



5-1-2014

# An Analysis of Students' Perceptions to Just Culture in the Aviation Industry: A Study of a Midwest Aviation Training Program (Case Study)

Lazo Akram Mohammad

Follow this and additional works at: <https://commons.und.edu/theses>

---

## Recommended Citation

Mohammad, Lazo Akram, "An Analysis of Students' Perceptions to Just Culture in the Aviation Industry: A Study of a Midwest Aviation Training Program (Case Study)" (2014). *Theses and Dissertations*. 383.  
<https://commons.und.edu/theses/383>

This Thesis is brought to you for free and open access by the Theses, Dissertations, and Senior Projects at UND Scholarly Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UND Scholarly Commons. For more information, please contact [zeinebyousif@library.und.edu](mailto:zeinebyousif@library.und.edu).

AN ANALYSIS OF STUDENTS' PERCEPTIONS TO JUST CULTURE IN THE  
AVIATION INDUSTRY: A STUDY OF A MIDWEST AVIATION TRAINING  
PROGRAM (CASE STUDY)

By

LAZO AKRAM MOHAMMED  
Bachelor of Art, University of Sulyamaniah- Iraq  
(2000-2001)

A Thesis

Submitted to the Graduate Faculty

Of the University of North Dakota

In partial fulfillment of the requirements

For the degree of Master of Science – Aviation

Grand Forks, North Dakota

May 2014

**Copyright 2014 LAZO AKRAM MOHAMMED**

This thesis, submitted by Lazo Akram Mohammed in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

W.D. Watson

William Watson, J.D.

Warren C. Jensen

Warren C. Jensen, M.D.

Gary Ullrich

Gary Ullrich, M.S.

This thesis meets the standards for appearance, conforms to the style and format requirements of the School of Graduate Studies of the University of North Dakota, and is hereby approved.

Wayne E. Swisher

Wayne E. Swisher, Ph.D.

Dean School of Graduate Studies

May 2, 2014

Date

**PERMISSION**

**Title: AN ANALYSIS OF STUDENTS' PERCEPTIONS TO JUST CULTURE IN THE AVIATION INDUSTRY: A STUDY OF A MIDWEST AVIATION TRAINING PROGRAM (CASE STUDY)**

Department: Aviation

Degree: Master of Science

In presenting this thesis in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my thesis work or, in his absence, by the chairperson of the department or the dean of the Graduate School. It is understood that any copying or publication or other use of this thesis or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of North Dakota in any scholarly use which may be made of any material in my thesis.

LAZO AKRAM MOHAMMED  
April, 22<sup>nd</sup>, 2014

## Table of Contents

ACKNOWLEDGMENTS .....	ix
Abstract .....	x
Chapter One: Introduction .....	1
1.0 Introduction .....	1
1.1 Background to the Problem .....	3
1.2 Problem statement .....	4
1.3 Research Aim and Pertinent aspects .....	5
Chapter Two: Literature Review .....	8
2.0 Introduction .....	8
2.1 Definitions .....	8
2.2 Features of a Just Safety Culture in Aviation .....	11
2.3 Purpose of Culture and SMS in Aviation Industries .....	12
2.4 Creating and Implementing a Just Culture .....	13
2.5 Models of Just Culture in Aviation Organization .....	15
2.6 Effective Methods of Reporting in Just Culture .....	16
2.7 Measurement of Success of Safety Culture and SMS .....	18
2.8 Diagnosis of Safety Culture in Aviation Safety Management Audits .....	18
2.9 A Hierarchical Factor Analysis of a Safety Culture Survey .....	23
2.10 Framework for Understanding of Organizational Safety Cultures .....	24
2.11 The Future of SMS and Culture in Aviation .....	26
2.12 Proposed Hypotheses and Research Questions .....	27
Chapter Three: Methodology .....	29
3.0 Introduction .....	29
3.1 Assumptions and Limitations .....	31
3.2 Data Collection .....	32
3.2.1 Administration of Questionnaires .....	34
3.3 Sampling Technique .....	35
3.4 Data Analysis and Result .....	35

3.5 Data Reporting .....	51
CHAPTER Four: Findings, Analysis and Recommendation .....	53
Conclusion .....	62
References.....	63
Appendices.....	69

### List of Figures:

Figure	Page
1. - GENDER RADIO OF RESPONDENTS .....	36
2. THE AVERAGE AGE OF RESPONDENTS.....	37
3. RESPONDENTS BY CLASS/ LEVEL OF STUDY.....	38
4. RESPONDENTS AS CATEGORIZED BY THE INDIVIDUAL FIELDS OF STUDY: THEIR MAJORS .....	39
5. REPRESENTATIVE OF THE GRADE POINT AVERAGE (GPA) MARK.....	40
6. AVIATION SAFETY AND THE PROVISION OF ADEQUATE RESOURCES.....	41
7. DISCUSSED ISSUES RELATED TO SAFETY AT THE VARIOUS AVIATION TRAINING PROGRAM AEROSPACE MEETINGS AND CLASSES. ....	42
8. THE PRIMARY GOALS OF IDENTIFYING THE ‘WHY AND WHAT FAILED’, AS OPPOSED TO ‘WHO FAILED’, IN THE EVENT OF AN ACCIDENT.....	43
9. AVIATION PROGRAMS AND AEROSPACE REGULARLY IDENTIFYING THE MOST URGENT SAFETY CONCERNS AND SUBSEQUENTLY CARRYING OUT EFFECTIVE PREVENTIVE ACTIONS .....	44
10. DEAN, DIRECTOR OF FLIGHT OPERATIONS, AND THE CHAIR OF ACADEMICS FEELING THAT A SINGLE INCIDENT OR ACCIDENT IS ONE TOO MANY, IN ADDITION TO THE ISSUE OF THE LEADERSHIP ALSO HAVE A GENUINE GOAL OF ZERO MISHAPS.....	45
11. THE ISSUE OF THE FREQUENCY AND WIDE RANGE OF ATTENDEES TO VARIOUS SAFETIES RELATED MEETINGS, BY UND AEROSPACE STAFF.....	46
12. - THE ISSUE OF UND’S AEROSPACE PROGRAM UNDERSTANDING THAT PRODUCTION GOALS AND SAFETY ISSUES CAN AT TIMES BE IN CONFLICT.....	47
13. REGARDING WHETHER THE UND AEROSPACE PROGRAM HAD POLICIES IN PLACE, TOWARDS ENCOURAGING EVERYONE TO RAISE INDIVIDUAL AND GROUP SAFETY-RELATED ISSUES.....	48



14. THE ISSUE OF UND PROGRAM’S AEROSPACE PROGRAM HAVING A SAFETY REPORTING SYSTEM,  
WHICH IS CLEARLY BOTH CONFIDENTIAL AND NON PUNITIVE IN NATURE..... 49

15. THE ISSUE REGARDING THE UND AEROSPACE DISCIPLINARY POLICIES BEING BASED ON AN AGREED  
DISTINCTION; BETWEEN UNACCEPTABLE AND ACCEPTABLE BEHAVIOR. .... 50

## ACKNOWLEDGMENTS

I wish to thank my Mighty GOD for the strength and wisdom to undertake this research work. I want to thank my faculty advisory committee members, William Watson, J.D, Warren Jenson, M.D and Gary Ullrich, M.S for their patience, insightful guidance and diligence provided during my studies at the University of North Dakota. God richly bless you. I thank my wife Valia Ameen, my daughter Alle and son Dilan for bearing with me through all those long nights at the study. Also I would like to thank my mother who came from overseas and tried to encourage and hearten me.

Henceforth, It is a great opportunity, to show my deep appreciation and faithfulness to my father whom till the day he died, supported me to get high academic degree and complete my higher education. (God bless his soul).

**Abstract**

The research will focus on the discussion of the ways in which the top-down nature of Safety Management Systems (SMS) can be used to create ‘Just Culture’ within the aviation industry. Specific focus will be placed on an aviation program conducted by an accredited university, with the institution in focus being the midwest aviation training program. To this end, a variety of different aspects of safety culture in aviation and aviation management will be considered. The focus on the implementation strategies vital for the existence of a ‘Just Culture’ within the aviation industry in general, and particularly within the aforementioned institution’s aerospace program. Some ideas and perspectives will be subsequently suggested and designed for implementation, within the institution’s program.

The aspect of enhancing the overall safety output gained, from the institution, as per standards set within the greater American Aviation industry will be examined. Overall, the paper will seek to showcase the vital importance of implementing the SMS standardization model in the institution’s Aerospace program, while providing some areas of concern. Such concerns will be based on a number of issues, which are pertinent to the overall enhancement of the institution’s observance of aviation safety. This will be both in general application of an SMS, as well as personalized/ specific applications in areas in need of improvement. Overall, through the paper, the author hopes to provide a better understanding of the institution’s placement, with regard to not only aviation safety, but also the implementation of an effective ‘Just Culture’ within the program.

## **Chapter One: Introduction**

### **1.0 Introduction**

Safety Management Systems has its acronym as SMS. It pertains to the utility of various comprehensive management systems in the sector of business, or any other pertinent arenas, where safety elements are of a primary concern. As a business approach towards safety, its major focuses on an explicit, comprehensive and systematic process. The process is tasked with the maintenance and management of various forms of potential safety risks. As with all other forms of management systems, SMS in the Aviation sector provides for various forms of procedural measures. Such measures include planning (policy formulation) and goal setting, in addition to the measurement of overall performance. Through its interwoven nature, with the prevailing fabric of the aviation industry, it hence forms part of the organizational culture present.

Safety therefore seeks the reduction of overall risk levels, to the lowest practical levels possible. Three imperatives are presented, toward adopting a business sector's SMS. These regard the financial, legal and ethical aspects of such a business sector. The latter, refers to an implicit moral obligation on an employer's part. This is towards ensuring that the various pertinent work activities, as well as the work area/ environment of work are safe (Gain Working Group, 2004). Legally, various legislative requirements do exist, with regard to the legal jurisdiction of law formulation. Safety has a directly related consequence on an organizations overall financial exposure. This is through either a reduction or increase, directly or indirectly, of financial obligations, costs and expenditures, in relation to either incidents and/ or accidents.

Just Culture is a relatively new development in management theory, particularly in corporate workplaces. This is a concept of defined values, set of beliefs or norms concerning important issues, how to act, and the behavioral options and resolutions appropriate in relation to incidences of error. In the past as Vietti –Cook (2011) allude, many workplaces have operated under the mutual understanding that employees will not inform or report to authorities or management about situations or conditions that require improvement. In some cases, these conditions or situations may be merely irritating to workers or employees, but in other cases, the conditions of the workplace may be actively dangerous to employees or the public. In workplaces that do not promote just culture, employees rarely report errors, whether they are errors committed by the individual or his or her coworker. Historically, safety culture and Just Culture stemmed from the disaster at Chernobyl. This is because of the massive loss of life that was sustained based on a series of failures at the site. As a result, new policies were created and implemented to ensure that similar disasters could be avoided in the future (Vietti-Cook, 2011).

In the absence of just culture, the culture that is established in workplaces can be best accurately described as blame culture. This is a concept of defined values, set of beliefs or norms concerning work ethics in relation to incidences of error such that people are unwilling to accept liability for faults owing to a dread of prosecution or criticism. In some workplaces, blame culture can and is at times innocuous. However, in industries like aviation or medicine, attempts to sweep mistakes aside or cover them up can be disastrous and can cost millions of dollars and people's lives (Fihn & Mearns et al., 2000).The aviation industry continues to grow, both in scope and magnitude, and will continue to grow as long as globalizing forces continue to work

upon human society. Safety Management Systems (SMS) is one type of managerial approach to the problem of the growing complexity of the aviation industry.

Cooper (2000), states that SMS implements a linear, tiered approach to implementation of safety culture. Implementing SMS in the aviation industry is indeed a complex process. However, one of the first and most important steps entails both the documentation and the creation of an atmosphere of trust. Encouraging an environment where people are rewarded for providing essential, safety-related information is therefore intricately and inextricably related to the issue of Safety Management Systems. Consequently, without trust in the system, as well as the safety net of just culture, the Safety Management Systems of any given organization can easily collapse. Maintaining safety considerations in the face of commercial and financial advancement is one of the major focuses of the aviation industry today (Cooper, 2000). This is particularly as a result of the post-September 11 commercial aviation environment in the United States.

### **1.1 Background to the Problem**

Pertaining to ‘just culture’, in reference to the aviation industry. It is traceable from the early 1990s, being a step towards replacing the majorly punitive cultures that were prevalent then. However to be noted is that these ‘non-blame cultures’ are rare in occurrence or implementation. This is due to the prevailing aspect of ‘the blame’ culture. The latter, is persistent due to the common occurrence of the ‘criminalization of error (human).’ This fundamentally contributes to the prevailing nature of adversarial relationships, at times witnessed in the greater global aviation industry. The problem emanates from the fact that this aspect may potentially influence the resulting inquiry. This is through its greater role-play with regard to getting the truth.

Consequently, various versions of the truth may emerge. These may be especially on the basis of following particular agendas i.e. the limitation of corporate liability or even evading jail sentences amongst others.

## **1.2 Problem statement**

The aspect of just culture, with regard to Safety Management Systems in the aviation industry, continues being a highly debatable issue. This is especially due to the fact that the 'Blame Culture' still plays a crucial role, regarding incident/ accident investigations, as well as the prosecution cases. It is crucial to recognize the fact that presence of incidences and/ or accidents, in the aviation industry cannot all be attributed to human error (SKYGUIDE, 2003). The legal fraternity holds the opinion that systems present are inherently safe, and that it is human beings who pose the main threat to safety. Consequently, it will still take some time before 'human error' is accepted as a justifiable variable. Regarding the Aviation industry's overall safety and pertinent SMSs, the researcher finds it vital to establish whether human error is unavoidable. This is possible to attain through design, which is outside the prevailing systems present.

Thus, as Ruitenber (2001) provides, the aspect of 'Just Culture' is necessary, with human error being a crucial element that is normal to all human beings, even those who are most disciplined. Regarding 'just culture', the background information of an individual is crucial when implementing the aforementioned SMSs. This is due to the fact that general accountability is only possible if there is present a workable solution. This pertains to the greater aim of reconstructing mechanisms which hold

individuals accountable. This is especially when evidence proves the same, the ‘blame-free atmosphere’ present notwithstanding.

Research will be conducted into the safety culture and adherence to the safety standards set. These are within the collegiate aviation program, with special attention being paid to the perceptions of safety culture. Perceptions of safety culture will be gained from flight instructors who have successfully completed the program, and who are therefore responsible for overseeing the program. An analysis of the SMS for the university aviation among students was conducted. In addition, a comparison between the ideal construction of a Just Culture in an aviation program and the actual safety culture will be examined.

### **1.3 Research Aim and Pertinent aspects**

A number of variables are present, i.e. The gender and age of an individual, which inadvertently do contribute to whether ‘Just Culture’ can be adequately cited (Ruitenbergh, 2001). Further still, are the following variables i.e. academic qualifications, the specific area of interest (educational major/ minor), an individual’s grade point average and his/ her career goals. Of vital importance, with respect to the aforementioned, as pertaining to human contributions and/ or the supposed failure of aviation SMSs, are other aspects. These are crucial towards enhancing ‘Just culture’, as opposed to the inherently prevalent ‘Blame culture.’ Pertinent to this, would be the greater engagement on issues related to safety, as discussed regularly at various midwest aviation training program aerospace classes and meetings.

