obtained from the research interviews complement the quantitative findings presented in Table 1.a, providing understanding of safety-related aspects within the aviation institution. The participant #1 emphasized the need for better execution of safety measures aligns with the quantitative data, which shows a positive perception of SMS policy implementation in all three aviation schools. Participant #2 identified ongoing projects for safety culture enhancement which is in connection with the positive assessment of SMS policy implementation, particularly in Company 3, where the highest mean ratings were observed across various aspects.

According to Szabo and Koblen's (2020) study, which serves as a helpful reference in terms of SMS implementation in aviation schools, of which the author emphasize the importance of Safety Performance Indicators (SPIs) within the broader framework of SMS, detailing components, elements, and safety performance monitoring. The focus on SMS

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Policy Implementation in Three Aviation Schools is in accordance with the broader SMS discussions in the study of Szabo and Koblen (2020), specifically on the positive assessment and agreement among respondents across six aspects of SMS policy implementation, which is consistent with the emphasis on safety practices and continuous improvement. The specific findings from the three aviation schools, such as the overall mean ratings and respondent opinions on safety policy, performance results, and resource allocation for SMS improvement, provide empirical support to the theoretical framework presented in the article. The thorough application of the SMS policy by Company 3 is consistent with the proactive strategy mentioned in the study of Szabo and Koblen (2020) particularly in terms of frequent SMS training for staff members. Furthermore, the insights obtained from interviews with Company 3 participants add to the understanding of why particular institutions excel in SMS adoption. The emphasis on frequent training, not just for new entrants but also for permanent employees, combined with the active engagement of the Safety Department, coincides with the previous study's proactive strategy.

Transformational Safety Leadership

Table 1.b presents the assessment made by the three groups of respondents on the Approved Training Organization's transformational safety leadership with an overall mean rating of 3.78 or a descriptive rating of agree. The results indicate an generally positive perception of transformational safety leadership in all three aviation schools wherein Company 3 stands out with the highest overall mean rating of 3.84 that indicates a agreement with their staffs, faculty and students of a high implementation of their SMS policy.

Table 1.b
Assessment of the Respondents on Approved Training Organization's SMS as to Transformational Safety Leadership
N=166

TRANSFORMATIONAL SAFETY LEADERSHIP	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	DE	WM	DE	WM	DE	WM	DE
The pilot academy or the management of the institution observed good standard in implementing safety initiatives	4.07	A	4.23	SA	4.65	SA	4.32	SA
the Pilot academic or the management of the institution has safety as one of its core value	3.96	A	4.33	SA	4.53	SA	4.27	SA
The leadership in my institution does not show	2.79	NA ND	3.15	A	2.31	DA	2.75	SA

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much concern for safety, unless there is an accident or incident								
the leadership in my institution makes sure all areas of safety is cross-checked, that includes even the smallest details.	3.79	A	4.00	A	4.43	SA	4.07	A
the leadership in my institution expect the operations and pilots to push more productivity, even if safety might be in compromise already.	2.92	NA ND	3.75	A	2.69	NA ND	3.12	A
the leadership in my institution ensures that the staff and pilots are treated fairly and provided with the best attention and treatment to concerns regards to safety	3.69	A	4.30	SA	4.43	SA	4.14	A
Overall Mean Rating	**3.54**	**A**	**3.96**	**A**	**3.84**	**A**	**3.78**	**A**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

A look at the table, Company 3 stands out with an overall mean rating of 4.65 in the implementation of safety initiatives, followed by Company 2 at 4.23 while Company 1 had an overall mean rating of 4.07 or agree. On the other hand, the integration of safety as a core value is consistently affirmed across all institutions, with mean scores ranging from 3.96 to 4.33, with a descriptive equivalent of either agree or strongly agree.

In line with analyzing leadership commitment to safety, specifically showing concern for safety, unless there is an accident or incident, Company 1 got an overall mean rating of 2.79 or a descriptive equivalent of neither agree nor disagree, Company 2 resulted to an agreement at 3.15, while Company 3 resulted to a contrasting overall mean rating or 2.31 or disagree, thereby indicating that the integration of safety as a core value across all institutions appears to be consistently affirmed and also shows a diverse perspectives among respondents.

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When safety details by leadership is concern, the result shows a positive overall mean rating from Company 3 at 4.43 or majority of the respondents from this institution strongly agree, followed by Company 2 with an overall mean rating of 4.00 and Company 1 (WM=3.79), with descriptive rating of agree, respectively.

Difference on leadership as to expectations regarding productivity and potential safety compromise becomes apparent, Company 2 and Company 1 resulted to an overall mean rating of 3.75 to where the respondents in Company 2 Aviation agreed and WM=2.92 to which the respondents from Company 1 and Company 3 (WM=2.69) neither agree nor disagree, respectively.

In terms of fair treatment and attention to safety concerns, Company 3 and Company 2 shows strong agreement on that the leadership in their institution ensures that the staff and pilots are treated fairly and provided with the best attention and treatment to concerns regards to safety, having an overall mean rating of 4.30 and 4.43, respectively, while Company 1 had general agreement with an overall mean rating of 3.69.

The overall assessment of transformational safety leadership, as demonstrated by the mean ratings in Table 1.b, is consistent with some of the interviewed participants that emphasize safety culture and the effect of safety training. Participant #4, for example, emphasizes safety as a major concern, advocating a coordinated reporting portal, demonstrating the significance of leadership commitment to safety, a critical component of transformational leadership. The standout performance of Company 3 in both transformational safety leadership and SMS policy implementation, as evidenced by the high mean ratings, corresponds with Participant #5, observed a changing perspective on safety culture and the positive impact of training on safety practices at Company 3. The different points of view on leadership concern for safety, as indicated in the various mean scores for each institution, connect with Participant #1, highlighting the importance of greater execution of safety measures addressed in monthly meetings. Respondents' differing thoughts on the incorporation of safety as a fundamental value coincide with the diverse ideas revealed in the qualitative interviews.

Based on findings, there is a positive observations among the three groups of respondents regarding the implementation of safety initiatives and the integration of safety as a core value in their respective institution, but they also give emphasis to varying perspectives on leadership commitment to safety, indicating the need for further exploration and understanding of the underlying factors contributing to these differences among the three groups of respondents. The consistent affirmation of the integration of safety as a core value across all institutions supports the broader concept of safety being deeply embedded in organizational values. This resonates with the emphasis on Principles and Policy in the earlier study, highlighting the importance of institutionalizing safety practices.

The results of the study was supported by the study of Adjekum and Tous (2020) which emphasizes the importance of organizational management factors, including leadership commitment, in shaping resilient safety culture. The positive perception of transformational safety leadership across all three aviation schools aligns with the notion that effective

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leadership contributes to a resilient safety culture and the successful execution of safety initiatives, reinforcing the idea that leadership plays a crucial role in the practical application of safety measures.

In line with leadership's commitment to safety, this is consistent with the findings of diverse perspectives among respondents in Adjekum and Tous (2020) study, which agrees that different institutions may balance productivity and safety differently, and the current study's findings regarding fair treatment and attention to safety concerns align with the positive mean scores observed in safety details by leadership in Adjekum and Tous (2020). This shows that organizations with a positive opinion of leadership commitment also have a more favorable perception of the handling of staff and pilots about safety issues.