In addition is the need for the Midwest Aviation Training Program Aerospace program, to regularly identify various safety concerns, especially those in need of



urgent attention. The implementation of pertinent and effective preventative actions follows next in the process. This is towards negating the overall effects of existing 'blame culture'. The fact that accidents do occur, does call for a serious review of all prevailing contexts, pertaining especially to the 'what and why reasons' of the accident, as opposed to the 'who caused/ failed' aspect (Churchill, 2003). As a measure, the present deans, the safety department, Directors of Flight Operations, as well as the Chair of Academics, genuinely concerned and hence committed to ensuring greater safety in the aviation sector. This can be achieved by way of ensuring the provision of adequate resources and expertise, which are crucial to the upholding of aviation safety as the safety is not a duty of someone or a group inside an organization but in fact everyone have to contribute and take safety as his or her responsibility. In addition, the Aerospace program officials do require continues review of their ideals and policies (Ruitenbergh, 2001). These are based on having a genuine goal of minimum level of mishaps, as is showcased by top management at the Midwest Aviation Training Program.

The program in general, as Bayuk (2007) alludes, should provide various avenues of encouraging individual and group-entity reporting of various issues affecting aviation safety in. Such a reporting system should be augmented by confidential and non-punitive measures. These do accidentally affect, and therefore influence the kind of disciplinary policies that should be subsequently enforced. There hence is a need to distinguish between acceptable and unacceptable behavior, as only a small percentage of unsafe actions/ acts are as a result of recklessness. Such actions commonly do deserve punitive measures. However, a majority of incidences, events and accidents are notably un-intentional and hence are not liable for punishment

(Bayuk, 2007). This paper therefore aims at establishing a clear system of safety culture in the aviation industry taking into consideration the existing just and blames cultures. It hopes to give a solution to the existent blame culture.

## **Chapter Two: Literature Review**

### **2.0 Introduction**

Generally, companies whose operations expose employees to risks have a responsibility to maintain an active safety system or program. These companies mainly are inclusive of service, manufacturing and mining organizations. However, safety is paramount in any organization, its myriad of activities notwithstanding. This essay will discuss the prevailing safety culture and Safety Management Systems (SMS) found in the aviation industry. Over the years, the aviation industry has maintained high safety standards as indicated by minimal occurrences of accidents or incidents (Stolzer&Halford, 2011). However, in spite of this encouraging trend, the industry still does encourage the establishment of SMS, and a just organizational culture among all Air Navigation Service Providers (ANSPs).

### **2.1 Definitions**

Many researchers have attempted to define both culture and SMS. In fact, as Soeters & Boer (2010) portray, there are many definitions, as recorded in research studies carried out by varying analysts in the previous century. The most comprehensive of these, are those that capture the essence of existing organizational culture encapsulating all values, beliefs and behaviors; notable across all the levels of a given organization. A 'Just Culture' therefore, comprises of pertinent unique features such as trust, the lack of unjustified blame, steady and timely response to criminal and negligible activities. This is in addition to the prevailing the reward system, especially on the aspect of reporting near misses, regarding incidents or

accidents (Soeters & Boer, 2010). In other words, a just culture is built on integrity, consistency and commitment to achieve the desired results of absolute safety to passengers. As Denison (1996) states, both safety standards and organizational cultures can be used interchangeably to portray the same thing.

On the other hand, Safety Management Systems are strategic formulations in the air transportation industry, which facilitate the smooth implementation of safety measures. They involve pertinent procedures, in addition to a well-structured system of management of security measures undertaken within the organization (Denison, 1996). The SMS cannot work efficiently unless a safety culture has been established across the organization. For example, for SMS to succeed there is need for both the employees and the management present, to be made aware of existing safety measures. In addition; is the need to comprehend and feel encouraged towards practicing SMS measures. These are the vital components that ought to, and subsequently need to be entrenched in a company culture.

Understanding the formulation of safety and just culture is the fundamental basis for analysis of the culture in an accredited aviation program. According to Parker, Lawrie, and Hudson (2006), there are a few requirements for an effective safety culture within an organization. They are of the suggestion that an organization with an effective safety culture ought to: -

- have a safety information system that collects, analyzes and disseminates information from incidents and near misses, as well as from regular proactive checks on the system; this promotes efficiency and transparency in operations. The collection and dissemination of information also helps enhance safety among personnel.

- have an efficient and effective reporting culture, where people are prepared to report their errors, mistakes and violations; this helps an organization track its performance and formulate efficient disciplinary actions for those who violate the standards.
- have a culture of trust where people are encouraged and even rewarded to provide essential safety-related information. Pertinently so is that there is need for a clear distinction, with regard to acceptable and unacceptable behavior; this describes just culture.
- be flexible, in terms of the ability to reconfigure the organizational structure present in the face of a dynamic and demanding task environment;
- have the willingness and competence, to draw the right conclusions from its safety system, in addition to being willing to implement reform when it is required. (Parker, Lawrie & Hudson, 2006).

Essentially, safety culture and Just Culture is core environments in which existing authorities do reward, not only the noticing of mistakes, but also the subsequent reporting. This is through the provision of information on potentially dangerous situations, rather than the aspect of punishment (Parker, Lawrie & Hudson, 2006). The GAIN Working Group (2004), suggest a similar ideal:- that the rewarding of employees for their recognition of mistakes, in addition to rectifying them at an early stage, is a much better solution and method. This is especially true in managing employees, rather than a punishment-based system. This is particularly true in the aviation industry, according to the GAIN report (2004). In addition, the GAIN report (2004) suggests that creating a Just Culture promotes an environment where everyone involved in the situation learns from potentially unsafe acts or mistakes. This is as

opposed to an environment where potentially unsafe acts or mistakes become compounded by individuals, assigning blame and covering up their mistakes (GAIN Working Group, 2004).

To be noted is that Safety Culture and Just Culture, are not synonymous. According to Cox & Cheyne (2000), a culture of safety is something that can be achieved through the creation of a just culture. Thus, although the two concepts are intricately linked, they are not synonymous, as they do indicate to varying ideals. When a Just Culture is created within a given organization, the resulting blame-free environment improves the overall safety standards present. This is due to the increase in the willingness of employees to actively participate in the reporting of unwarranted and hence dangerous (reckless) behaviors (Cox & Cheyne, 2000).

The creation of a Just Culture within an organization also requires a positive outcome for noticing errors and mistakes that are recorded. Cooper (2000) notes that managerial roles in the creation of a Just Culture are fundamentally important. Thus, those in managerial positions must be goal-oriented and very clear with the actions and steps requisite towards creating a just culture within a given organization. Essentially, the creation of a just culture, does require the establishment of new and adequate behavioral norms. This is with regard to individuals acting within a certain environment; authority figures within such an environment must set realistic and subsequently attainable goals (Cooper, 2000).

## **2.2 Features of a Just Safety Culture in Aviation**

To attain a steady feature of a just safety culture, there should be some appearances to shape the features. First, it should be extensively informed from data

collection and analysis. Employees should honestly report accidents and near miss incidents. The accuracy of data collected is crucial in gauging the success rate of proactive safety measures, against the rate of accidents reported. Second, employees should be made comfortable when reporting on issues of safety incidences (Eurocontrol, 2006). Third, the culture must be fair in encouraging employee participation, as well as positive contributions. Fairness involves the absence of automatic blame, and the adherence to quick responses to any criminal or safety issues arising within a given setting. Finally, a competent safety culture ought to be flexible enough to accommodate change arising from unforeseen external factors. These include technological advancements, vis-à-vis the obsolete nature of earlier technologies. All these features enable managers to learn, draw conclusions and implement alternative procedures or equipment aimed at improving safety in the aviation industry (Eurocontrol, 2006).

### **2.3 Purpose of Culture and SMS in Aviation Industries**

The importance of these systems cannot be overemphasized especially in the aviation industry. This is indicated by the influx of researchers who have dedicated their time and effort relentlessly to the study of these fields. Moreover, the industry itself is encouraging all the ANSPs to embrace safety culture and SMS.

SMS and Safety Culture are supposed to culminate in special behavioral norms across the whole organization. These norms are crucial for the continuity of the existing standards of safety within a given organization. Additionally, safety culture should be able to reduce accidents and injuries by a considerable extent. Otherwise, the competency of such a culture would be considered questionable as Cooper (2000), provides. A given culture will also place the necessary importance to safety issues that

would necessitate corresponding attention from all employees present within a given organization. Moreover, this culture must provide protection for employees from common risks, hazards, and ill-health as entrenched in the company's ideas and beliefs. Culture and SMS, thus do play a major role in identifying the style and efficiency of the company's safety criteria. Largely, the overall role of both systems is towards achieving the minimum level of accidents (Cooper, 2000).

Safety Management Systems (SMS) in the aviation industry, as Ferguson & Nelson (2013) allude, are designed to reduce overall levels of threat and risk, while carrying out the necessary processes in the aviation industry. Therefore, SMS in the aviation industry need to create the basic framework of a safety culture within the organization. In addition, it should strive towards the promotion of a transparent and effective reporting environment for individuals who are working within the environment (Ferguson & Nelson, 2013). The GAIN report (2004), notes that there are potential pitfalls to an SMS that promotes a confidential reporting culture. However, the potential problems that may arise from such a reporting system are vastly outweighed by the amount of information and knowledge that can be gained from a mandatory reporting system. There are difficulties, however, with regard to the aspect of validation. This is especially so, when reporting systems are confidential in nature. This is due to the fact that confidential reporting systems often make it difficult to properly assess and manage information (GAIN Working Group, 2013).

#### **2.4 Creating and Implementing a Just Culture**

While there are clear benefits in creating a just culture, these entail both legal and logistical undertakings. Thus, there exist two conflicting theories on the ways in which a sustainable Just or safety culture can be created within an organization. The



traditional “Top-down” method for SMS and Just Culture is effective. This is due to the fact that it provides employees with clear definitions of acceptable and unacceptable behavior (Fihn & Mearns et al., 2000). A ‘Top-down’ approach is one in which a system is broken down in quest for insight about its sub-systems. Dekker (2009) suggests that in a top-down approach, incidents that occur “must not be seen as a failure or a crisis, neither by management, nor by colleagues. An incident is a free lesson, a great opportunity to focus attention and to learn collectively.” This atmosphere of collective learning, according to Dekker, must be established and encouraged by the authorities within an organization.

Conversely, Hudson (2007) examines a major multinational corporation that approached the issue of SMS and Just Culture differently. Hudson (2007) writes:

“Once top management had provided the initial support for the development of a more advanced safety culture, a number of supporting tools were developed, under the Hearts and Minds brand, and a strategy for implementation was developed that relied more on bottom-up ‘pull’ rather than top-down ‘push’ – the standard implementation model for new initiatives. The tools were designed to provide a clear direction, a road map to an advanced culture defined in terms provided by people within the industry, to support lasting changes in attitudes and beliefs, to promote an increased feeling of control when solving HSE-specific problems – all components of a more advanced culture.” (Hudson, 2007).

In a similar vein, Antonsen (2009) suggests that power and the potential for abuse of power plays an important role in the creation of a Just Culture and Safety Management Systems. While safety culture in its ideal form is free from conflict and

free from punishment for errors made in earnest, in reality, society assigns blame. He further argues that power and blame often do play a vital role in the breakdown of safety culture in large organizations (Antonsen, (2009).

Dekker (2009), suggests that the line between legitimate and illegitimate behavior in a Just Culture is a judgment rather than a clear delineation between right and wrong. He further suggests that the pull method of creation is inadvisable, because someone must be given the ability to make judgments on the definition of legitimate and illegitimate behavior in a Just Culture. Similarly, he takes note of the fact that a culture, which is blame-free should not be confused with a culture that is accountability-free. Safety management systems that are accountability-free are not effective in their overall ability to negate risk (Dekker, 2009).

## **2.5 Models of Just Culture in Aviation Organization**

Several models have been proposed by researchers to explain how the safety culture works. Successfully tested models dwell on the interaction between “behavioral, situational and psychological” factors that lead to the occurrence of accidents within an organization. Other factors considered when constructing a model are espoused in the basic assumptions found within an organization, towards security culture. In fact, assumptions are the most arduous factors to influence in a safety culture. Models should also involve external signs traceable by outsiders. These models can also be used to analyze or assess the success of a safety culture. Through models, the goals of the system should clearly be set to ensure focus (Eurocontrol, 2006).

## **2.6 Effective Methods of Reporting in Just Culture**

Most literature present, suggests that a Just Culture requires open and blame-free communication strategies to maintain the integrity of the safety culture. However, the logistical issues that arise when considering the blame-free environment are problematic, and thus are handled differently by a variety of existing researchers. Wagner (2013), suggests that anonymous and confidential reporting are both extremely important tools for use in creating a safety culture within an organization. He further suggests that confidential reporting in particular encourages active learning in employees and members of the organization (Wagner, 2013). Dekker (2009) on his part, notes that active learning is a fundamental underlying purpose in the creation of a safety culture within a given organization (Dekker, 2009).

The GAIN report (2004) suggests that mandatory reporting of events by Danish air traffic controllers has vastly reduced the number of incidents that have occurred. The knowledge that reports must be made and filed, has improved the attention paid to details by the air traffic controllers. The report, notes the important difference between blameless and non-punitive organizational just culture. However, reporters are ensured of their indemnity against unjust (blame-based) prosecution or disciplinary actions against them. This is for any events that they may, or have reported, especially those based on the information contained in the reports they may have submitted. However, this does not always mean that such reports can be submitted without any consequences” (GAIN Working Group, 2004).

Mandatory reporting, according to the report, has been utilized effectively, in the aviation industry to great success. In addition, when mandatory reporting is used in conjunction with confidential reporting, incident levels do have a tendency of

decreasing. The new system for Danish air traffic controllers also allows authorities to train individuals to both assess and further produce their reports. This is done through by prioritizing reports; those, which require urgent attention are addressed first. The culture of trust that this system created as a result, was able to permeate the entire air-traffic control chain of command. It thus allowed existing air traffic controllers to address existing problems earlier, and with less fear of punishment from figures of authority (GAIN Working Group, 2004).

Glendon and Stanton (2000), suggest that reporting methods should be quantitative in nature, as well as qualitative, for the maximum efficacy of the reports. They further suggest that the measurement of existing safety culture, does depend on its definition. The prevailing definition in turn, reflects the perspective adopted within a given organizational culture. This measurement is not merely empirical, but it rests upon a value decision. As a result, ethnographic approaches, while being possibly the most valid form an interpretive perspective, are often costly and time consuming in nature. Case study data reported here, showed that two existing and independent measures did reveal existing safety improvements over time. This was as reflected in the patterns of behavior and working practices, as found within an existing organizational environment (Glendon & Stanton, 2009).

The convergence of existing data, from the different methodologies utilized, is most likely to improve both the breath and subsequent accuracy. However, the direction and resulting influences, of such prevailing 'cause and effect' situational contexts, cannot necessarily be established from their analysis. It may thus be summarized, in the fact that observed changes, if present in both measures, do reflect the prevailing corresponding changes. These are as found in the underlying aspects of

the prevailing safety culture (Glendon & Stanton, 2009). They are of the suggestion that such methods of quantitative analysis, do provide those in authority with more accurate and hence concrete knowledge of safety measures and analysis, within a given organization.

## **2.7 Measurement of Success of Safety Culture and SMS**

As Guldenmund (2000) declares, there exist both quantitative and qualitative measures on data, vital in determining the overall competence of a given safety culture. Quantitative measures do cover the total number of accidents and injuries reported to the risk manager of the organization. Qualitative measures on the other hand, pertain to the measure of faith, which existing employees have in the system, with regard to their safety within the given organization. Data can be gained through the conduct of interviews, and visiting the organization, or by studying security and safety data recorded in the company. As a result, the aviation industry has benefited immensely, from such measures of competence (Guldenmund, 2000). This is because crucial information i.e. ways of improving the system, as well as effective factors, can be identified and necessary action taken thereafter. This is the point where risk managers can and ought to apply corrective measures.

## **2.8 Diagnosis of Safety Culture in Aviation Safety Management Audits**

The socio-technical systems approach, provides an avenue through which the interplay of technology, an organization and people is presented. This is through an understanding of the prevailing safety culture. Efforts are thus focused primarily on both individual-centered and technical measures, as well as the integral safety management. This regards the improvement of overall interplay, of the aforementioned pertinent organizational factors. Latent errors, as Reason (1993)

provides, refer to faulty management decisions. These do endanger the optimal functioning of a given socio-technical system. These are through the increase of the potential occurrence of errors, and thus are at the core of assessments based on safety-related systems. With regard to the aviation industry, the presence of high safety margins provides for a re-evaluation of the prevailing systems. This is fundamental in not only identifying such errors of management, but also the retracing of causal chain of incidents and accidents, with the aim of forecasting potential future errors.

The prevailing organizational value systems are evaluated with respect to existing contexts of safety culture. Various indicators are utilized towards assessing an organization's overall safety culture. Inclusive in these value systems are: - safety motivation and training; the organizational management's commitment to overall safety; accident and incidents record keeping, as well as adequate maintenance and operation procedures (Reason, 1993). In addition, there is good house-keeping; sufficient communication and inspection; safety rules and committees, and technical equipment/ systems, which should be both functional and well designed. Unfortunately, most major problems with such models are associated with the lack of optimal integration into existing models of both an organization and its inherent organizational culture. Thus, with safety being perceived as an aspect that may be considered outside the socio-technical system of a given organization, such a context provides cause for worry.

As Jacobs and Haber (1994) allude, the organization and the safety culture need to be interconnected and interrelated for optimal outcomes. This is especially with regard to aviation safety and overall management. Organizational culture, refers to the deeply entrenched assumptions pertaining to social relations, human interaction

and inherent human nature that are shared between a given organization's work-force. It is generally an exhibition of the prevailing behavioral patterns, artifacts (working environment) and values present within such an organization. These need to interact positively with the existing system's general characteristics, as well as related safety aspects. In order to avoid some of the aforementioned problems, there is need to distinguish between an organization's cultural framework, and its prevailing safety culture, as distinct yet parallel dimensions (Jacobs & Haber, 1994). The latter encompasses an organization's general transparency, mechanisms of coordination and conflict management, as well as decision-making that are centralized.

The presence of a link as Susmann (1976) provides, between the aviation industry's organizational design, to both safety culture and management, provides a key avenue where general aviation safety and management are enhanced. This is in regard to the 'socio-technical model of safety culture. Regarding this model, two core assumptions are prevalent, i.e. first, that both the working system's social and technical subsystems need to be optimized jointly, so as to enhance maximum efficiency. This is aimed at allowing the maximization of efficiency, especially towards accomplishing the given system's core task/ role-play. Secondly, is that for greater optimization of the joint effort, the prevailing system needs to have the capacity to control the existing variables, especially at their source of origin. The first assumption provides critical support to the core aspect of safety management i.e. conflict resolution, which is proactively carried out, especially between a given organization's safety goals and its overall productivity.

System efficiency is achieved through better definition of such a system's core task/ role-play, especially regarding production safety, quality and quantity of work

done. The second assumption bases its argument on the fact that greater enhancement of work self-regulation, with regard to work teams present is indeed beneficial to overall safety (Susmann, 1976). As Grote (1997) provides, the basis of this argument is that the delegation of control is crucial in complex organizational systems. Here, immediate action and reactions, especially to prevailing disturbances and variations require anticipatory actions to prevent further harm, damage and inconvenience. In addition, an individual worker's motivation is enhanced with the presence of a higher degree of autonomy. This is especially in regard to task feedback and completeness. This is rooted in the motivation model, as entrenched in a given organization's socio-technical approach system. An individual, when performing a primary task, becomes motivated more towards overall safety if the task includes safety, as well as action efficiency.

The presence of higher degrees of system automation, partnered with lower human job autonomy, has been linked to technology as the most probable risk factor. Conversely, greater job autonomy and lesser degrees of system automation, allude to human error/ omission as the major high risk factor (Grote, 1997). The rigid combination of systems, even with minor limitations, provides for case scenarios where the decentralization of such systems becomes limited. To gain the optimal working environment, as Agnew and Daniels (2010) allude, there should be enhancement of both optimal human autonomy, as well as system combination. This is requisite in providing greater flexibility with regard to the switch between the different pertinent degrees of system centralization. Through greater linkage of an entity's safety management, the inherent socio-technical systems and overall



organizational culture are crucial in overcoming the shortfalls of various safety culture models.

Fundamental to the achievement of the above is the need to conceptualize overall safety culture outside the limitations given above. This is done by focusing not only on the directly observable characteristics, but more into the prevailing invisible assumptions and norms (Agnew & Daniels, 2010). As Schein (1992) provides, these are based on the knowledge of such assumptions, as well as external agents such as insurers and regulatory agencies carrying out norms providing meaning to safety-related evaluations. However, two sets of difficulties arise, which need be addressed. First, the evaluations mentioned are constrained in terms of both time and resources. Secondly, the relationship between the evaluating parties and the organization to be evaluated; whether the relationship founded in the organization more on control and regulations, or based on trust and or equality.

It is the presence of such conditions, which inadvertently interfere with the enhancing overall safety. The concept of safety culture is therefore severely curtailed. This is with regard to performing in-depth studies on a given organization by way of management audits. It is due to the fact that such activities often do require, and are hence based on qualitative methodology. Such methodology bases itself on such aspects as company document analysis, participatory observation and narrative interviews. The absence of normative frameworks also provides another difficulty, with regard to cultural approach, when evaluating a given organization's safety concerns (Schein, 1992).

## **2.9 A Hierarchical Factor Analysis of a Safety Culture Survey**

Organization culture is the topmost factor that adds value to a safe culture. Dwivedi (1995), defines organizational culture as a system of shared meaning that distinguishes one organization from another. It further provides the employees have a clear understanding of how things are done in the organization. An organizations culture determines the overall behavior of the human resource present. Safety culture is thus developed as part of the overall organizational culture within a given organizational entity. A safety culture identifies workplace risks in addition to addressing them. This is achieved through elimination, mitigation and/or taking precaution, to prevent them from causing injury. An effective safety culture should therefore be strong. It is strengthened through the maintenance of clear communication, based on mutual trust, between both the employees and the management.

Employee involvement in safety policy formulations, as well as providing them with the necessary resources for maintaining safety, is important in building an effective safety culture. The culture should be clearly spelled out for new employees, so as to be effective. There are three major players in the formulation, implementation and maintenance of an effective safety culture (Dwivedi, 1995). They are the management, employees and the established safety systems. The management is the policy maker in any organization. It influences the safety culture based on how it perceives safety, how much it cares for it employees, and should therefore considers safety as an important priority. It should ensure that the objective of the organization involves the enforcement of safety behaviors, as Zohar (2000) states. It should be at the forefront of encouraging productivity as well as the formulation of policies that

enhance the well-being of all employees present. Loss due to injury could also reason for the high employee turnover, due to the prevailing work pressure.

The building of a strong safety culture is also an employee's personal responsibility. Employees should be committed to their own safety. Mutual trust that exists between the employees and the management enhances employee positive behavior towards safety. Employees should also be committed to the wellbeing of their fellow employees. They should therefore often congratulate them for safe actions undertaken, vis-à-vis warning them against risky behavior. Employees should provide management with feedback on safety in the operation ground. Safety systems involve all the tools which enhance overall positive safety behavior. These include: - communication, training, discipline, reward systems and recognitions. When there is effective communication on safety issues, proper training of employees is carried out. Additionally, discipline is clearly spelled out, with both rewarding and punishment being done fairly. As a result, a positive safety environment is developed (Zohar, 2000). Consequently, every stakeholder does feel that it is his or her responsibility to maintain positive behavior, which eventually results in a stronger safety culture.

## **2.10 Framework for Understanding of Organizational Safety Cultures**

The article by Christopher *et al* (2007) is an analysis of a survey conducted to investigate the factors that contribute to establishment and maintenance of a positive safety culture. It provides the structure of the factors identified in a hierarchical manner. According to the article, interviews were carried out to determine structure that an organization could use to assess its safety culture. These interviews sought to

describe an organizational culture based on Wesstrum's topology of organizational communication. Five levels of safety culture were developed: pathological, reactive, calculative, proactive and generative (Christopher *et al*, 2007).

At the pathological level, the behavior in the organization is to cover up for any safety hazards and incidents. A reactive culture only gets involved in safety matters when there is an accident to be handled. A calculative culture has systems in place that deal with safety issues such as policies and regulations. A proactive culture anticipates the hazards, establishes preventive measures in course, and has a policy to deal with any unavoidable safety issues. As DePasquale & Geller (1999) allude, the generative culture is behavior based. It encourages behaviors that enhance a positive safety culture. A positive safety culture is built. It should not only be based on policies and regulations given to employees but should also be behavior oriented. An effective safety culture involves commitment of all the stakeholders in the organization. Everyone is to be clearly informed of its importance so that they take it as their responsibility to maintain it. Employees are motivated towards encouraging and enhancing safety, since in some cases they see it as the responsibility of the management to ensure safety.

Safety culture is based on behavior and behavioral attitudes. The existing management uses tools that build on positive safety attitudes within organizations. These attitudes eventually influence how the employees respond to the existing work-culture, organizational goals, aims and focus. The management instills these behaviors by providing adequate resources to handle safety issues. These resources could include: protective gear, the need to demonstrate to employees that safety culture is of mutual interest, in addition to setting an example, by behaving according

to the expectations they have stated for the employees. The safety systems are flexible and independent. A healthy safety system can withstand the face of change and still remain effective. At times, the equipment may change, the employees or the management may change but a robust safety continues. When flexible, the safety system can be adjusted without inconvenience to the organization and the workforce (DePasquale & Geller, 1999).

The safety culture is proactive, as Taieh (2012) suggests. It does not act only when a safety crisis has emerged. A proactive culture perceives what is in store for the future, placing the necessary measures both within and outside the organization, to avoid safety crises. Its policies are clearly spelled out on how to handle crisis in case it arises. This culture learns from its past experiences and other organizations, so as to avoid a repeat of the crisis. The safety culture is fair, just and goal-focused. In this culture discipline is spelt out in a fair and even manner. Everyone bears responsibility for the consequences of their own individual risky or reckless actions. A clear and just discipline policy is formed, made known to the employees and followed when required. Employees who engage in both individual and group support of a safety-based culture, are also fairly rewarded.

### **2.11 The Future of SMS and Culture in Aviation**

As technology continues to advance by the day, the aviation industry needs to keep up the pace. Awareness of the role of safety culture should be promoted among all aviation organizations. This should be in line with modern safety advancements (Taieh, 2012). Various organizations should come together and pool their safety data results so as to identify the common issues affecting the industry. Safety culture workshops should be encouraged among aviation organizations in order to enrich the

involvement of stakeholders. An intervention and measurement tool should be put in place, further being introduced to the industry arena. This would facilitate the identification of existing frailties, while marking areas requiring improvement (Eurocontrol, 2006).

However many definitions of culture there may be, any definition that captures its holistic nature of bringing together all beliefs and values across an organization will provide the most suitable definition. Both SMS and organizational safety culture do adequately and effectively complement each other. As Hale (2003) alludes, a working safety culture is characterized by being not only informed, but also just, fair and flexible. These features enable a smooth integration of safety culture in the industry. Safety culture and SMS perform important roles ranging from establishing norms, to reducing injuries and accidents. To better understand how safety culture works in existing organizations, models are used. These models also indicate the success position of the system. Due to the overwhelming success rates of safety culture in the aviation industry, SMS should be supported embracing SMS and safety culture in the future. The sky is the limit for the achievement of occurrences of accidents and incidences.

## **2.12 Proposed Hypotheses and Research Questions.**

The aviation program's Safety Management Systems (SMS) can only be improved by the creation of a Just Culture within the university's program. Through fine-tuning of reporting methods, as well as the establishment of a blame-free environment, will allow overall improvements. This is in the SMS of the program, such as Midwest aviation training programs, and the improvement of the safety culture of the system as a whole. Oversight, with regard to the just culture program,

may need to be streamlined and adjusted, based on the skills of the university's students and technical staff presents (Hale, 2003). This paper therefore aims at establishing a clear system of safety culture in the aviation industry taking into consideration the existing just and blame cultures environment that exist in general in most of aviation industries. It hopes to give a solution to the existent blame culture.

Hence, the researcher with the support and believe of those norms and principles that were said and alluded by the great scientists and psychologists of the aviation safety industry and just culture; will try to dig deep into those questions that have been used for the survey and use them as a row material for the study conducted and try to look for answers of questions like: Did the participant have a view that top managers have a genuine goal of zero mishaps? And as the fact, that the production goals and safety issues can come into conflicts; so Did UND measure in place to recognize and solve such conflicts in an effective and open manner? Also how affective those policies that put by UND Aerospace in encouraging everyone to raise safety- related issues? Or Did UND Aerospace has a safety reporting system that is clear confidential and non-punitive? Also Did UND Aerospace disciplinary policies base on an agreed distinction between acceptable and unacceptable behavior? Did this recognize by everyone that small proportion of unsafe acts were indeed intentional and reckless and warrant punishment, but that the large majority of such acts are not intentional and should not attract punishment?

## **Chapter Three: Methodology**

### **3.0 Introduction**

As mentioned before, the questionnaire included thirty eight questions; the researcher here only focused on and exercised those questions that might relate to Just Culture and SMS in general, some of those questions are:

Q1. Gender: Male or Female.

Q2. Age:

Q3. What is your current academic year? (a.Freshman, b. sophomore, c. Junior, d. Senior, e. Graduate)

Q4. What is your primary major? (Example: if your major in both ATC and Airport Management, but hope to become a controller for the FAA select ATC).