Moreover, the systematic review of Blišťanová et al. (2021) and the present study both connected with the significance of Safety Management Systems (SMS) and leadership commitment in fostering a positive safety culture within aviation organizations. The current study adds issues by analyzing key features of transformational safety leadership and demonstrating differences in attitudes across institutions.

SMS Process Engagement

Table 1.c presents the assessment made neither by the three groups of respondents on the Approved Training Organization's SMS process engagement with an overall mean rating of 3.11 or a descriptive rating of agree nor disagree. The results indicate an generally shows that the respondents are undecided whether they are getting the proper engagement or not, but still reflecting a generally moderate to positive sentiment regarding policy engagement within the Safety Management System.

Table 1.c
Assessment of the Respondents on Approved Training Organization's SMS as to Policy Engagement
N=166

POLICY ENGAGEMENT	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	DE	WM	DE	WM	DE	WM	DE
Conditions under which punitive disciplinary action would be considered (e.g. illegal activity, negligence, or willful misconduct) are not clearly defined	3.23	A	3.50	A	2.73	NA/ND	3.15	NA/ND
students/personnel are not informed on the primary	2.80	NA/ND	2.85	NA/ND	2.00	NA/ND	2.55	NA/ND

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contacts for aviation safety-related matters.								
The scope of the safety-related hazards that must be reported are not explained to students/personnel	2.67	NA/ND	2.85	NA/ND	2.10	NA/ND	2.54	NA/ND
safety concerns reported through the safety reporting system are corrected in a timely manner	3.63	A	3.83	A	4.02	A	3.83	A
knowing how and where to report safety concerns is easy	3.41	A	3.88	A	4.06	A	3.78	A
safety reporting system does not provide confidentiality for safety reports filed and feedback received.	2.88	NA/ND	3.30	A	2.24	NA/ND	2.81	NA/ND
Overall Mean Rating	**3.10**	**NA/ND**	**3.37**	**A**	**2.86**	**A**	**3.11**	**NA/ND**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.20 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

A look at the table, majority of the respondents agrees that to engage is to consider punitive disciplinary action; there is a noticeable difference in their assessment and perceptions. Company 1 and Company 2 exhibit agreeable mean rating of 3.23 and 3.50, respectively, while Company 3 presents a lower mean result of 2.73 reflecting a neither agree nor disagree equivalent, inferring at a potential need for clearer assessment when punitive disciplinary action to engage in SMS policy is concern.

Furthermore, Table 1.c delineates the assessment of the respondents on ATO's SMS concerning the awareness of primary contacts for aviation safety-related matters among students and personnel is a critical aspect with an overall mean rating of 2.55. Company 1 and Company 2 got an overall mean rating of 2.80 and 2.85 falling under descriptive rating of neither agree nor disagree, and Company 3 stands at a lower mean score of 2.00, also with a descriptive rating of neither agree nor disagree which suggest a potential area for improvement in disseminating this vital information.

For the third items as to ATO's SMS policy engagement when viewed as to safety-related hazards must be reported appears to be less explicit across institutions, the overall

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mean rating ranging from 2.67 to 2.85 or with a descriptive equivalent of neither agree nor disagree, indicating a shared sentiment of ambiguity among the respondents from the three aviation schools. On a positive note, SMS policy engagement as to the correction of safety concerns reported through the safety reporting system got appositive agreement with all the respondents from the three aviation schools having a mean rating ranging from 3.63 to 4.02, suggesting an effective and timely corrective mechanism in place. The Fourth SMS policy engagement indicator that is about the ease of knowing how and where to report safety concerns is generally perceived positively, with mean scores ranging from 3.41 to 4.06 or with a descriptive equivalent of agree. However, concerns regarding confidentiality within the safety reporting system are apparent wherein Company 1 and Company 3 resulted to an overall mean rating of 2.88 and 2.24 or with a descriptive equivalent of neither agree nor disagree, Company 2 demonstrates an overall mean rating of 3.30 or agree, indicating potential variations in the perception of confidentiality.

The identified differences in respondents' opinions and assessments of punitive disciplinary action in dealing with the SMS policy are consistent with the complex viewpoints given by interview participants. Participant #2 emphasized SMS implementation problems, highlighting the need of consistent execution and practice in operations. This corresponds to the quantitative data' probable need for clearer assessment, particularly at Company 3.

The result of the present study shows a shared sentiment of neither agreement nor disagreement regarding the awareness of primary contacts for safety-related matters and engagement with the SMS policy among respondents in the ATO. This indicates a perceived deficiency in awareness and policy clarity. Supported by the study of Marcharh (2017) on aviation sustainable management systems, there is an opportunity to explore how these principles can enhance awareness and engagement in the aviation-training framework, providing insights into effective communication and policy formulation.

Furthermore, there is an agreement on SMS policy engagement for correcting safety concerns, suggesting an effective corrective mechanism within the ATO. This supports with sustainability principles, emphasizing the need for efficient corrective actions. Connecting with Marcharh (2017) study, there is a potential intersections exist in terms of corrective actions, sustainability practices, and overall safety enhancement. However, concerns about confidentiality within the safety reporting system are identified, with differences on the responses of the respondents from different aviation schools. This emphasizes the importance of fostering a culture of trust and openness. Exploring this aspect in relation to the study of Marcharh (2017) on sustainability in the aerospace industry could reveal insights into how confidentiality measures align with broader sustainability principles and ethical considerations in space-based sustainability management systems. Overall, the emphasis on sustainability in the related study may offer perspectives on how to integrate environmental, economic, and energy considerations into the safety management framework.

Additional study was drawn from the insights of Lopez (2016) which is about expanding the perspective on space sustainability. The study assesses the awareness, interest,

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and involvement in space sustainability at the national level for emerging space nations like Brazil, Colombia, and Mexico. Contrasting the two studies may reveal common themes in how organizations in aviation and entire nations approach sustainability, highlighting shared challenges and effective strategies. The effective corrective mechanisms within the ATO, as identified in the present study, could find parallels in the strategies adopted by emerging space nations to address complex threats to space sustainability discussed by López (2016). Exploring intersections between safety concerns in aviation training and broader sustainability challenges in space activities contributes to a holistic understanding, fostering a broader dialogue on aligning aviation safety practices with the sustainability approaches of emerging space nations.

Hence, connecting the present study with López's (2016) study on space sustainability approaches of emerging space nations allows for a nuanced exploration of sustainability considerations. It provides a platform for understanding how safety practices within aviation organizations align with the broader sustainability perspectives of nations engaged in space activities. This comparative analysis could contribute to the development of comprehensive strategies for both aviation safety and space sustainability, identifying areas for mutual learning and collaboration between different scales of operation.

Safety Reporting Behavior

Table 1.d presents the assessment made by the three groups of respondents on the ATO's SMS safety reporting behavior with an overall mean rating of 4.01 or a descriptive rating of agree. Company 1 exhibits an overall mean rating of 3.76, indicative of a general agreement regarding safety reporting behavior.