Answers: a. Commercial Aviation, b. Commercial Aviation- Helicopter, c. Air Traffic Controller, d. Aviation Management, e. Flight Education, f. Aviation Technology Management, g. unmanned Aircraft Systems, h. Airport Management, i. Major outside of the Aviation Department.

Q5. If you completed a semester of college, what is your Grade Point Average (GPA).

Q30. Score your safety culture: Please state your level of agreement in regards to the following statement.



<b>Question 30:</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Many. Top managers at UND have a genuine goal of zero Mishaps.					
UND Aerospace understands that production goals and safety issues can come into conflict. At UND we have measures in place to recognize and resolve such conflicts in an effective and open manner.					
UND Aerospace has policies that are in place to encourage Everyone to raise safety-related issues.					
UND Aerospace has a safety reporting system that is clearly Confidential and non-punitive.					
UND Aerospace disciplinary Policies are based on an agreed distinction between acceptable and unacceptable behavior. It is recognized by everyone that a small proportion of unsafe acts are indeed intentional and reckless and warrant punishment, but that the large majority of such acts are not Intentional and should not attract punishment.					

Also a copy of complete thirty eight questions questionnaire has attached in the end of the thesis.

This methodology aimed at assessing and addressing the Safety Management Systems (SMS) of the Midwest Aviation Training Program Aerospace program. Questionnaires were the chosen instrument for data collection, with the questions focusing on the safety culture within the program. Flight instructors and students were the respondents representing the sample for the study. The questions listed in the questionnaires included the participants' age, gender, year of study, career goals, and the policies associated with the aviation policy. The questions about policy issues were based on a Likert scale, which indicated a strong or partial agreement or disagreement. The questionnaire addressed the current SMS and potential issues they

face based on the responses provided. The paper also addressed the strengths and weaknesses of the SMS standards at the collegiate program aforementioned.

Safety culture is fundamentally important for the success of any aviation program, and safety culture is inextricably linked to a just culture within the program. Without the transparency of the just culture, a true safety culture within an aviation program cannot exist. Through the utility of the creation of Just Culture and the various implementation methods discussed in this proposal, a culture of safety and openness within the Midwest aviation training program aerospace program were established and analyzed (Helmreich, & Merritt, 1998). The continual re-analysis of SMS within the aviation program is fundamental to the maintenance of high standards of safety (Helmreich, & Merritt, 1998).

In order to address the Safety Management Systems (SMS) of Midwest aviation training program's aviation program, questionnaires were produced. These were towards asking flight instructors, as well as students, about the overall safety culture within the program. The questionnaire addressed the current SMS, and the potential issues that the SMS faces based on the responses flight instructors and students of aviation.

### **3.1 Assumptions and Limitations**

The author assumed the following during data collection: - that all the flight instructors have adequate knowledge about the program and that the program affects all of them in an equal measure. In addition, there was the aspect of students not having complete knowledge of the program, and pertinent aspects involved. The paper also assumed that all the administered questionnaires will be returned within the

stipulated period, having been adequately responded to. Another limitation was a lack of adequate responses and answering, on the side of the respondents. The use of questionnaires as the preferred tool for collecting data, however, had several limitations. One is the low rate of response associated with them. Some participants never returned the questionnaires even upon follow-ups, compromising the findings of study.

A researcher also could not explain questions to the respondents, therefore, limiting the eventual understanding by respondents. Therefore, the participants may misinterpret the questions they deem difficult, thereby compromising the desired outcome (Bradburn, Sudman, & Wansink, 2004). The use of questionnaires does limit researchers in terms of assessing the respondents' emotions and expressions when answering the questionnaire. As a researcher, this author may need to probe the respondent further so as to establish their perspective of a given issue. For example, on sensitive questions; a questionnaire does limit them in such case. The author, therefore, will take note of these limitations before evaluating the returned questionnaires.

### **3.2 Data Collection**

The author will focus on questionnaires conducted in the Midwest aviation training program, called students' survey. This will be conducted every 2 years. The paper will try to scope the questions and the data that relate to 'Just Culture and SMS' issues using 2013 student data survey. The questionnaire is identical; with each questionnaire containing thirty-eight questions. The Midwest aviation training program researchers posed a wide range of questions based around SMS culture to verify the issues it faces, in addition to identifying ways of improving the safety

culture. The questionnaire, therefore, is semi-structured, with different parts covering specified questions. They contain both open and close-ended questions. Some of the SMS' elements addressed, through the questions include safety organization, safety services, reporting, and infrastructure. The questions generally address the current and potential issues that the SMS, as a vital component of aviation safety measures, faces.

The rationale behind the choice of the questionnaire as the instrument for data collection is the amount of information that is collectable using one. A questionnaire enables a researcher collect a variety of information about their topic of interest (Baker, 2006). The use of questionnaires in this research, for example, will provide a wide range of information regarding the SMS of the college aviation program. Questionnaires also promote reliability and validity, as the number of researchers or individuals conducting such a study, does not affect its overall reliability (Bradburn, Sudman, & Wansink, 2004). The use of questionnaires will also be cost effective as they only require formulation and administration to the respondents, with the necessary waiting time, for the respondents to return them.

Questionnaires are tools that facilitate accuracy during data analysis. This is informed by the fact that data collected through a questionnaire can be analyzed using scientific objectives as compared to other data collection techniques. The comparison of findings of such a study with similar works is possible using a questionnaire. This is because it presents distinct responses from the participants present (Bradburn, Sudman, & Wansink, 2004). Researchers, therefore, can use questionnaires to measure change in related studies. Questionnaires provide the participant adequate time to respond to the questions because a researcher has no room for probing. A researcher can also use questionnaires to draw a representative sample especially

when the population under study is large. This makes them more reliable when compared to other techniques such as interviews.

As the researcher, the author intends to issue follow-up cards to respondents who will not have mailed back the questionnaires requesting them to do so. Through this, the author will seek to minimize the low response rate problem associated with the questionnaires provided. The structure of the questions will be simplified to facilitate better and easier understanding amongst the targeted respondents. This minimizes the misinterpretation limitation common, with the utility of the questionnaires. This paper will also follow a shortened format for all questions present while avoiding using many ambiguous questions. These ambiguous questions can compromise the eventual outcome of the study, as it may not yield the expected results.

### **3.2.1 Administration of Questionnaires**

The first step towards administrating the questionnaires is informing the participants about the aims of the study in question. This motivated the respondents to answer these questions and return the questionnaires on time. The author informed them about the benefits they stand to reap from participating in the study. This is because the findings will be used to compare the program to another one conducted. The paper thereafter provided a diagnosis of the problems with the program in focus, and offered pertinent recommendations. At this stage, the study also assured the participants of the confidentiality of the information they provide in the questionnaires. The second step regarded the physical issuance of the questionnaires to the selected sample group. The questionnaires were inclusive of a timeline, within which participants were expected to return them. The respondents, who will not have

returned the questionnaires within the stipulated period, will receive follow-up cards requesting them to mail them to the researcher, as soonest possible.

### **3.3 Sampling Technique**

Flight instructors, as well as Midwest aviation training program students, will provide the sample group for this study. This project was reviewed and approved by the UND Institutional Review Board. The research study will utilize the random sampling technique, so to select the participants for the study. This is because this technique provides all the respondents with an equal chance of selection. The random sampling method is representative in nature. Thus, the findings regarding the sample group's characteristics, as obtained from data analysis, will be generalized to the population present (Baker, 2006). The author intends to use a sample of a hundred individuals, so as to generate a wide range of information regarding the topic in focus. Flight instructors within the aviation station, as well as students in the Midwest aviation training program's aviation program, will be informed of the study, and the selected respondents issued with questionnaires. The timeline for returning the questionnaires provided, is a month after which the author will analyze the collected data and responses.

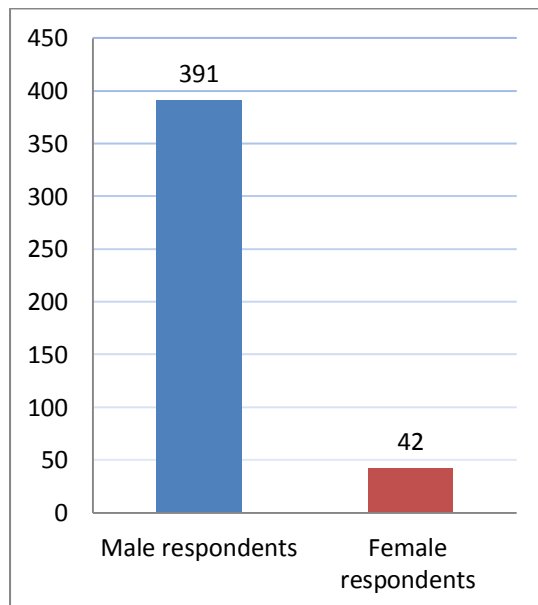
### **3.4 Data Analysis and Result**

The author observed ethical considerations during data analysis. First, names of participants are not be revealed during analyses, as the paper uses the information provided, purely for research. The research apply reasonable precautions to ensure that the analysis does not pose negative implications upon the participants .The analysis process will entail the documenting, sorting, interpreting of data and evaluation of models present. As the researcher, the author will identify, sort, and

classify popular phrases used by the respondents in the questionnaires to ease the analysis. The paper will evaluate, compare, and interpret responses for the chosen questions before the actual analyses. The responses to the close-ended questions, for example, will be classified in the same group and the open-ended in another. Hypotheses tests will also be conducted to prove the validity of the various hypotheses formulated.

This analysis is based on the responses generated through questionnaires. From the questionnaires given out, and the responses provide, varying issues are observable. First and foremost is that there is present, a trend where more males than females did respond. This is exemplified by the 90% response of 391 male participants, as opposed to 42 female participants, which equates to only 10 percent. The total number of responses was 433 individuals, making the random sample adequate for the research study. This is shown in the graph, **Figure 1**.

Graph of Male Respondents vs. Female Respondents



Individual Respondents	
Male respondents	391
Female respondents	42
Total	433

The 90% response of 391 male participants, as opposed to 42 female participants, which equates to only 10%

Figure 1- Gender Ratio of Respondents

The number of respondents, as per the given statistics is roughly approximated at 430 for each gender group, with the total number being estimated at 860 overall.

Regarding the age bracket of all student respondents, the average age is at 22, as provided from the existing data. The minimum age present is at 18 years, while the maximum is at 35 years. 427 individuals did respond. This is provided in **Figure 2**.

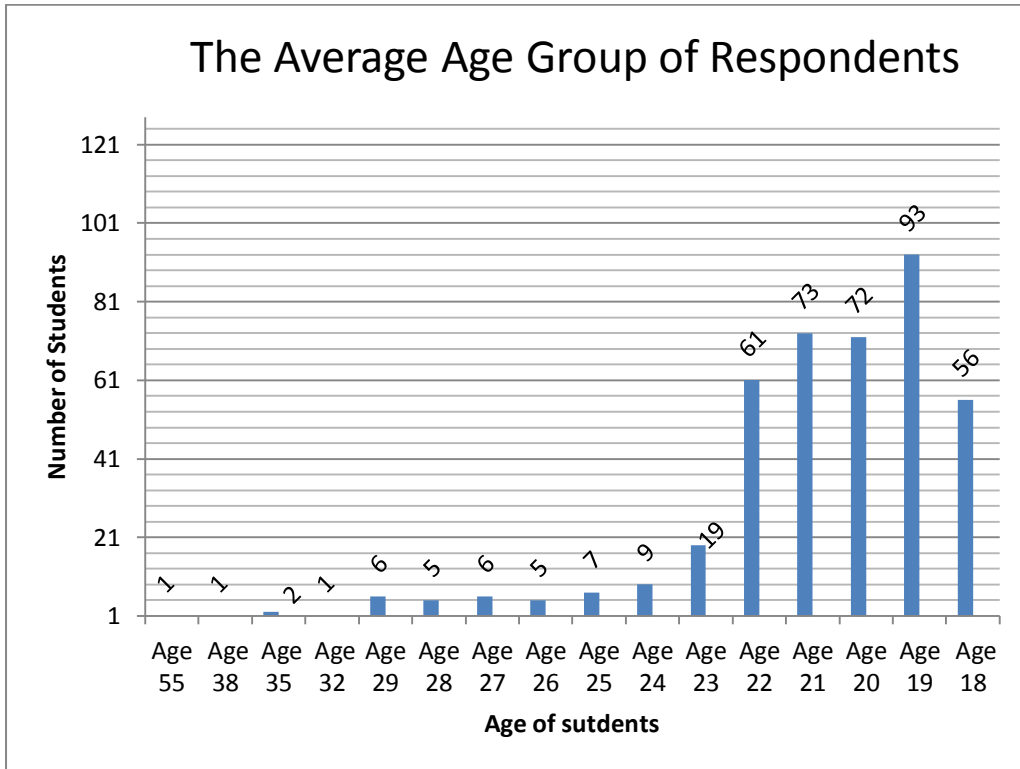
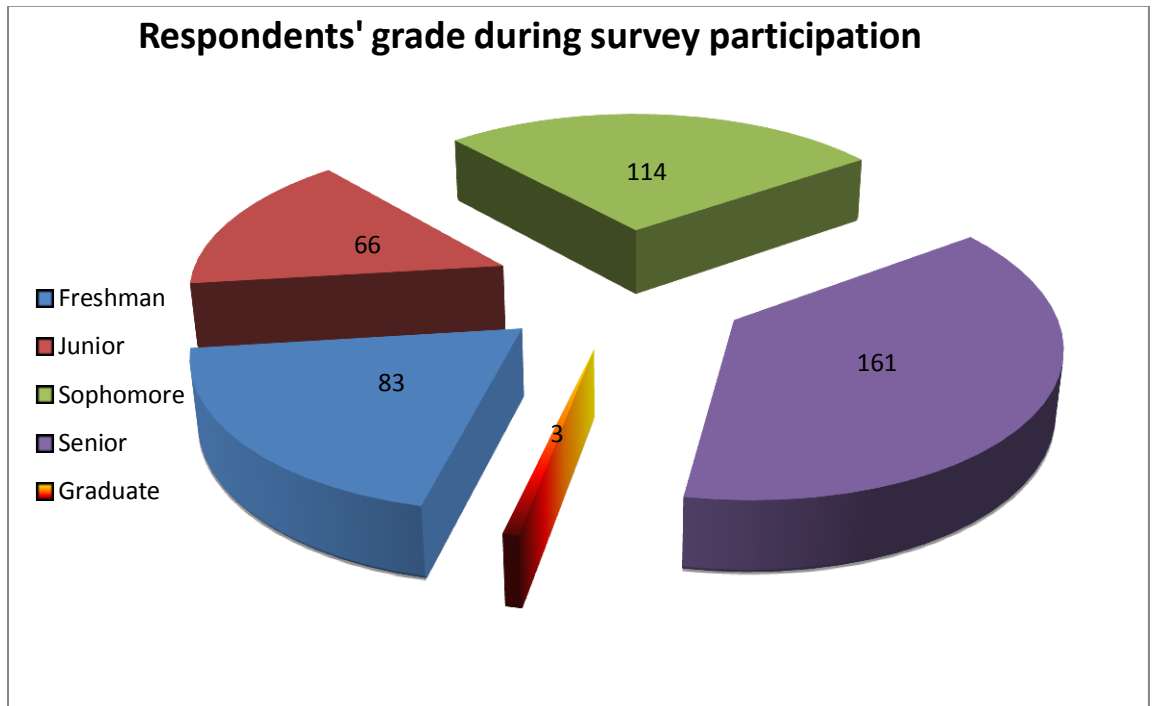