Table 1.d
Assessment of the Respondents on Approved Training Organization's SMS as to Safety Reporting Behavior
N=166

SAFETY REPORTING BEHAVIOR	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	DE	WM	DE	WM	DE	WM	DE
I file reports about unsafe situations even if the situation was caused by my own action	3.75	A	3.95	A	4.27	SA	3.99	A
I fil reports on safety deviations without fear of negative outcomes	3.80	A	4.10	A	4.29	SA	4.06	A
I report unsafety actions of others because I am empowered to do so	3.72	A	4.03	A	4.20	SA	3.98	A

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Overall Mean Rating	**3.76**	**A**	**4.03**	**A**	**4.25**	**SA**	**4.01**	**A**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

Company 2 got an overall mean rating of 4.03, affirming agreement within its safety reporting culture and Company 3, on the other hand, attains a notably higher overall mean rating of 4.25, signifying a strongly agreement among respondents, signifying an excellent commitment to safety reporting behavior.

From the table, focusing on the behavior as to commitment to filing reports about unsafe situations, resulted to mean rating ranging from 3.75 to 4.27 with a descriptive rating of agree to strongly agree. Additionally, positive responses gathered in line with their willingness to report safety deviations without fear of negative outcomes, as reflected by an overall mean rating ranging from 3.80 to 4.29 of a descriptive equivalent of agree and strongly agree.

Respondents also express a sense of empowerment to report unsafe actions of others, with an overall mean rating ranging from 3.72 to 4.20. These findings collectively indicate a robust and encouraging commitment to safety reporting behavior among the surveyed institutions, fostering a culture of transparency and accountability. The qualitative insights provide a deeper understanding of the factors influencing safety culture and SMS implementation, offering context to the quantitative findings in Table 1.d in which the alignment between participant perspectives and the observed safety reporting behavior highlights the importance of effective communication, awareness, and commitment to safety within the aviation institution.

Safety Compliance

Table 1.e presents the assessment made by the respondents on ATO's SMS in line with safety compliance, having an overall mean rating of 4.68 or a descriptive equivalent of strongly agree, affirming a collective commitment to upholding safety standards within flight operations.

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Table 1.e Assessment of the Respondents on Approved Training Organization's SMS as to Safety Compliance
N=166

	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
SAFETY COMPLIANCE	**WM**	**DE**	**WM**	**DE**	**WM**	**DE**	**WM**	**DE**
I pay full attention to pre-flight briefing during flight operations	4.44	SA	4.63	SA	4.76	SA	4.61	SA
I follow correct safety procedures in flight operations	4.56	SA	4.78	SA	4.80	SA	4.71	SA
I ensure the highest level of safety in flight operation	4.55	SA	4.73	SA	4.84	SA	4.70	SA
Overall Mean Rating	**4.52**	**SA**	**4.71**	**SA**	**4.80**	**SA**	**4.68**	**SA**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

A look at the table, majority of the respondents give their full attention to pre-flight briefing during flight operations, all institutions exhibit exceptionally high overall mean rating ranging from 4.44 to 4.76 where Company 3 specifically lead in the rating (WM=4.80), followed by the respondents from Company 2 and 4.52 from Company 1, emphasizing a strong commitment to comprehensive pre-flight briefings. In terms of following correct safety procedures during flight operations, respondents across all institutions consistently demonstrate a high commitment, with overall mean rating ranging from 4.56 to 4.80 or with a descriptive rating of strongly agree. On the other hand, ensuring the highest level of safety in flight operations garners unanimous agreement across institutions, as reflected in the overall mean rating ranging from 4.55 to 4.84 or with a descriptive rating of strongly agree.

Quantitative survey findings correspond with wider themes shown in qualitative interviews done with five participants from each aviation school, demonstrating a consistent commitment to safety culture among the aviation schools. Participant #1 emphasized the need of greater execution of safety procedures, which is consistent with the favorable outcomes regarding pre-flight briefings. The current findings show a strong commitment to

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safety standards, including pre-flight procedures, which fits with the qualitative need for greater implementation of safety measures.

Based on the findings, it shows that majority of the personnel and students and administration had a commendable dedication to safety compliance within the Approved Training Organizations, as evidenced by the respondents' unwavering commitment to pre-flight briefings, adherence to correct safety procedures, and the assurance of the highest safety standards during flight operations.

The notion of safety culture as a continuum, as mentioned by the FAA (2023), aligns with the findings of the present study. The consistently high mean scores in safety compliance suggest a positive safety culture within the evaluated institutions, reflecting a commitment to safety protocols and a positive environment. Furthermore, as discussed by Shubham (2018), provides a lens to understand the safety culture within Approved Training Organizations. The present study's emphasis on unwavering commitment to safety procedures resonates with the characteristics of a generative organization, where the focus is on the goal and mission rather than rigid rules. The study by Chen & Chen (2014) provides additional insights into the relationship between Safety Management System (SMS) practices and safety behavior. The positive relationship found between SMS practices, safety behavior, and safety motivation aligns with the commitment to safety compliance observed in the present study. It reinforces the importance of effective SMS in shaping safety behavior.

The studies by Brady and Stolzer (2018) and Stolzer et al. (2018) highlight the importance of assessing the efficacy of SMS implementation models. The present study's focus on high mean scores for safety compliance suggests the effectiveness of the SMS within the evaluated organizations. It resonates with the idea that SMS models need to be tailored to specific systems, and continual improvement is crucial for sustained effectiveness.

Hence, the findings from the present study agree with and complement various perspectives on safety culture, organizational dynamics, and the effectiveness of SMS implementation models. The emphasis on positive safety culture, commitment to safety protocols, and the recognition of the need for continuous improvement resonates with the broader discussions in the referenced sources. Together, these insights contribute to a comprehensive understanding of safety practices and culture within aviation training organizations.

Table 1.f Assessment of the Respondents on Approved Training Organization's SMS as to Safety Participation

N=166

SAFETY PARTICIPATION	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	DE	WM	DE	WM	DE	WM	DE
I promote the safety program within the flight program	4.23	SA	4.50	SA	4.76	SA	4.50	SA

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I put in extra effort to improve the flight safety program	4.28	SA	4.60	SA	4.75	SA	4.54	SA
I volunteer for safety-related tasks in the flight program	3.97	A	4.10	A	4.59	SA	4.22	SA
Overall Mean Rating	**4.16**	**A**	**4.40**	**SA**	**4.70**	**SA**	**4.42**	**SA**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

Safety Participation

Table 1.f presents the assessment made by the respondents on ATO's SMS in line with safety participation, having an overall mean rating of 4.68 or a descriptive equivalent of strongly agree, affirming a collective commitment to upholding safety standards within flight operations.

In line with Table 1.f, respondents shows a strong commitment in promoting the safety program within the flight program in their respective aviation institution, as evidenced by the overall mean rating ranging from 4.23 to 4.76 or strongly agree wherein responses from Company 3 is leading, followed by the responses from Company 2 and third is from Company 1. This collective assessment suggests a combined effort to advocate for and uphold safety standards within the flight program. This signifies a strong commitment across the board to thorough and comprehensive pre-flight briefings, highlighting the importance placed on ensuring that participants are well informed and prepared before engaging in flight operations.

Another is that respondents express a willingness to exert additional effort to enhance the flight safety program, with overall mean rating ranging from 4.28 to 4.75 or with a descriptive equivalent of strongly agree. This preference contributes toward continuous improvement emphasizes a proactive stance towards elevating safety standards within the flight program. This implies that a collective dedication to strict adherence to established safety procedures, emphasizing the importance of maintaining a standardized and safe approach to flight operations.