Figure 2- The Average Age of Respondents



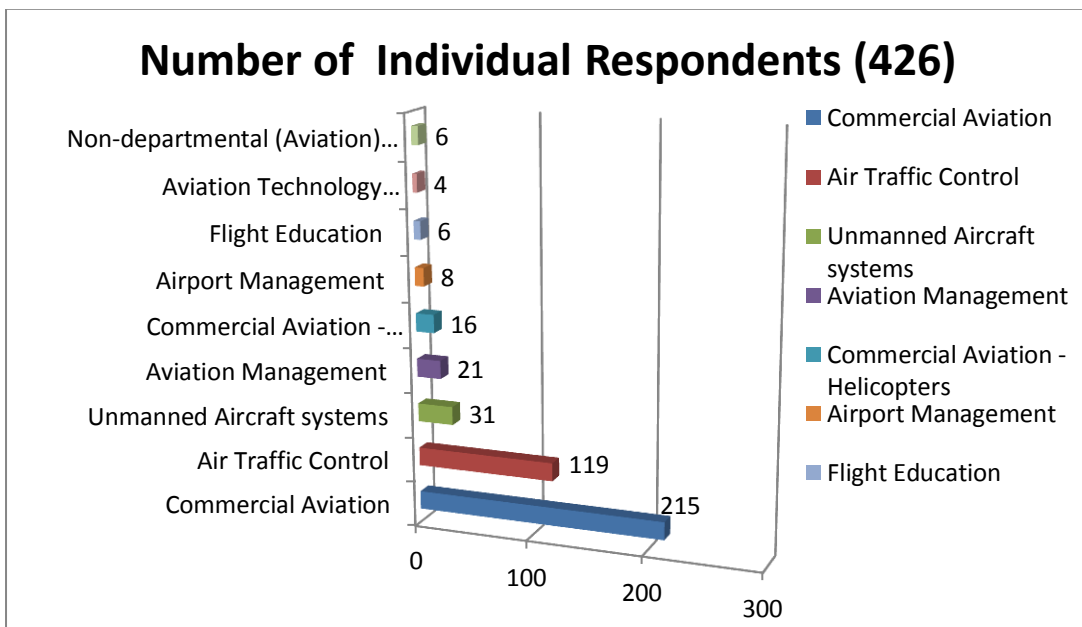
Regarding the current year of study, with regard to the student respondents, a majority were in the senior class, with the sophomore class producing the second highest responses. Following was that of freshman students, with junior students having the fourth lowest response. Lastly is the presence of 3 Graduate respondents, who comprise 1% of total respondents. This is provided in the pie chart, ***Figure 3.***



**Figure 3- Respondents by Class/ Level of Study**

The total responses, regarding the above were 427.

Regarding the respondents' fields of study, with a focus on their primary majors, varying results were achieved. Individuals majoring in Commercial Aviation provided the most response, with 215 individuals providing 50% of total responses gained. Air Traffic Control provided the next largest number, with 119 individuals comprising 28% of all respondents. Those in Unmanned Aircraft systems provided the next largest category, with 31 respondents signifying 7% of all individuals. Following closely, were the 21 Aviation Management students who responded, comprising 5% of all respondents. Students majoring in Commercial Aviation – Helicopters, followed at 4%, with 16 respondents in total. Airport Management students followed at 2%, with 8 individuals responding. The rest shared the 1% mark, with 6 respondents being from Flight Education; 4 from Aviation Technology Management, and 6 from other majors outside the university's (Midwest aviation training program) Aviation Department. This is represented in the graph, ***Figure 4.***



**Figure 4- Respondents As Categorized By the Individual Fields of Study: Their Majors**

The total number of respondents was 426, with the study's Standard Deviation value being 2.04. The Variance value was at 4.17, with the mean of the response being at 2.53. The minimum value stood at 1, with the maximum value being 9.

Concerning respondent's answers to their Grade Point Average (GPA), varying results were acquired. The number of total responses was 346 individuals, who had points ranging from 4.0 (the highest) to 2.56 being the lowest point indicated. A total of 346 individuals responded accordingly. This is represented in ***Figure 5.***

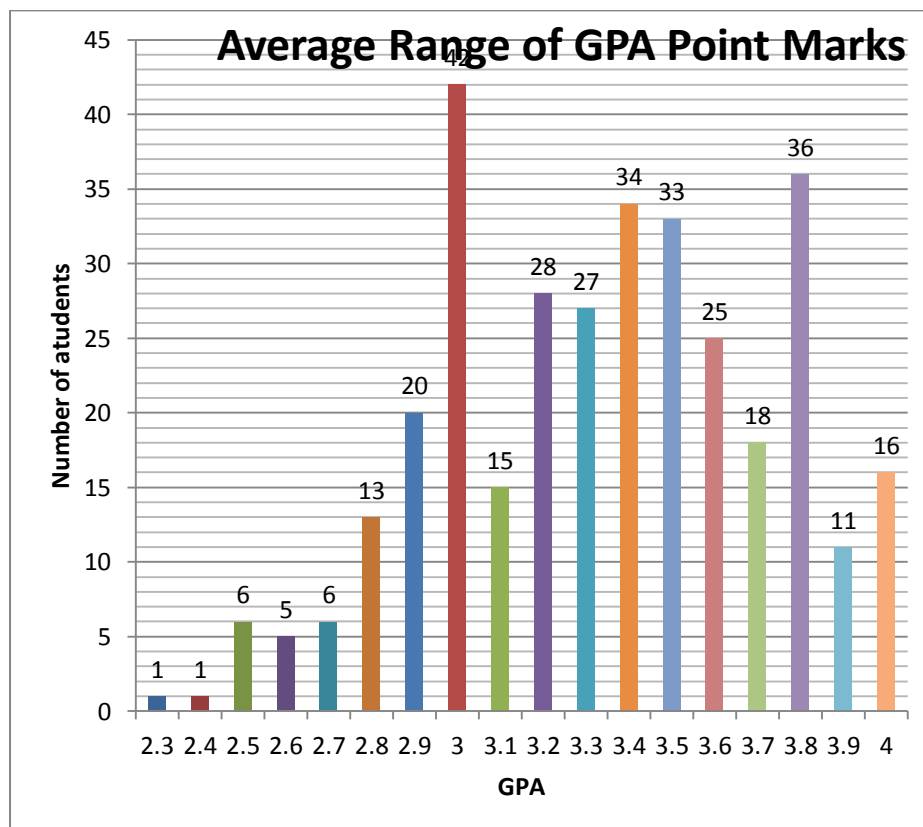
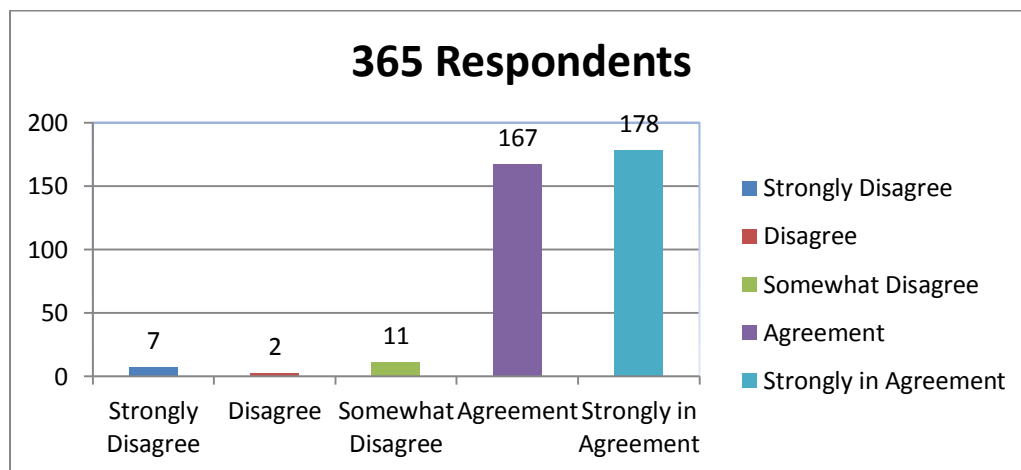


Figure 5- Representative of the Grade Point Average (GPA) mark

Regarding the various responses based on the participants' score on safety culture, varying results were achieved. From the 10 different questions posed, indicators highlight a general agreement by the participating students. Total responses also did vary from one question to the next, with the average number of respondents to the questions provided being approximately 388 individuals. A minority section of all the respondents was of the view that the safety culture present was not satisfactory, with a sizeable group viewing the questions as not being applicable in their case.

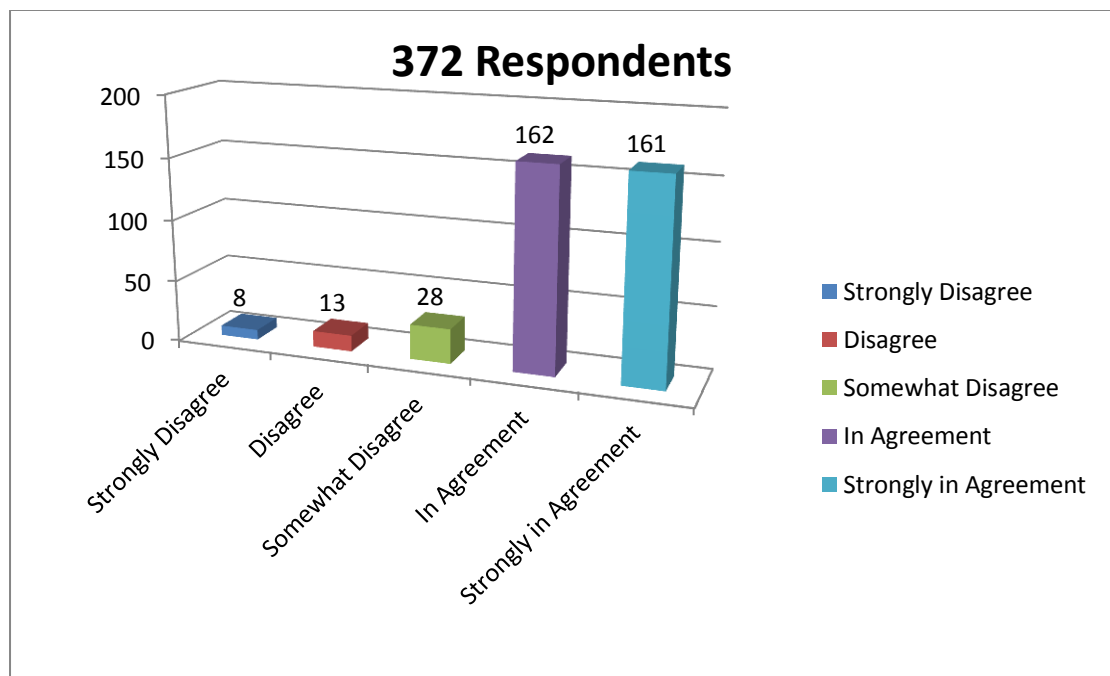
On the issue of commitment to aviation safety and the provision of adequate resources, the Dean, Director of Flight Operations and the Chair of Academics had 178 respondents agreeing strongly, with 167 students being in general agreement. 11 individuals somewhat disagreed to the above, with 2 being in disagreement, while 7 were in strong disagreement to the aforementioned output. 24 individuals' responses were indicated not applicable which have not counted. This is shown in **Figure 6**.



**Figure 6- Aviation Safety and the Provision of Adequate Resources**

The total number of respondents was 366 individuals, with the Standard Deviation being at 0.752 and the Variance stood at 0.566, with the Mean being at 4.39 points.

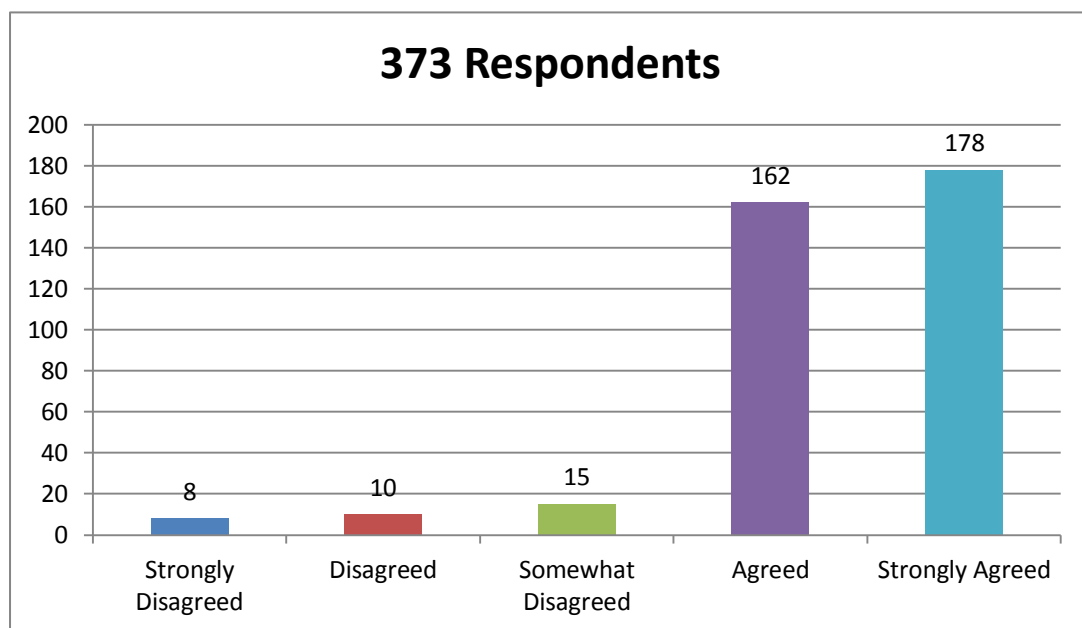
On the aspect of discussed issues related to safety at the various Midwest aviation training program aerospace meetings and classes, on a regular basis, and not after an incident or accident, varying responses were obtained. Those in strong agreement were 161 individuals, with 162 others being in general agreement. 28 individuals did somewhat disagree, with 13 individuals being in disagreement to the aforementioned. Those strongly in disagreement were 8, while 19 respondents indicated not applicable. This is shown in **Figure 7**.



**Figure 7- Discussed Issues Related To Safety at the Various Aviation Training Program Aerospace Meetings and Classes.**

The total number of respondents was 372 individuals, with the Standard Deviation being at 0.891 and the Variance stood at 0.794, with the Mean being at 4.22 points.