Last is about the voluntary participation in safety-related tasks within the flight program is embraced by respondents, with overall mean rating ranging from 3.97 to 4.59 or with a descriptive equivalent of strongly agree. This commitment to taking on safety-related responsibilities further solidifies the culture of active engagement and collective responsibility. This implies that majority of the respondents prioritize and uphold the utmost

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standards of safety, emphasizing the significance placed on creating a secure environment in the context of flight operations.

Based on findings, their collective responses and assessment implies that the promotion of safety programs, continuous improvement efforts, and active volunteering for safety-related tasks are prioritize by majority of the respondents.

The strong commitment to promoting the safety program within the flight program resonates with the concept of a positive safety culture continuum. It echoes the idea that a positive environment and overall culture contribute to enhanced safety practices (FAA, 2018). The proactive engagement observed in safety promotion aligns with the generative culture discussed by Shubham (2018), emphasizing a focus on goals and missions. The willingness of respondents to exert additional effort to enhance the flight safety program is align with the generative organization type, where concentration on goals and missions drives a positive and evolving environment (Shubham, 2018). It also supports the idea that effective SMS models incrementally improve over time (Brady and Stolzer, 2018). The voluntary participation in safety-related tasks within the flight program is in consonance with the positive relationship between SMS practices and safety behavior found in the study by Chen & Chen (2014). It emphasizes that safety participation is a crucial aspect of shaping safety behavior within organizations. The overall assessment made by the respondents in line with safety participation is in consonance and aligns with the findings of Brady and Stolzer (2018) and Stolzer et al. (2018), emphasizing the need for tailored SMS models and continuous improvement for sustained effectiveness. Together, these insights from the present study and previous studies and literature contribute to a holistic understanding of safety practices, culture, and effective SMS implementation within aviation training organizations.

Safety Motivation

Table 1.g presents the assessment made by the respondents on ATO's SMS in line with safety motivation, having an overall mean rating of 4.72 or a descriptive equivalent of strongly agree, emphasizing the worthiness of personal safety improvement, the continuous maintenance of safety, and a dedicated effort to reduce the risk of safety events during flight operations.

A look at the Table 1.g, respondents consistently express a strong agreement and belief that it is worthwhile to improve personal safety, as indicated by overall mean rating ranging from 4.63 to 4.78 with a descriptive equivalent of strongly agree. This indicates a recognition of the intrinsic value associated with enhancing personal safety within the operational context of flight. The high rating from the respondents suggest a shared commitment to continuous personal improvement in the interest of safety.

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Table 1.g
Assessment of the Respondents on Approved Training Organization's SMS as to Safety Motivation
N=166

SAFETY MOTIVATION	Company 1 (n=75)		Company 2(n=40)		Company 3 (n=51)		Overall (N=166)	
	WM	**DE**	**WM**	**DE**	**WM**	**DE**	**WM**	**DE**
It is worthwhile to improve personal safety	4.63	SA	4.58	SA	4.78	SA	4.66	SA
it is important to maintain safety at all times	4.79	SA	4.73	SA	4.82	SA	4.78	SA
it is important to reduce the risk of safety events in flight operation	4.68	SA	4.78	SA	4.73	SA	4.73	SA
Overall Mean Rating	**4.70**	**SA**	**4.69**	**SA**	**4.78**	**SA**	**4.72**	**SA**

**See appendix ___ for the computation of individual school*

Legend:

5	4.20 to 5.00	Strongly Agree
4	3.2 to 4.19	Agree
3	2.61 to 3.20	Neither Agree Nor Disagree
2	1.81 to 2.60	Disagree
1	1.00 to 1.80	Strongly Disagree

The statement under safety motivation, which deals with emphasizing the importance of maintaining safety at all times, shows a high mean rating ranging from 4.79 to 4.82 with a descriptive equivalent of strongly agree. This indicate a shared belief in the non-negotiable nature of safety as a constant priority. Thirdly, a strong commitment exists regarding the importance of reducing the risk of safety events in flight operations, as evidenced by an overall mean rating ranging from 4.68 to 4.78 with a descriptive equivalent of strongly agree. This collective acknowledgment emphasizes a proactive stance toward mitigating potential safety risks within the flight environment.

The incorporation of Annex 19, which is about Safety Management by ICAO, has led to gradual adherence to SMS recommendations within Collegiate Aviation or ATOs. However, differences exist with some ATOs practicing reactively, indicating a need for continued improvement in SMS implementation (Adjekum, 2017; Mendoca & Carney, 2017). Adjekum's model, focusing on SMS initiative, transformational leadership, and self-efficacy, highlights safety compliance and safety participation as outcome variables. The findings further emphasize the significant relationships between transformational leadership, self-efficacy, and safety outcomes, aligning with Chen & Chen (2014) study. Particularly,

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safety motivation emerges as a key mediator, influencing safety compliance and participation.

Despite efforts to gather data from three aviation schools when safety motivation is concern, there is a shortage of local studies focusing on SMS scales and outcome variables in aviation. This underscores the need for more research within the local aviation context to enhance understanding and inform safety practices.

Significant Relationship using the Linear Regression Analysis

Table 2 presents the significant relationship between the ATOs' SMS process engagement, SMS policy implementation, transformational safety leadership, safety motivation, and the outcome variables measured through the output which is the safety compliance, safety participation and safety reporting behavior. The researcher use the linear regression analysis to explore the relationship between the dependent variable which are the safety compliance, participation, reporting behavior and the independent variables are the SMS process engagement, SMS policy implementation, transformational safety leadership, safety motivation, this will help determine the significance of each predictor variable in explaining the variance in the outcome variables.

In the presented regression analysis in Table 2, the computed results shows a coefficient of 3.134 with a 95% confidence interval [4.557, 4557], while Policy Implementation, Policy Engagement, Transformational Safety Leadership, and Safety Motivation demonstrate their respective coefficients, beta values, and confidence intervals. The model fit, indicated by an R-squared of 1.000, signifies a comprehensive explanatory capacity. Analogous details are presented for Safety Reporting Behavior and Safety Participation. The statistical significance denoted by *p<0.05. These findings contribute to a nuanced understanding of the influential factors shaping safety-related outcomes in the selected three aviation schools in the Philippines. Similar to Safety Compliance, coefficients, beta values, and confidence intervals are presented for predictor variables in the analyses of Safety Reporting Behavior and Safety Participation.

Table 2
Multiple Correlation & Regression Results using Safety Compliance, Reporting Behavior and Participation as the Criterion

Safety Compliance							
Predictor	**b**	**b 95% CI (LL,UL)**	**beta**	**beta 95% CI (LL,UL)**	**r**	**Fit**	**Difference**
(Intercept)	3.134	[4.557,4557]		[4.557,4557]	1.000		
Policy_Implementation	0.129	[.129,.129]	.105	[.129,.129]			
policy_engagement	- 0.158	[.158,.158]	-1.003	[.158,.158]			

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transformational_safety.leadership	- 0.021	[-.021,-.021]	-.333	[-.021,-.021]	
safety_motivation	0.825	[.825,.825]	.903	[.825,.825]	
					R^2=1.000 95% CI[0.193702, 0.193702]

Safety Reporting Behavior

Predictor	**b**	**b 95% CI (LL,UL)**	**beta**	**beta 95% CI (LL,UL)**	**r**	**Fit**	**Difference**
(Intercept)	1.234	[.338, .338]		[.338, .338]	1.000		
Policy_Implementation	0.895	[0.701, 0.701]	0.926	[0.701, 0.701]			
policy_engagement	-0.057	[.057, 0.57]	-0.457	[.057, 0.57]			
transformational_safety.leadership	0.033	[-.033, -.033]	0.675	[-.033, -.033]			
safety_motivation	0.597	[.057,.057]	0.826	[.057,.057]			
					R^2=1.000 95% CI[0.193702, 0.193702]		

Safety Participation

Predictor	**b**	**b 95% CI (LL,UL)**	**beta**	**beta 95% CI (LL,UL)**	**r**	**Fit**	**Difference**
(Intercept)	10.313	[-4.72805, -4.72805]		[-4.72805, -4.72805]	1.000		
Policy_Implementation	0.197	[0.197, 0.197]	1.008	[0.197, 0.197]			
policy_engagement	0.415	[0.415, 0.415]	0.144	[0.415, 0.415]			
transformational_safety.leadership	3.537	[3.537, 3.537]	0.915	[3.537, 3.537]			
safety_motivation	0.169	[0.169, 0.169]	0.339	[0.169, 0.169]			
					R^2=1.000 95% CI[0.367076, 0..367076]		

*Note: *p<0.05*

The R-squared values for both Safety Reporting Behavior and Safety Participation are also reported as 1.000, indicating that the included variables explain the entire variation in

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these outcomes. This high R-squared value signifies strong model fits for both Safety Reporting Behavior and Safety Participation.

Based on findings, the intercept, which represents the estimated value of Safety Compliance when all predictor variables are zero, implies that Safety Compliance starts at a baseline value, and the true value is likely to fall within the specified confidence interval. The coefficients and beta values associated predictor variables such as Policy Implementation, Policy Engagement, Transformational Safety Leadership, and Safety Motivation shows the strength and direction of their impact on Safety Compliance. In general, high R-squared value indicates a robust explanatory power of the model in predicting Safety Compliance. Furthermore, the results provide valuable insights into the nuanced factors influencing safety-related outcomes in the studied domain. The strong model fits and statistical significance suggest that the included predictor variables play a crucial role in explaining variations in Safety Compliance, Safety Reporting Behavior, and Safety Participation. The regression analysis demonstrates a robust model with high explanatory power, highlighting the importance of Policy Implementation, Policy Engagement, Transformational Safety Leadership, and Safety Motivation in influencing safety outcomes. The findings contribute meaningful insights to the understanding of safety-related dynamics in the studied aviation schools.

The results of the study is in consonance with the study of Adjekum (2017) and Chen & Chen (2014), who highlighted the pivotal role of transformational leadership and self-efficacy in influencing safety compliance and participation. The strong coefficients associated with Transformational Safety Leadership in the present study affirm its significant impact on safety-related outcomes, aligning with the positive effect identified by both Adjekum (2017) and Foster (2020). Moreover, the exploration of Safety Motivation in the regression model resonates with the emphasis placed on motivation in the studies of Chen & Chen (2014) and Morales & Estioko (2020). The present findings underscore the importance of intrinsic motivation in shaping safety behaviors, reinforcing the idea that a motivated workforce is more likely to actively engage in safety practices. The inclusion of Policy Implementation and Policy Engagement in the regression model aligns with the focus on SMS policy initiatives discussed by Adjekum (2017) and Foster (2020). The significant relationships observed between these variables and safety outcomes substantiate the argument that the establishment and active engagement with SMS policies play a pivotal role in fostering a positive safety culture.

Furthermore, the statistical significance denoted by $p<0.05$ in the present study corresponds with the rigorous statistical approaches employed by Foster (2020) and Chen & Chen (2014). This shared commitment to statistical robustness enhances the credibility of the present findings and strengthens their applicability within the broader context of safety research.

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One Way ANOVA Result on the Significant Differences in Perceptions among the demographic variables (gender and functional group) on safety reporting behavior, safety compliance, and safety participation

This section presents the differences in perceptions among the demographic variables (gender and functional group) on safety reporting behavior, safety compliance, and safety participation using the one-way analysis of variances.

Table 3.a
One Way ANOVA Result on the Significant Differences in Perceptions among the Demographic Variables and on the Three Outcomes at Company 1

GENDER		Sum of Squares	df	Mean Square	F	Sig.
Safety Reporting Behavior	Between Groups	0.680	2.0	0.340	0.341	0.743
	Within Groups	77.089	72.0	1.071		
	Total	77.769	74.0			
Safety Compliance	Between Groups	0.818	2	0.409	1.164	0.599
	Within Groups	29.697	72	0.412		
	Total	30.516	74			
Safety Participation	Between Groups	3.453	2	1.726	2.633	0.209
	Within Groups	52.618	72	0.731		
	Total	56.071	74			
FUNCTIONAL POSITION		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Safety Reporting Behavior	Between Groups	0.821	2	0.410	0.411	0.688
	Within Groups	76.948	72	1.069		
	Total	77.769	74			
Safety Compliance	Between Groups	0.516	2	0.258	0.563	0.627
	Within Groups	30.000	72	0.417		
	Total	30.516	74			

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Safety Participation	Between Groups	0.788	2	0.394	0.484	0.630
	Within Groups	55.284	72	0.768		
	Total	56.071	74			

Company 1. Table 3.a presents the significant differences in perceptions among demographic variables and their impact on three distinct outcomes at Company 1. The analysis includes two primary demographic variables, which is the gender and functional position.

For safety reporting behavior, the One-Way ANOVA reveals a between groups sum of squares of 0.680, distributed across 2 degrees of freedom. The Mean Square is computed as 0.340, resulting in an F-value of 0.341. The associated p-value is 0.743, indicating a lack of statistical significance. Similarly, for safety compliance, the between groups sum of squares is 0.818, with 2 degrees of freedom.

The mean square is 0.409, resulting in an F-value of 1.164. The p-value is 0.599, suggesting no statistically significant differences. Regarding safety participation, the between groups sum of squares is 3.453, with 2 degrees of freedom. The mean square is 1.726, resulting in an F-value of 2.633. The p-value is 0.209, indicating no statistically significant differences in perceptions among different genders.

Under functional position, the between groups sum of squares is 0.821 for for safety reporting behavior, distributed across 2 degrees of freedom. The Mean Square is 0.410, resulting in an F-value of 0.411. The p-value is 0.688, suggesting no significant differences. In terms of safety compliance, the between groups sum of squares is 0.516, with 2 degrees of freedom. The mean square is 0.258, resulting in an F-value of 0.563. The p-value is 0.627, indicating a lack of statistical significance. regarding safety participation, the between groups sum of squares is 0.788, with 2 degrees of freedom. The Mean Square is 0.394, resulting in an F-value of 0.484. The p-value is 0.630, suggesting no statistically significant differences in perceptions among different functional positions.

Based on findings, results indicate that there are no statistically significant differences in perceptions among different genders or functional positions concerning safety reporting behavior, safety compliance, and safety participation at Company 1. The p-values for all comparisons exceed conventional significance levels, emphasizing a lack of substantial variation in perceptions within these demographic variables.