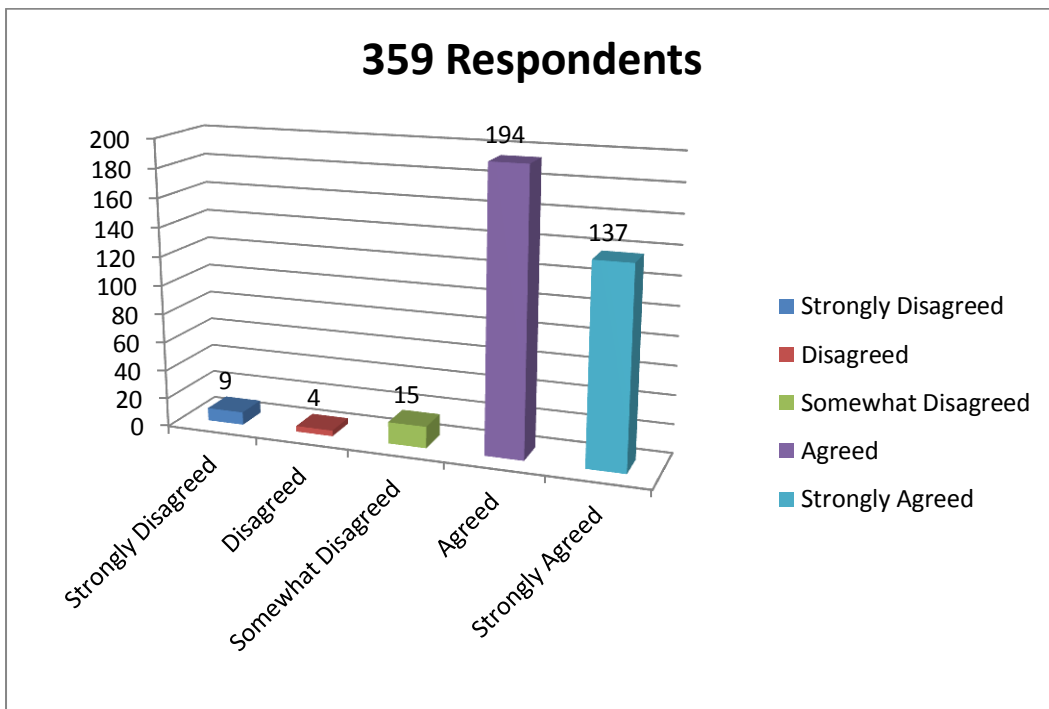
Regarding the issue of the primary goals of identifying the ‘why and what failed’, as opposed to ‘failed’, in the event of an accident, various responses were obtained. Those in strong agreement to midwest aviation training program’s role were 178, with 162 individuals being in general agreement. 15 individuals were somewhat in disagreement, with 10 respondents being in disagreement. 8 respondents on their part did strongly disagree, with 28 individuals having responded with not applicable that will be not calculated. So the total is 373. This is shown in ***Figure 8.***



**Figure 8- The Primary Goals of Identifying the ‘Why and What Failed’, As Opposed To ‘Who Failed’, In The Event Of an Accident**

The total number of respondents was 391, with the Standard Deviation being at 0.847 and the Variance stood at 0.718 points, with the Mean value being 4.32 points.

On the issue of midwest aviation training program aerospace regularly identifying the most urgent safety concerns and subsequently carrying out effective preventive actions, varied responses were received. Those strongly in agreement to the aforementioned were 137, with those in general agreement being more; being 194. 15 were somewhat in disagreement, with 4 respondents being in general disagreement. Those strongly in disagreement to the aforementioned, were 9, and those recording not applicable being 31 individuals but will not be calculated. This is shown in **Figure 9**.

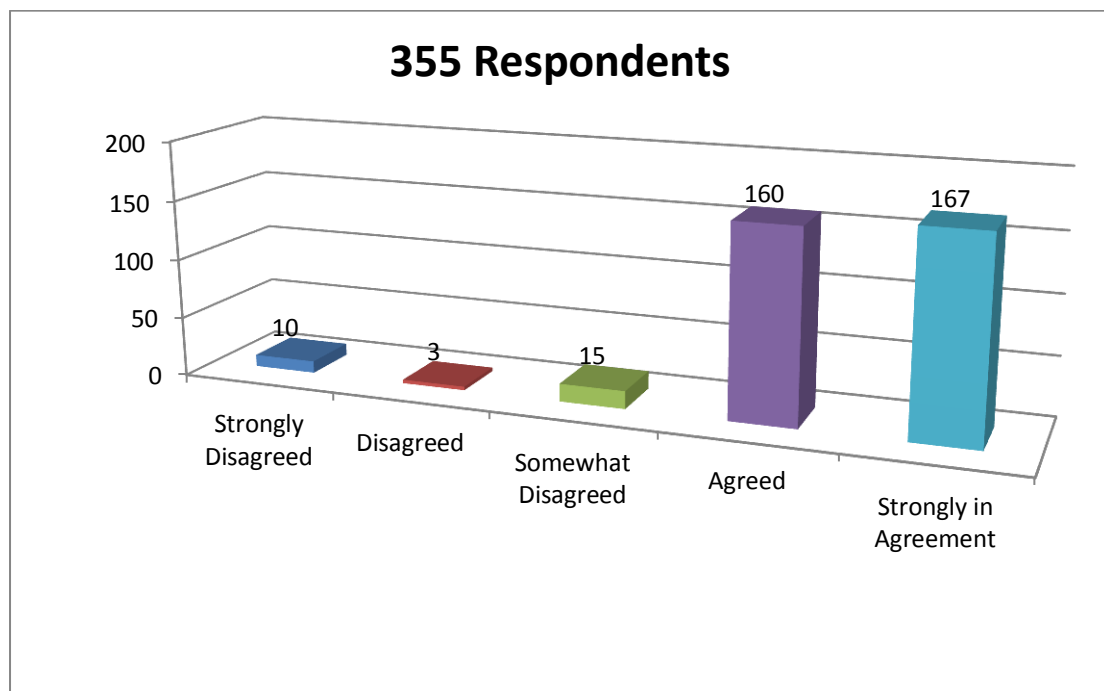


**Figure 9- Aviation Programs and Aerospace Regularly Identifying the Most Urgent Safety Concerns and Subsequently Carrying Out Effective Preventive Actions**

The total number of respondents was 359, with the Standard Deviation being 0.799. The Variance was recorded at 0.639, with the Mean value being 4.24.

The issue of the Dean, Director of Flight Operations, and the Chair of Academics feeling that a single incident or accident is one too many, varied responses were obtained. The issue of the leadership at the Midwest Aviation Training Program having a genuine goal of zero mishaps elicited the following as recorded in ***Figure 10***.

The total number of individuals was 355, with those strongly in agreement being 167. Those in general agreement were 160, with individuals somewhat in disagreement being 15 in total. 3 individuals were in general disagreement, with 10 being strongly in disagreement. 32 individuals, on their part, indicated not applicable (***Figure 10***).

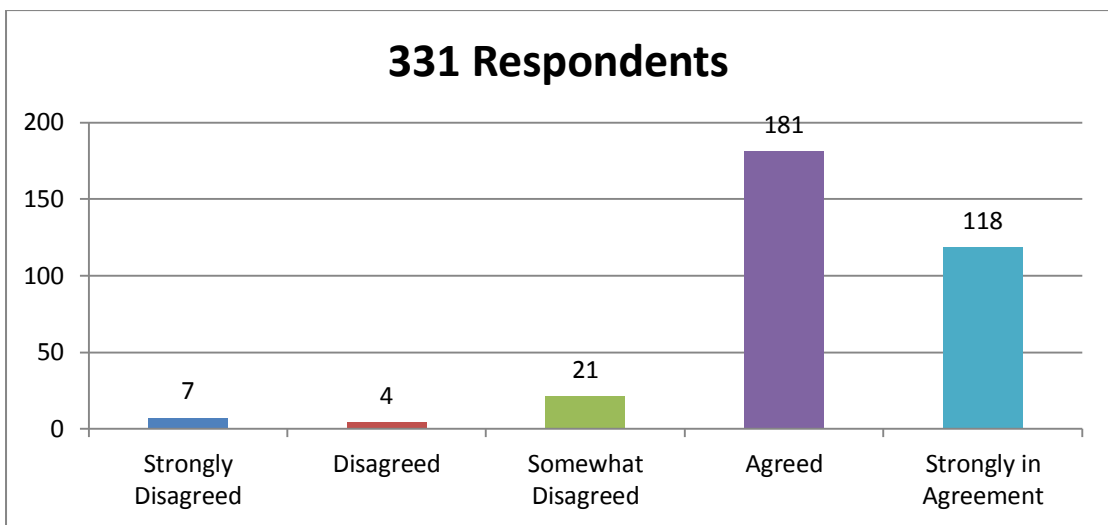


**Figure 10- Dean, Director of Flight Operations, And the Chair of Academics Feeling That a Single Incident or Accident Is One Too Many, In Addition To the Issue of the Leadership also have a Genuine Goal of Zero Mishaps.**

The Standard Deviation stood at 0.835, with the Variance being at 0.697 The Mean of this specific response stood at the 4.32 point mark.



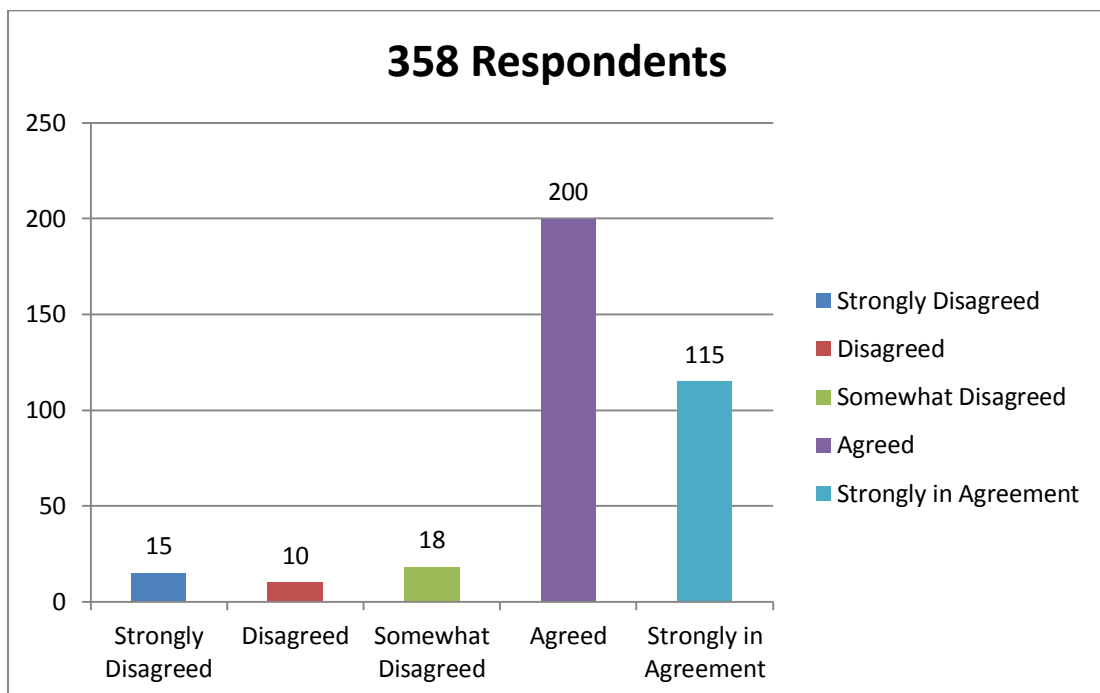
On the issue of the frequency and a wide range of attendees to various safety related meetings, by Midwest Aviation Training Program Aerospace staff, a variety of responses were obtained. Those who responded in strong agreement were 118 in total, with those in general agreement being more, at 181 in total. Respondents somewhat in disagreement were 21, with those in general disagreement being 4 in total. 7 individuals did respond with a strongly in disagreement stance, with 57 individuals indicating not applicable. This is as shown in ***Figure 11***.



**Figure 11- The Issue of the Frequency and Wide Range of Attendees to Various Safeties Related Meetings, By UND Aerospace Staff.**

The total number of respondents stood at 331, with the Standard Deviation being 0.78. Variance was at the 0.618 value point with the Mean value being 4.21.

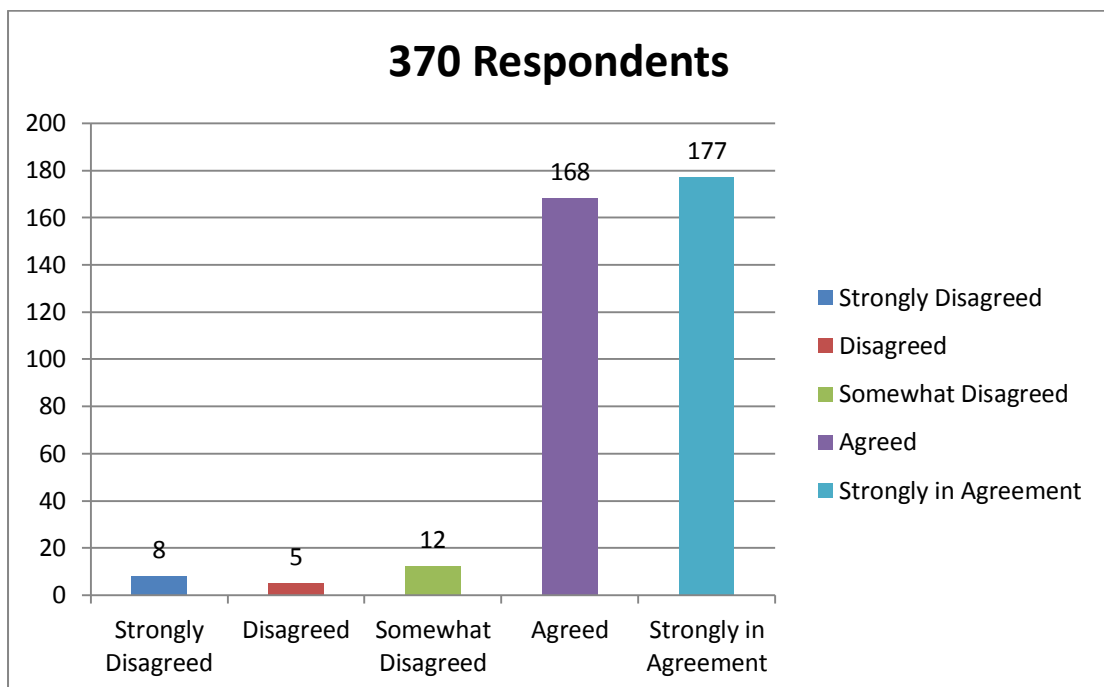
The issue of Midwest aviation training program's aerospace program understanding that production goals and safety issues can at times be in conflict, varying responses were gained. Respondents had differing opinions of whether the program had pertinent measures in place towards recognizing and subsequently resolving such conflicts in both an open and effective manner. A total of 358 individuals did respond, with those strongly in agreement being 115 in total. 200 respondents were in general agreement, with 18 somewhat in disagreement, and 10 being in general disagreement. Those strongly in disagreement were 15 in total, with 27 responding with the not applicable phrase. This is shown in ***Figure 12.***



**Figure 12- The Issue of UND's Aerospace Program Understanding That Production Goals and Safety Issues Can At Times Be in Conflict.**

The Standard Deviation stood at the 0.925, with the Variance being at the .855 valuation point. The Mean average value on its part was at 4.09.