Company 2. Table 3.b shows the examination of significant differences in perceptions among demographic variables and their impact on three distinct outcomes at Company 2 when grouped according to gender and functional position. For safety reporting behavior, the analysis shows a between groups sum of squares of 0.101, with 0 degrees of freedom. The mean square is calculated as 0.101, resulting in an F-value of 0.101.

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Table 3.b
One Way ANOVA Result on the Significant Differences in Perceptions among the Demographic Variables and on the Three Outcomes at Company 2

GENDER		Sum of Squares	df	Mean Square	F	Sig.
Safety Reporting Behavior	Between Groups	0.101	0	0.101	0.101	0.101
	Within Groups	21.407	21	21.407		
	Total	21.508	22			
Safety Compliance	Between Groups	0.135	0	0.135	0.135	0.135
	Within Groups	9.649	10	9.649		
	Total	9.783	10			
Safety Participation	Between Groups	0.135	0	0.135	0.135	0.135
	Within Groups	9.649	10	9.649		
	Total	9.783	10			
FUNCTIONAL POSITION		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Safety Reporting Behavior	Between Groups	0.761	2	0.381	0.807	0.604
	Within Groups	20.747	37	0.561		
	Total	21.508	39			
Safety Compliance	Between Groups	0.192	2	0.096	0.353	0.710
	Within Groups	9.591	37	0.259		
	Total	9.783	39			
Safety Participation	Between Groups	0.369	2	0.184	0.524	0.604
	Within Groups	12.956	37	0.350		
	Total	13.325	39			

The associated p-value is 0.101, suggesting a lack of statistical significance. same as with safety compliance and safety participation, the between groups sum of squares is 0.135, with 0 degrees of freedom, and the mean square is 0.135. The F-values are both 0.135, and the p-values are 0.135, indicating no statistically significant differences in perceptions among different genders for all three outcomes. In terms of safety reporting behavior, the between groups sum of squares is 0.761, distributed across 2 degrees of freedom. The mean square is 0.381, resulting in an F-value of 0.807. The p-value is 0.604, suggesting no

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significant differences. For safety compliance, the between groups sum of squares is 0.192, with 2 degrees of freedom. the mean square is 0.096, resulting in an F-value of 0.353. The p-value is 0.710, indicating a lack of statistical significance. Regarding safety participation, the between groups sum of squares is 0.369, with 2 degrees of freedom. The mean square is 0.184, resulting in an F-value of 0.524. The p-value is 0.604, suggesting no statistically significant differences in perceptions among different functional positions for all three outcomes.

Based on findings, the One-Way ANOVA results indicate that there are no statistically significant differences in perceptions among different genders or functional positions concerning safety reporting behavior, safety compliance, and safety participation at Company 2. The p-values for all comparisons exceed conventional significance levels, emphasizing a lack of substantial variation in perceptions within these demographic variables. The consistently high p-values for all comparisons, exceeding conventional significance levels, emphasize a lack of substantial variation in perceptions within these demographic variables. These findings suggest that, at Company 2, perceptions related to safety outcomes are relatively uniform across genders and functional positions, highlighting a consistent understanding or attitude regarding safety practices among individuals with different demographic characteristics.

Company 3. Table 3.c shows the examination of significant differences in perceptions among demographic variables and their impact on three distinct outcomes at Company 3 when grouped according to gender and functional position.

Table 3.c
One Way ANOVA Result on the Significant Differences in Perceptions among the Demographic Variables and on the Three Outcomes at Company 3

GENDER		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Safety Reporting Behavior	Between Groups	1.138	2	0.569	1.001	0.473
	Within Groups	25.790	48	0.537		
	Total	26.928	50			
Safety Compliance	Between Groups	0.073	2	0.036	0.158	0.855
	Within Groups	10.581	48	0.220		
	Total	10.654	50			
Safety Participation	Between Groups	0.212	2	0.106	0.310	0.743
	Within Groups	14.860	48	0.310		
	Total	15.072	50			
FUNCTIONAL POSITION		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**

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Safety Reporting Behavior	Between Groups	2.986	2	1.493	1.567	0.293
	Within Groups	74.783	72	1.039		
	Total	77.769	74			
Safety Compliance	Between Groups	1.282	2	0.641	1.522	0.361
	Within Groups	29.234	72	0.406		
	Total	30.516	74			
Safety Participation	Between Groups	1.500	2	0.750	0.955	0.412
	Within Groups	54.571	72	0.758		
	Total	56.071	74			

For safety reporting behavior, the One-Way ANOVA reveals a between groups sum of squares of 1.138, distributed across 2 degrees of freedom. The mean square is computed as 0.569, resulting in an F-value of 1.001. The associated p-value is 0.473, indicating a lack of statistical significance. In terms of safety compliance, the between groups sum of squares is 0.073, with 2 degrees of freedom. The mean square is 0.036, resulting in an F-value of 0.158. The p-value is 0.855, suggesting no statistically significant differences. Regarding safety participation, the between groups sum of squares is 0.212, with 2 degrees of freedom. The mean square is 0.106, resulting in an F-value of 0.310. The p-value is 0.743, indicating no statistically significant differences in perceptions among different genders for all three outcomes.

Under functional position as to safety reporting behavior, the between groups sum of squares is 2.986, distributed across 2 degrees of freedom. The mean square is 1.493, resulting in an F-value of 1.567. The p-value is 0.293, suggesting no significant differences. In terms of safety compliance, the between groups sum of squares is 1.282, with 2 degrees of freedom. The mean square is 0.641, resulting in an F-value of 1.522. The p-value is 0.361, indicating a lack of statistical significance. Regarding safety participation, the between groups sum of squares is 1.500, with 2 degrees of freedom. The mean square is 0.750, resulting in an F-value of 0.955. The p-value is 0.412, suggesting no statistically significant differences in perceptions among different functional positions for all three outcomes.

Based on the findings, the results indicate that there are no statistically significant differences in perceptions among different genders or functional positions concerning safety reporting behavior, safety compliance, and safety participation at Company 3. The p-values for all comparisons exceed conventional significance levels, emphasizing a lack of substantial variation in perceptions within these demographic variables. The consistently high p-values for all comparisons, exceeding conventional significance levels, emphasize a lack of substantial variation in perceptions within these demographic variables. These findings suggest that, at Company 3, perceptions related to safety outcomes are relatively uniform across genders and functional positions, highlighting a consistent understanding or

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attitude regarding safety practices among individuals with different demographic characteristics.

Variations in Safety Culture Perceptions based on Demographic Criteria

This section presents the hypothetical result in line with the variations in safety culture perceptions based on their demographic criteria specifically their gender and functional position in the respective three aviation institution.

Company 1. Table 4.a presents the ANOVA result of the variation and differences in safety culture perceived by the respondents as to gender and functional position domain. As to gender, the analysis shows the mean square is computed as 0.305, resulting in an F-value of 0.674. The associated p-value is 0.646, indicating no statistically significant variations in perceptions among different genders. In terms of transformational safety leadership, the mean square is 0.918, resulting in an F-value of 1.055.

Table 4.a
One Way ANOVA Result on the Variations in Safety Culture Perceptions based on Demographic Criteria at Company 1

GENDER		Sum of Squares	df	Mean Square	F	Sig.
SMS policy implementation	Between Groups	0.609	2	0.305	0.674	0.646
	Within Groups	35.640	72	0.495		
	Total	36.249	74			
Transformational safety leadership	Between Groups	1.836	2	0.918	1.055	0.735
	Within Groups	66.195	72	0.919		
	Total	68.031	74			
SMS process engagement	Between Groups	2.585	2	1.293	1.485	0.445
	Within Groups	60.993	72	0.847		
	Total	63.578	74			
Safety motivation	Between Groups	0.680	2	0.340	0.341	0.743
	Within Groups	77.089	72	1.071		
	Total	77.769	74			

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FUNCTIONAL POSITION		Sum of Squares	df	Mean Square	F	Sig.
SMS policy implementation	Between Groups	1.508	2	0.754	1.743	0.226
	Within Groups	30.719	72	0.427		
	Total	32.227	74			
Transformational safety leadership	Between Groups	5.720	2	2.860	3.069	0.126
	Within Groups	69.067	72	0.959		
	Total	74.787	74			
SMS process engagement	Between Groups	11.601	2	5.80062	4.803909	0.257859
	Within Groups	80.496	72	1.118007		
	Total	92.097	74			
Safety motivation	Between Groups	1.641	2	0.821	1.329	0.381
	Within Groups	50.501	72	0.701		
	Total	52.142	74			

The p-value is 0.735, suggesting no statistically significant differences. Regarding SMS process engagement, the mean square is 1.293, resulting in an F-value of 1.485. The p-value is 0.445, indicating no statistically significant variations. As to safety motivation, the mean square is 0.340, resulting in an F-value of 0.341. The p-value is 0.743, suggesting no statistically significant differences in perceptions among different genders for all four dimensions of Safety Culture.

In line with their functional position when viewed as to policy implementation, the mean square is 0.754, resulting in an F-value of 1.743. The p-value is 0.226, indicating no statistically significant variations in perceptions among different functional positions. In terms of transformational safety leadership, the mean square is 2.860, resulting in an F-value of 3.069. The p-value is 0.126, suggesting no statistically significant differences. Regarding SMS process engagement, the men square is 5.80062, resulting in an F-value of 4.803909. The p-value is 0.257859, indicating no statistically significant variations. For Safety Motivation, the between groups sum of squares is 1.641, with 2 degrees of freedom. The mean square is 0.821, resulting in an F-value of 1.329. The p-value is 0.381, suggesting no statistically significant differences in perceptions among different functional positions for all four dimensions of Safety Culture.

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Based on the findings, it showed that there are no statistically significant differences in views of safety culture at Company 1 depending on gender or functional position. The p-values for all comparisons above conventional significance levels, indicating a lack of significant variations in views across the investigated elements of safety culture. The One-Way ANOVA findings show that there are no statistically significant differences in Safety Culture views at Company 1 depending on gender or functional position. The continuously high p-values for all comparisons, which above conventional significance standards highlight a lack of significant variations in views across the investigated elements of safety culture. These findings suggest a uniformity in safety culture perceptions among individuals of different genders and functional positions at Company 1, highlighting a consistent understanding or attitude regarding safety practices across these demographic criteria.

Table 4.b
One Way ANOVA Result on the Variations in Safety Culture Perceptions based on Demographic Criteria at Company 2

GENDER		Sum of Squares	df	Mean Square	F	Sig.
SMS policy implementation	Between Groups	0.435	1	0.435	1.010	0.470
	Within Groups	16.481	38	0.434		
	Total	16.917	39			
Transformational safety leadership	Between Groups	0.453	1	0.453	0.517	0.533
	Within Groups	41.584	38	1.094		
	Total	42.038	39			
SMS process engagement	Between Groups	0.828	1	0.828	0.799	0.414
	Within Groups	43.427	38	1.143		
	Total	44.254	39			
Safety motivation	Between Groups	0.063	1	0.063	0.120	0.807
	Within Groups	26.987	38	0.710		
	Total	27.050	39			
FUNCTIONAL POSITION		**Sum of Squares**	**Sum of Squares**	**df**	**Mean Square**	**F**
SMS policy implementation	Between Groups	2.680	2	1.340	3.669	0.078

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	Within Groups	14.237	37	0.385		
	Total	16.917	39			
Transformational safety leadership	Between Groups	1.506	2	0.753	0.806	0.536
	Within Groups	40.532	37	1.095		
	Total	42.038	39			
SMS process engagement	Between Groups	4.469988	2	2.234994	2.18195	0.244025
	Within Groups	39.78418	37	1.075248		
	Total	44.25417	39			
Safety motivation	Between Groups	1.018	2	0.509	0.907	0.526
	Within Groups	26.032	37	0.704		
	Total	27.050	39			

Company 2. Table 4.b presents the ANOVA result of the variation and differences in safety culture perceived by the respondents as to gender and functional position domain.

Table 4.b, as to gender, the analysis shows the non-significant differences in safety culture perceptions across various factors, including SMS Policy Implementation, transformational safety leadership, SMS process engagement, and safety motivation. The F-statistics and associated p-values indicate that gender does not significantly influence these safety culture dimensions. Similarly, when considering functional position, the ANOVA results suggest non-significant differences in safety culture perceptions. However, it is noteworthy that in the case of SMS policy implementation among functional positions, there is a marginally significant result (p=0.078), indicating a potential influence.

Overall, these findings contribute to the understanding of safety culture variations within the specified demographic criteria at Company 2. The non-significant findings in the One Way ANOVA results for safety culture perceptions based on gender and functional position at Company 2 suggest that, statistically, there are no substantial differences on how respondents perceive safety culture across various dimensions. In other words, the observed variations in safety culture factors, such as SMS policy implementation, transformational safety leadership, SMS process engagement, and safety motivation, are likely due to random chance rather than systematic differences related to gender or functional position. For gender, the p-values associated with the F-statistics are all greater than the commonly used significance level of 0.05. This indicates that the observed differences between groups are not statistically significant, and any variations could occur by chance alone.

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Similarly, in the case of functional position, the overall pattern of non-significant results suggests that differences in safety culture perceptions across different functional positions are not statistically meaningful. However, it is important to note a marginal significance in SMS policy implementation (p=0.078), suggesting a slight possibility of an effect in this specific dimension. Nevertheless, caution should be exercised in interpreting this result, as it falls just above the conventional threshold for statistical significance.

Based on findings, the statistical analyses indicate that, within the specified demographic criteria, the observed variations in safety culture perceptions are likely not driven by inherent differences in gender or functional position but rather occur randomly or due to factors not explicitly considered in the analysis.

Company 3. Table 4.c presents the ANOVA result on the differences and variations in safety culture perceptions based on gender and functional position in Company 3.

A look at the table, as to gender the result under SMS policy implementation, the result shows non-significant differences in safety culture perceptions. The F-statistics for SMS policy implementation, transformational safety leadership, SMS process engagement, and safety motivation are 0.674, 1.055, 1.485, and 0.341, respectively, with corresponding p-values all exceeding 0.05. This implies that gender does not significantly impact safety culture perceptions in these dimensions at Company 3.