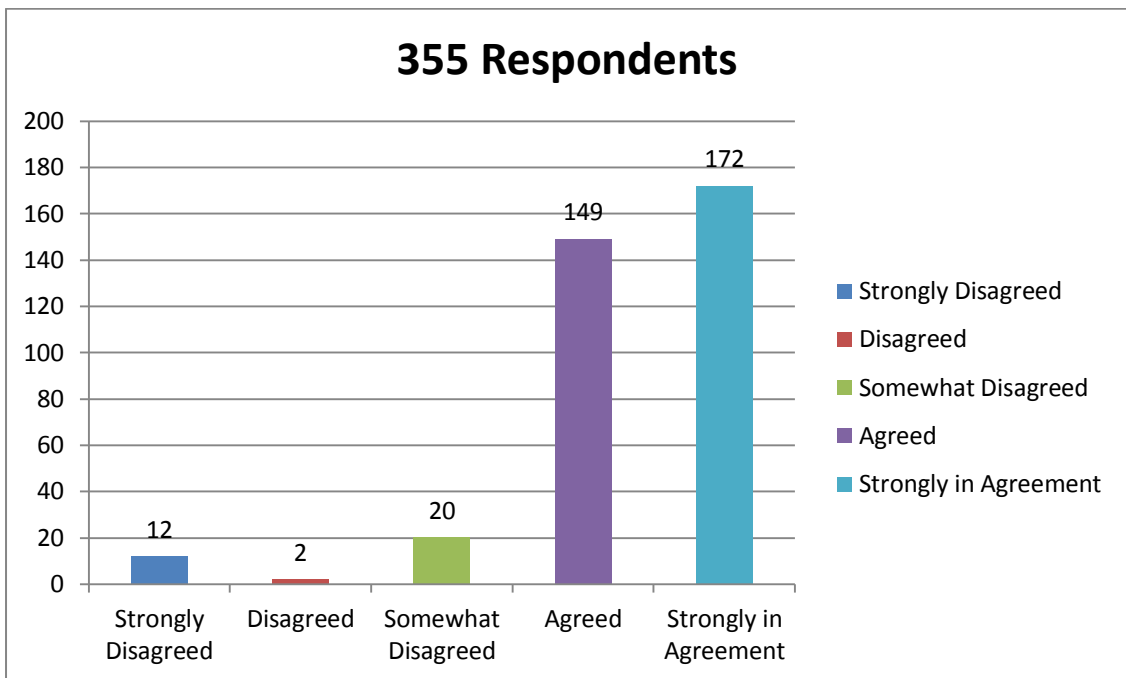
Regarding whether the Midwest Aviation Training Program Aerospace program had policies in place, towards encouraging everyone to raise individual and group safety-related issues, the respondents provided varying answers. A total of 370 individuals responded, with 177 of these being strongly in agreement. 168 respondents were in general agreement, with 12 being somewhat in disagreement. 5 respondents were in general disagreement, with 8 respondents strongly disagreeing to the aforementioned. Those indicating the not applicable clause were 18 in total. This is shown in ***Figure 13***.



**Figure 13- Regarding Whether the UND Aerospace Program Had Policies in Place, Towards Encouraging Everyone to Raise Individual and Group Safety-Related Issues.**

The Standard Deviation was at the 0.797 valuation point, with the Variance standing at the 0.636 mark. The Mean valuation was at the 4.35 mark.

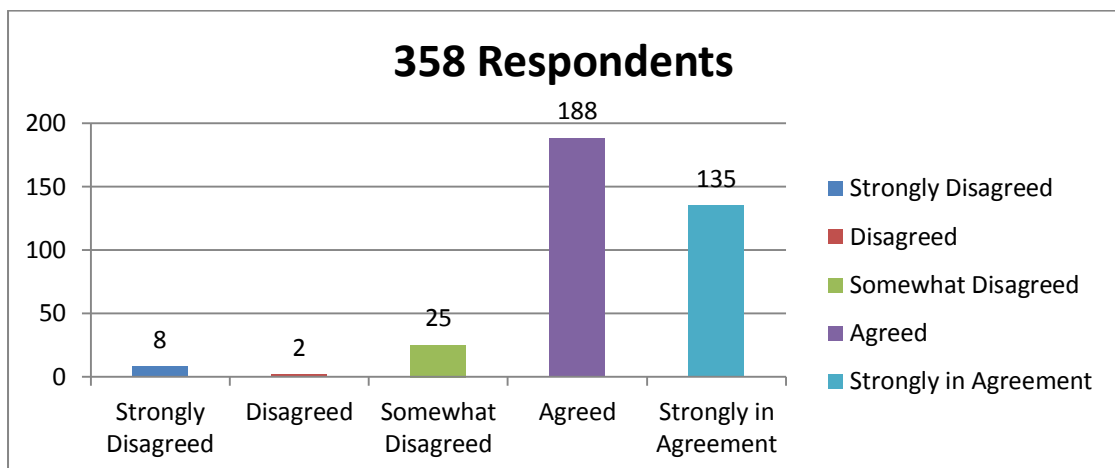
On the issue of Midwest Aviation Training Program’s Aerospace program having a safety reporting system, which is clearly both confidential and non-punitive in nature, differing responses were obtained. 355 individuals responded, with 172 being strongly in agreement. Those in general agreement were 149 in total, with 20 individuals being in general agreement. 2 respondents were in general disagreement, with 12 individuals being strongly in disagreement. Those who responded with the not applicable clause were 31 in total which will not be calculated. This is shown in ***Figure 14.***



**Figure 14- The Issue of UND Program’s Aerospace Program Having a Safety Reporting System, Which Is Clearly Both Confidential and Non Punitive in Nature.**

The Standard Deviation mark was at 0.878, with the Variance range being at 0.770 valuation point. The Mean point was at the 4.32 mark.

Finally, on the issue pertaining to the Midwest aviation training program aerospace disciplinary policies being based on an agreed distinction; between unacceptable and acceptable behavior, varying results were gained. Whether it was recognized by all that a minor segment of unsafe acts were indeed intentional and often reckless in nature was duly questioned. The majority of such misbehavior were not intentional and hence did not merit punitive measures was also put into focus. 358 individuals responded, with those strongly in agreement, with the aforementioned standing at 135. Those in general agreement however were more being 188. Those somewhat in disagreement were 25 in overall, with 2 individuals being generally in disagreement. 8 respondents were in strong disagreement, with 29 individuals having responded with the not applicable clause. This is shown in **Figure 15**.



**Figure 15- The Issue Regarding the UND Aerospace Disciplinary Policies Being Based On an Agreed Distinction; Between Unacceptable and Acceptable Behavior.**

Standard Deviation stood at the 0.787 valuation mark, with the Variance being at the 0.620 mark. The Mean value was at the 4.23 mark.

### **3.5 Data Reporting**

The findings from the data analysis will be reported and explained in this section. A decision rule will be used to explain the choice to reject or not reject the null hypotheses that there is no variation between the mentioned variables, and there is no single variable is unlike zero. Additionally, the decision rule will be generated to describe the implications of the choices made, with regard to the proposed hypotheses. Those who will not have responded to questions will be considered as a null, and thereby, will not be included in the diagram calculations.

Figures and charts utilized above are helpful in interpreting and subsequently reporting the analyzed data. The charts, figures and graphs are carefully labeled to facilitate better understanding. The results of the analysis aid in better comparison of the SMS program with that of a similar-sized one. From the findings, the researcher has deduced that more respondents were males, with this being represented by 90% as compared to 10% female respondents. Furtherance is that sophomore and freshman year students carried the bulk of the study's respondents, with their ages averaging on the 23-year mark. The individuals majoring in Air Traffic Control and Commercial Aviation did also provide the bulk of the sampled respondents. Regarding the respondents' GPA, these ranged from 4.0, to the 2.5 mark, with a majority being between the 2.8 mark and the 3.5 mark average.

Regarding the Midwest aviation training program's aerospace program's implementation of the SMS program, the result was positive as a majority of respondents was either in agreements or strongly in agreement. The minority were

in disagreement, both in general or strongly against, with a sizeable portion indicating the not applicable option. This proves that the program is adequately implemented, with positive results being present. However, the sizeable number of respondents, providing less than adequate answers provides a pointer to the need for better implementation of the same. The effects on overall aviation safety standard, within the Midwest aviation training program's aerospace program are according to the researcher's view, and as backed up by data provided, adequate. The positive output does portray a sense of satisfaction on the students' side, with regard to overall aviation safety standards. However, room exists for more enhancements regarding the aforementioned program.

## **CHAPTER Four: Findings, Analysis and Recommendation**

This section of the research paper aims at discussing and analyzing some of the findings on just culture. Before the 21st century, very few people had heard about Just culture. Currently, almost every organization in the aviation industry has implemented the just culture in all their activities. Recent findings have suggested that; the just culture has become the foundation for safety in the aviation industry (Frazier, 2012). Organization leaders have to focus at achieving a just culture in the firm so that the business can benefit from the simplicity, power and effectiveness of the culture; Therefore, The researcher think that studying Just Culture, Safety Management System (SMS) and Human Error classes at UND is a very clear answer for the question of “Did the participant have a view that top managers have a genuine goal of zero mishaps?” which UND management are trying to educate their student despite of their stages about the idea of just culture and how this affect the safety. This is also supported by the results that showed in (figure 11) that the majority agreed with the issues of the frequency and wide range of attendees to various safety related classes and meetings.

There are several activities whereby the degree of professionalism required is so high such that lack of high standards may lead to serious consequences. Failure to perform in accordance with set standards may be enough to justify dismissal, as there has to be a balance between the productions and safety, Therefore the researcher pondered that this has positively explained at UND in the same according to the (figure 12) there are still some participants who disagreed and the writer believes that



this need more review by the UND authorities so as to get a clear picture of what made that disagreement.

Based on the fact mentioned in these papers, the researcher believes that unprofessional conduct within the aviation industry may have a significant impact on safety and organizational growth. Also most researchers define unprofessional conduct as any act that involves moral turpitude, dishonesty, or corruption. There are several cases in the aviation industry that involves unprofessional conduct such as the misrepresentation of materials in obtaining a license.

Common errors that can be attributed to unprofessional conduct include incompetence, negligence and sometimes malpractice. These types of misconducts often result in injury to both the pilot and passengers. In some cases, misconduct creates an unreasonable risk that a passenger or the pilot may be harmed. Therefore, it is significant that reporting or making policies that encourage everyone in the aviation industry to raise safety and report about safety issues should be prioritized, subsequently the writer believes that UND has hit that target and this is also supported by the data presented in (Figure 13) too, and the writer based on that data has a strong believe that he got an answer for the question “how affective those policies that put by UND Aerospace in encouraging everyone to raise safety- related issues?”

Currently, organizations within the aviation industry have realized the importance of educating their employees about just culture. Just culture aids professionals in understanding and accepting the ubiquity of human error and the industry is continuously surrounded by risks. Studies have suggested that lack of an

understanding on human errors and risks limits organizational growth (Fernández, Montes-Peón, & Vázquez-Ordás, 2007).

Hence, the writer trusts that the data gathered in this paper implies that, just culture prepares professionals in understanding and appropriately responding to outcomes and events that may be unexpected. Education in just culture should become mandatory in all disciplines in aviation education. The knowledge and application of just culture principle may soon become one of the most important building blocks for the aviation industry.

In addition to reporting, the researcher believes that another fundamental procedure to lead to a just culture is to have a good data analysis and data management in place; to obtain that also we should have a non-punitive and confidential environment that can free and encourage everyone to report about safety issues. Thus the researcher believes that based on the data presented in (figure 14), UND has very clearly responded to the question of “Did UND Aerospace has a safety reporting system that is clear confidential and non-punitive?” as majority of the students positively agreed with the reporting and data handling procedure in UND.

In most cases, aviation safety training, system design and processes are very complex. The aviation industry is also a high-risk area that requires systematic change. Enterprise risk management and change management systems may be put in place to reduce the likelihood of loss in case unforeseen risk occurs.

Learning from mistakes can be costly and sometimes the organization may fail to get back on its feet. The researcher has found that there is an underlying need for

organizations to learn from accidents, and incidents through safety investigations so that they can take the appropriate actions. This approach plays a critical role in preventing the repetition of such events in the future. This is also will very unmistakably help to distinct between acceptable and unacceptable behavior and will obviously lead to distinguish between intentional and non-intentional and reckless actions; It is very significant for an environment to exist where occurrences are reported and where all the necessary processes are already in place for investigations. After the investigations are completed, so the researcher believes that the organization should shift its focus on developing preventive measures such as re-training or increasing the level of supervision.

Departments such as the air traffic control, pilots or vehicle drivers are legally bound to report any occurrence or incident. Several task forces have been created within the aviation industry. Most of these tasks forces have found out that punishing air traffic controllers and pilots with fines or suspending their licenses might have led to a reduction in the reporting of incidents and sharing of safety information. Different tasks forces have recognized the need for an active culture that encourages honest reporting and one that has not yet been reconciled with the legislative powers or the judicial system.

For this reason, the researcher has faith in the data presented in (figure 15) that in answer for the question of “Did this recognize by everyone that small proportion of unsafe acts were indeed intentional and reckless and warrant punishment, but that the large majority of such acts are not intentional and should not attract punishment?” UND has a positive level of agreement and the majority of the students are agree with that; in the meantime more investigations and studies needed by UND authorities to

know why some participants are disagreed despite of their small numbers. This can be achieved by involving those students' opinions or their participations in the general UND safety plans and procedures.

The benefits of creating a just culture are numerous. The researcher has confidence in that for organizations to enjoy these benefits, they first have to embrace just culture. One of the first steps an organization can take is to increase the rate at which reports are made. This approach is more useful when previously unreported events are identified and their trends investigated. This offers risk managers with an opportunity to address latent safety challenges that may come in the future.

According to the conservative's estimates, for each major accident, which involves fatalities, there are as many as several hundred unreported incidents. Researchers have suggested that, if these incidents are properly investigated, they might identify underlying problems on time and prevent future incidents from taking place again. Lack of reported events does not necessarily indicate a safe operation (Dekker, 2012). Likewise, increased reporting on events does not indicate a decrease in the level of safety. Even reporting illuminates the potential safety concerns an organization has. Increased reporting should be seen as a healthy, safety indicator (Eurocontrol, 2006).

Another approach that the researcher believes in that can be used to create just culture within the organization is building trust. Organizational leaders and managers should focus at establishing behaviors that are acceptable. Also, the process of building trust if done correctly can bring different members together within the organization that can often have infrequent contact in policy and decision-making.

Increased trust within the organization is critical in creating a just culture. Trust results into a general understanding of where the lines are drawn for disciplinary actions. Therefore, trust is at the core in the development of a just culture.

Trust assist in establishing a just culture that is well defined and well monitored (DePasquale, 1999). Trust also assists all members within the organization to do better, as well as, define their individual responsibilities. Through trust building, organizational leaders can influence and motivate others within the company. Organizations should shift their focus to trust building to increase the confidence of front line employees in their superiors.

The researcher imagines another approach that can be taken in creating a Just culture, is implementing a more effective safety and operational management system. It is often expected that a just culture will enhance the overall effectiveness of an organization. This will be done by defining job performance expectations and establishing clear guidelines for the consequences of deviance from procedures. Managers can focus at creating more effective safety and operational management system to allow the organization identify and report on any emerging trends (Antonsen, 2009). Such systems can also assist the organization determine whether violations are taken place, as well as, identify any deviations from procedures that are already established.

Effective systems can spot organizational structures that are outdated or ineffective. Such systems are often identified as operational inefficiencies, lost opportunities or safety lapses. The major motive behind creating effective systems within organizations is safety. The author strongly agrees with researchers' suggestion

that, factors that contribute to accidents also create production losses, quality and cost problems. Organizations within the aviation industry should focus at creating a constructive Just culture. This shift would be expected to have tangible benefits that can contribute positively to the overall safety culture of an organization (Behm, 2004).

The researcher in this section also offers more recommendations on some of the steps an organization can take to create a just culture. It will also outline potential obstacles that may hinder an organization from implementing a just culture. The first step to be taken for consideration is the legal aspect of just culture. An organization has to have in place a disciplinary framework that supports reporting of incidents. This will significantly reduce any legal impediments to reporting. The first significant step in changing the legal aspects may entail substantiating the current legal situation and establishing whether it needs to be changed.

The step that mentioned by the researcher in creating a just culture is reporting organizational policy and procedures. This step is very important because it considers safety issues concerning the underlying reporting structure and company commitment. Also another important step is selecting the reporting method to be used. Some of the issues the organization may consider with regard to the method by which reports are collected are the rapid, usefulness and intelligible feedback of the reporting community. The organization should also consider the ease at which reports are generated. This is because; voluntary reporting is often perceived an extra task (Bayuk, 2007). Therefore, the organization will require a clear and unambiguous direction for reporting and accessing to reports.

In the aviation industry, some of the first steps in developing a just culture might include deciding on whether to have a voluntary or a mandatory reporting system. The organization should put in place a team who will be tasked with the responsibility of implementing a just culture. This team should comprise of the following members: the safety and operations manager, human resources manager, risk manager, employees and the organization's stakeholders. And the author further suggests that UND needs to involve any one that wants to get involved voluntarily in creating just culture or in safety issues as whole, then selected team should conduct further investigations with the operational team. This will assist in making informed decisions on how reports can be investigated further. It is very important for the team to decide on which reports that will be further investigated. This will allow UND to organize the reports in an orderly manner. Those reports that are more severe are given more priority.

Also the researcher recommends that just culture is the key to successful implementation of safety regulations. This culture creates a reporting environment within aviation organizations, as well as, regulators and investigating authorities. A reporting culture often depends on how organizations handle blame and punishment. The researcher is strongly agrees that according to research, only small proportions of human actions that are unsafe are deliberate, and therefore, require to be sanctioned. Also research has showed that amnesty on all unsafe acts may lack credibility in the eyes of employees and may even be seen to oppose natural justice. Therefore, blameless culture may be undesirable.

Research data gathered and analyzed in this paper by the author suggest that, safety analysis and investigations are necessary in improving safety. Organizations

such as UND should have a continues process of ensuring that all the necessary processes are in place for carrying out investigations and developing preventative actions such as re-training and improved supervision. Also a nonstop attempt to create an environment that can foster a just culture.



## **Conclusion**

In summary, this research project has discussed some of the ways in which the top down nature of safety management systems may be used to create a just culture within organizations in the aviation industry. Research data gathered in this paper has considered several aspects of a safety culture in aviation management. The research has also suggested some of the strategies for a just culture that can be designed and implemented. In the aviation industry, safety is regarded as the reduction of overall risk levels. Organizations in the aviation industry aim at having the lowest levels of risk.

In this research paper, just culture is a new development in management theory especially in corporate workplaces. In the past, workplaces operated under the mutual understanding that employees will not inform or report to authorities, as well as, management about situations and conditions that required improvement. This research paper has showed that, in some cases, these conditions and situations may be irritating to workers. However, in other cases, these conditions at the workplace may be actively dangerous to employees and the public. Reporting of errors will ensure that they are addressed accordingly and prevented from taking place in the future.

The researcher has used a questionnaire that has IRB approval by UND and tried to analyze those data to go deep inside the just culture and its characteristics, and use the answers of UND students as fundamental materials for discussions and findings.

## References

- Agnew, J., & Daniels, A.C. (2010). *Safe By Accident: Take the Luck Out of Safety: Leadership Practices that Build a Sustainable Safety Culture*. Atlanta, GA: Performance Management.
- Antonsen, S. (2009). Safety culture and the issue of power. *Safety Science*, 47 (2), pp. 183--191.
- Baker, L. (2006). *Research methods*. Baltimore, MD: Johns Hopkins University Press.
- Bayuk, A.J. (2007). *Aviation Safety Management Systems as a Template for Aligning Safety with Business Strategy in Other Industries*. Philadelphia: Creative Ventures International, LLC.
- Behm, M., Veltri, A., & Kleinsorge, I. K. (2004). The cost of safety: Cost analysis model helps build business case for safety. *Professional Safety*, 4, 22--29.
- Bradburn, N.M., Sudman, S., & Wansink, B. (2004). *Asking questions: The definitive guide to questionnaire design: for market research, political polls, and social and health questionnaires*. San Francisco: Jossey-Bass.
- Churchill, D. (2003). Just Culture in Aviation Safety Management. IFATCA/ Professional and the Controller Magazine.
- Cooper, M. (2000). *Towards the Model of Safety Culture*. 36. 111-136.
- Cox, S. and Cheyne, A. (2000). Assessing safety culture in offshore environments. *Safety Science*, 34 (1), pp. 111--129.

- Dekker, S. (2009). Just culture: who gets to draw the line?. *Cognition, Technology & Work*, 11 (3), pp. 177--185.
- Denison, D. R. (1996). What is the Difference between Organizational Culture and Organizational Climate? A Native's Point of View on a Decade of Paradigm Wars. *The Academy of Management Review*, 21(3), 619–654.
- DePasquale, J.P., & Geller, E.S. (1999). Critical success factors for behavior-based safety: A study of twenty industry-wide applications. *Journal of Safety Research*, 30,237–249.
- Eurocontrol Experimental Centre, (2006). Understanding Safety Culture in Air Traffic Management.
- Ferguson, M. and Nelson, S. (2013). *Aviation safety*. Albany, N.Y.: Delmar.
- Fernández-Muñiz, B., Montes-Peón, J.M., & Vázquez-Ordás, C.J. (2007). Safety culture: Analysis of the causal relationships between its key dimensions. *Journal of Safety Research*, 38, 627–641.
- Flin, R., Mearns, K., O'connor, P. and Bryden, R. (2000). Measuring safety climate: identifying the common features. *Safety science*, 34 (1), pp. 177--192.
- Frazier, C., Ludwig, T., Whitaker, B. and Roberts, D. (2012). A hierarchical factor analysis of a safety culture survey. *Journal of safety research*.
- Gain Working Group E. (2004). *A Roadmap To A Just Culture: Enhancing The Safety Environment (1<sup>st</sup> Ed.)*. Global Aviation Information Network: Flight Ops/ ATC Ops Safety Information Sharing.

- GAIN Working Group. (2004). *Implementing the Global Aviation Safety Roadmap*.  
 [e-book] International Civil Aviation Organization. Available through:  
 International Civil Aviation Organization  
<http://flightsafety.org/files/roadmap2.pdf> [Accessed: 3 Oct 2013].
- Gaur, A.S., & Gaur, S. S. (2009). *Statistical methods for practice and research: A guide to data analysis using SPSS*. Los Angeles: Response.
- Glendon, A. and Stanton, N. (2000). Perspectives on safety culture. *Safety Science*, 34 (1), pp. 193--214.
- Grote, G. & KuÈnzler, C.,(1996). Safety culture and its rejection in job and organizational design: Total Safety Management. In: Gheorghe, A.V. (Ed.), *Integrated Regional Health and Environmental Risk Assessment and Safety management. International Journal of Environment and Pollution* 6, 618-631.
- Grote, G. (1997, April). *Autonomy and Safety – a necessary contradiction?* 8<sup>th</sup> European Congress of Work and Organizational Psychology, Verona.
- Grote, G. and Kunzler, C. (2000). Diagnosis of safety culture in safety management audits. *Safety Science*, 34 (1), pp. 131--150.
- Guldenmund, F. (2000). The nature of safety culture: a review of theory and research. *Safety science*, 34 (1), pp. 215--257.
- Guldenmund, F. (2007). The use of questionnaires in safety culture research--an evaluation. *Safety Science*, 45 (6), pp. 723--743.

- Guldenmund, F., (2000). The nature of safety culture: a review of theory and research. *Safety Science* 34, 215–257.
- Hale, A.R. (2003). Safety management in production. *Human Factors and Ergonomics in Manufacturing*, 13, 185–201.
- Hale, A.R. (2000). Culture's confusions. *Safety Science* 34, 1–14.
- Helmreich, R.L. & Merritt, A.C., (1998). *Culture at work in aviation and medicine: national, organizational, and professional influences*. Ashgate: Aldershot.
- HSE, (2005). A review of safety culture and safety climate literature for the development of the safety culture inspection toolkit. *Research Report 367*. Norwich, HMSO.
- Hudson, P. (2007). Implementing a safety culture in a major multi-national. *Safety Science*, 45 (6), pp. 697--722.
- Jacobs, R. & Haber, S. (1994). Organizational processes and nuclear power plant safety. *Reliable Engineering and System safety*, 45, 75-83.
- Jha, N.K. (2008). *Research methodology*. Chandigarh: Abhishek Publications.
- Love, K. (2012). *Ethics in social research*. Bingley, U.K: Emerald.
- Neal, A., Griyn, M.A. & Hart, P.M., 2000. The impact of organizational climate on safety climate and individual behavior. *Safety Science* 34, 99–109.
- Parker, D., Lawrie, M. & Hudson, P. (2006). A framework for understanding the development of organizational safety culture. *Safety Science*, 44 (6), pp. 551--562.

- Reason, J (2008) *The Human Contribution*.
- Reason, J. (1993). Managing the management risk: new approaches to organizational safety. In, Wilpert B.&Qvale, T. (Eds.) *Reliability and Safety in Hazardous Working Systems* (pp. 7-22). Hove: Lawrence Erlbaum.
- Ruitenbergh, B. (2001). Accepting Human Error as a Normal Component in Behavior. Presentation-Aviation Safety and Juridical Actions, HIAS Symposium, Toulouse: France.
- Schein, E.H. (1992). *Organizational culture and leadership* (2<sup>nd</sup>Ed.). San Francisco: JosseyBass.
- Shappel, S. and Wiegmann, D. (2000). The human factors analysis and classification system--HFACS.
- SKYGUIDE (2003). *Non-Punitive ATM Safety Occurrence Reporting*. High Level European Action Group for ATM Safety (AGAS), 4<sup>th</sup> Meeting.
- Soeters, J. L., and Boer, P. C. (2010). Culture and Flight Safety in Military Aviation. *The International Journal of Aviation Psychology*, 10(2), 111-133.
- Sorensen, J.N., (2002). Safety culture: a survey of the state of the art. *Reliability Engineering and System Safety* 76,189–204.
- Stolzer, A. J. and Halford, C. D. (2011). *Implementing Safety Management Systems in Aviation*. Surrey, England: Ashgate.
- Susmann, G.I. (1976). *Autonomy at Work, a Socio-technical Analysis of Participative Management*. New York: Praeger.

- Taieh, E. M. (2012). *Technology Engineering and Management in Aviation Advancements and Discoveries*. Hershey, PA: Information Science Reference.
- Vietti-Cook, A. (2011). *Final Safety Culture Policy Statement*. [report]  
WashingtonD.C.: Nuclear Regulatory Commission.
- Wagner, M. (2013). Just Culture Confidential Reporting Guarantees Active Learning.  
A.
- Zohar, D., (2000). A group-level model of safety climate: testing the effect of group climate on micro accidents in manufacturing jobs. *Journal of Applied Psychology* 85(4), 587–596.

# Appendices

Qualtrics Survey Software

Page 1 of 10

## Background Information

### Q1. Gender

- Male
- Female

### Q2. Age

### Q3. What is your current academic year?

- Freshman
- Sophomore
- Junior
- Senior
- Graduate

### Q4. What is your primary major? (example: If you are majoring in both ATC and Airport Management, but hope to become a controller for the FAA select ATC)

- Commercial Aviation
- Commercial Aviation - Helicopter
- Air Traffic Control
- Aviation Management
- Flight Education
- Aviation Technology Management
- Unmanned Aircraft Systems
- Airport Management
- Major Outside of the Aviation Department

### Q5. If you already completed a semester of college, what is your Grade Point Average (GPA)

### Q6. What best describes your career goals?

- Airline Pilot

<https://und.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview&T=38j...> 10/29/2013



My advisor refers me to other campus resources (Academic Achievement Center).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My advisor refers me to career services, tutoring, personal counseling when needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My advisor show respect and concern for me as an advisee.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q29. Overall, how would you rate the quality of academic advising you have received.**

- Poor
- Fair
- Good
- Excellent

**Q48. Please provide any comments about your academic advising.**

**Safety**

**Q30. Score your safety culture: Please state your level of agreement in regards to the following statements.**

	Strongly Disagree	Disagree	Somewhat Disagree	Agree	Strongly Agree	Not Applicable
The Dean, Director of Flight Operations, and the Chair of Academics are genuinely committed to aviation safety and provide adequate resources to serve this objective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safety related issues are discussed at UND Aerospace meetings and classes on a regular basis, not just after an accident or incident.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After an accident, the primary goal is to identify the "why and what failed", rather than the "who failed"?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
UND Aerospace regularly identifies the safety concerns which are most in need of attention, and then carries out effective preventive actions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Dean, Director of Flight Operations, and the Chair of Academics feel that a single accident/incident is one too	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

many. Top managers at UND have a genuine goal of zero mishaps.

Meetings relating to safety are attended by UND Aerospace staff from a wide variety of departments and levels.

UND Aerospace understands that production goals and safety issues can come into conflict. At UND we have measures in place to recognize and resolve such conflicts in an effective and open manner.

UND Aerospace has policies that are in place to encourage everyone to raise safety-related issues.

UND Aerospace has a safety reporting system that is clearly confidential and non-punitive.

UND Aerospace disciplinary policies are based on an agreed distinction between acceptable and unacceptable behavior. It is recognized by everyone that a small proportion of unsafe acts are indeed intentional and reckless and warrant punishment, but that the large majority of such acts are not intentional and should not attract punishment.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q31. In your opinion, what is the most significant strength of the UND Safety Program?**

**Q32. In your opinion, what is an area for improvement with the UND Safety Program?**

**Q33. Even though one accident is too many, if we were going to have an accident, what kind of accident will we have?**