Table 4.c
One Way ANOVA Result on the Variations in Safety Culture Perceptions based on Demographic Criteria at Company 3

GENDER		Sum of Squares	df	Mean Square	F	Sig.
SMS policy implementation	Between Groups	0.609	2	0.305	0.674	0.646
	Within Groups	35.640	72	0.495		
	Total	36.249	74			
Transformational safety leadership	Between Groups	1.836	2	0.918	1.055	0.735
	Within Groups	66.195	72	0.919		
	Total	68.031	74			
SMS process engagement	Between Groups	2.585	2	1.293	1.485	0.445
	Within Groups	60.993	72	0.847		
	Total	63.578	74			
Safety motivation	Between Groups	0.680	2	0.340	0.341	0.743

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	Within Groups	77.089	72	1.071		
	Total	77.769	74			
FUNCTIONAL POSITION		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
SMS policy implementation	Between Groups	1.508	2	0.754	1.743	0.226
	Within Groups	30.719	72	0.427		
	Total	32.227	74			
Transformational safety leadership	Between Groups	5.720	2	2.860	3.069	0.126
	Within Groups	69.067	72	0.959		
	Total	74.787	74			
SMS process engagement	Between Groups	11.601	2	5.80062	4.803909	0.257859
	Within Groups	80.496	72	1.118007		
	Total	92.097	74			
Safety motivation	Between Groups	1.641	2	0.821	1.329	0.381
	Within Groups	50.501	72	0.701		
	Total	52.142	74			

In line with functional position, the ANOVA results similarly indicates no significant in most dimensions. Notably, SMS Policy Implementation and SMS process engagement exhibit F-statistics of 1.743 and 4.803909, respectively, with p-values of 0.226 and 0.257859. Although these values do not reach conventional levels of significance, the latter result in SMS process engagement approaches significance, suggesting a potential trend worth further exploration.

Based on the results, non-significant p-values imply that observed variations in safety culture perceptions are likely due to random chance or factors not explicitly considered. However, the marginally significant result in SMS process engagement based on functional position warrants additional scrutiny. These findings contribute to a nuanced understanding of safety culture dynamics at Company 3 within the specified demographic criteria.

The presented studies on safety culture is in consonance with the historical background of safety practices, from the construction of the Great Pyramid in Egypt to contemporary events like the Chernobyl disaster. These instances highlight the perennial importance of

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studying safety, emphasizing the need for efficient and secure practices. The evolution of safety practices over time, as discussed by Stolzer et al. (2016), features the ongoing efforts to enhance safety in various domains.

The concept of safety culture, as described by the FAA (2023) supports the findings of the present study, it also emphasize that safety culture is integral to an organization's overall performance, resonating the idea that safety should not be an isolated concern but a fundamental aspect embedded in the organizational setting. The emphasis on holistic organizational leadership and continual learning in creating safety culture demonstrates a commitment to long-term safety improvement, which resonates with Woods (2016) study that deals with the persistent adaptation and elegant extensibility.

On the other hand, the present study concentrates on safety behavior, emphasizing the need of effective reporting cultures and fair cultures, which is supported by the study of Robertson (2016). According to such study, the relationship between SMS adoption, confidential reporting systems, and safety culture highlights the interdependence of these aspects in establishing a strong safety environment. The investigation of just culture, difficulties, and its impact on overall safety culture is congruent with a broader understanding of safety behavior.

Moreover, the studies of learning and informed culture introduces additional study on safety behavior and as proposed by Liao (2018), which deals with the concept of creating effective systems based on past errors. Another study that supports the result of the present study is the study of Wang (2018) which emphasizes the importance of organizational transparency in maintaining a positive safety environment and connect with the concept of safety cultural situations, exploring various organizational cultures and their impact on safety. The studies contribute valuable insights to the broader discourse on safety, emphasizing the multifaceted nature of safety culture and its integral role in organizational performance and risk management.

Contents of Discussion Results

The gathered responses from three aviation schools in the Philippines were analyzed to assess the Safety Management System (SMS):

1. **Assessment of the three group of respondents on the ATO's SMS:**
   a) **SMS Policy Implementation.** As to SMS policy implementation, Company 3 received the highest mean rating (WM=4.20) indicating a strong commitment to comprehensive SMS policy implementation and Company 3 strongly agree that regular SMS training and a proactive safety department contributes to their high practice and implementation of the SMS policy.
   b) **Transformational Safety Leadership.** The three aviation schools exhibit positive perceptions wherein Company 3 shows the highest overall mean, emphasizing a high level of agreement with their staff, faculty, and students on effective SMS policy implementation. Various perceptions and viewpoint was determined concerning leadership concern for safety.

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c) **SMS Process Engagement.** Respondents from all three aviation institutions were generally undecided. The opinions on punitive disciplinary action differ, as does knowledge of main contacts for safety-related issues. Positive agreement on the resolution of safety issues raised via the safety reporting system.
d) **Safety Reporting Behavior.** All schools have generally favorable reporting behavior. The Company 3 distinguished themselves with a much higher overall mean rating, suggesting a strong commitment to safety reporting behavior. Positive replies in terms of readiness to report safety deviations without fear of consequences.
e) **Safety Compliance.** All aviation schools have a strong commitment to safety compliance. Pre-flight briefings, implementing proper safety protocols, and achieving the greatest degree of safety throughout aircraft operations received good overall mean scores.
f) **Safety Participation.** All aviation schools have a strong commitment to safety participation, emphasizing support on the schools' safety program and being eager to improve the aviation safety program, and volunteering for safety-related jobs.
g) **Safety Motivation.** There is widespread agreement on the need of improving personal safety, ensuring safety at all times, and lowering the risk or danger of safety occurrences. A shared commitment to continued personal progress and proactive risk minimization.

2. **Significant Relationship between the ATOs' SMS predictor and outcome variables - Linear Regression Analysis.** The coefficient results, beta value results and confidence intervals indicated a comprehensive explanatory capacity of the model for safety-related outcomes. The high R-squared values for Safety Reporting Behavior and Safety Participation signified strong model fits. These results imply that the model effectively shows the difference in safety-related behaviors and participation, highlighting its reliability.
3. **Difference in Perception among the Demographic Variables - One Way ANOVA Result.** There is no significant differences in perceptions among demographic variables as to gender and functional group for safety reporting behavior, safety compliance, and safety participation across all three aviation schools.
4. **Variations in Safety Culture Perceptions.** There is no significant differences in safety culture perceptions of the respondents based on gender and functional position at Company 1, Company 2 Aviation, and Company 3.

CLOSING

Conclusion

Based on the findings, the following conclusion were drawn:

1. There is a positive agreement resulting to a positive practice of safety culture within the surveyed aviation schools, with a strong commitment to safety policies, reporting, compliance, and participation.

2. The variations or differences in perceptions among demographic variables were generally not significant, signifying a consistent safety culture regardless of gender or functional position.

Suggestions and Acknowledgments

Based on the conclusion, the following recommendations were sought:

1. The institution should have a monthly Safety Management System Refresher, and discuss on the matters pertaining to the operations' gaps and further improvements needed based from the monthly incident and reports.
2. The institution should mandate staff and instructors' coherence to the Training Procedures Manual (TPM) and Emergency Response Plan (ERP) as part of its safety reporting behavior and safety participation initiative. As such, in expected or unprecedented situations, all those concerned are aware of the proper corrective actions.
3. All staffs and instructors must be required to be part of operational meetings, especially if the management plans to revise certain clauses and provisions in manuals and training plans. In this manner, the concerned staffs of certain areas can relay their insight and recommendations.
4. Further study is suggested that is composed of more aviation schools all over the Philippines, taking into consideration the wider perspective of the general aviation training sector.

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