Consumers' Trust in Pilots Based on Pilot's Preference for use of Breathalyzer in the Cockpit

by

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"Consumers' Trust in Pilots Based on Pilot's Preference for use of Breathalyzer in the Cockpit"
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Abstract

Title: Consumers' Trust in Pilots Based on Pilot's Preference for use of Breathalyzer in the Cockpit

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Trust has been studied across disciplines for years, with the focus looking at trust between individuals, between individuals and organizations, and between organizations (Lee & See, 2004). Establishing trust between people has been an issue for decades (Simpson, 2011), but defining it has proved difficult as well. Within the aviation industry, there has been a lack of research exploring how trust is affected from the consumer's or passenger's perspective. Aviation is one of the major forms of transportation in today's culture, and understanding consumers' trust is important for safety and economic reasons. The current study will use a 5-point Likert-type scale of trustworthiness (Rice, Mehta, Steelman, & Winter, in press) in a survey questionnaire to measure consumers' perceived level of trust toward a pilot based on the pilot's preference for use of a breathalyzer in the cockpit. There was a significant main effect for pilot preference and also a significant relationship between pilot preference and gender as well as pilot preference and country of origin. The participant's perceived level of trust toward the pilot based on the pilot's preference depended on whether the participants were male or female, and also depended on whether they were American or Indian.

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List of Abbreviations

RQ – Research Question

ANOVA – Analysis of Variance

DUI – Driving Under the Influence

FAA – Federal Aviation Administration

FAR – Federal Aviation Regulation

ILS – Instrument Landing System

IFR – Instrument Flight Rules

BAC – Blood Alcohol Concentration

MTurk – Amazon ® Mechanical Turk

HIT – Human Intelligence Task

IV – Independent Variable

DV – Dependent Variable

IDA – Initial Data Analysis

List of Key Words

Aviation

Trust

Trustworthiness

Breathalyzer

Aircraft

Consumers

Passengers

Pilot

Cockpit

Commercial

India

United States

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Dedication

I dedicate this work to my mom and dad,

Thanks for the hours spent on the phone

And the love and support you have always shown me.

Chapter 1

Introduction

Trust within the aviation industry is critical for the industry to be successful. For example, Malaysia Airlines has experienced two catastrophic aviation events in the last year, and it will take years before the airline will be able to rebuild the trust in its brand (Kembrey, 2014). After the most recent Malaysia Airlines Boeing 777 was shot down, international passengers flying with the airline dropped 15.2 percent, and domestic flight numbers decreased by 21.5 percent (Ironside, 2014). From a business perspective, decrease levels of consumers' trust can negatively impact an organization's survival. Malaysia Airlines is now offering reduced fares to encourage passengers to return and fly with their airline. In order for an airline to be successful, they need the trust of the passengers first. Malaysia Airlines plans on rebuilding that trust by being attentive to the families who lost loved ones in the accidents and voice their concerns about safety, then over time the airline may be able to regain passenger's trust and be viewed as a caring and safety conscious airline (Kembrey, 2014).

Consumers' trust in aviation is particularly critical because of the unique relationship between the passengers and pilots. The pilots have the responsibility to safely maneuver and operate the plane, whereas the passengers can only buckle up and follow crew instructions (Markovitz, 2010). This type of trust can be easily lost because

of the high mortality rate when a flight goes awry. When planes crash or demonstrate issues, they receive a tremendous amount of publicity, especially in commercial aviation.

Trust will be the focus of the current study, and Chapter 2 of this thesis will go into further detail about trust and trustworthiness. This chapter will detail the problem statement, research questions, hypotheses, the purpose of the study, theoretical base of the study, and finally ending with the significance of the study.

Problem Statement

Aviation has become an integral part of consumer travel, whether it be for business or leisure. In 2013, the number of passengers grew by nearly 3.4 percent to 3.1 billion passengers compared to 2012 for world scheduled air passenger traffic. The increase is expected to grow by 6.0, 6.3, and 6.5 percent in 2014, 2015, and 2016, respectively (International Civil Aviation Organization, 2014). These statistics demonstrate the magnitude of the aviation industry. Passengers rely on aviation to travel for business, to visit family, or take vacations.

The commercial aviation industry receives a lot of attention, especially when a catastrophic event occurs. As mentioned previously, Malaysia Airlines is an example of how catastrophic cases can impact an airline. It has to work toward rebuilding trust (Kembrey, 2014). Consumers put a large amount of trust with an airline when they choose to fly with them. Pilots have been known to take the blunt of criticism for aviation accidents, since they are in control of the aircraft (Fishetti, 1986). Pilots assume a great

deal of responsibility when they depart from the gate for both the aircraft and its passengers. Understanding how the trust of the consumers is affected can set a foundation for airlines to quantify how consumers' trust is affected as well as pave way for future research in consumers' trust.

The focus of the current study is consumers' trust in the pilot. Trust is an important aspect in any industry, but within the aviation sector, it proves to be crucial for the success of the organization. Since the relationship between passenger and pilot is so unique, trust plays an important role in this relationship. Passengers put their trust in the pilot to safely fly and operate the plane to their destination (Markovitz, 2010). There could be possible variations in consumers' trust in pilots based on the pilot's preference for using a breathalyzer in the cockpit.

Research Questions and Hypotheses

Chapter 3 of this study went into detail about the dependent and independent variables that were included in this work. The dependent variable was consumers' perceived level of trust based on a trustworthiness scale developed by Rice et al. (in press). The independent variables included the gender of the participant, country of origin of the participant, and pilot preference (support or not support). The aim of this study was to determine whether or not there was statistically significant relationships among the group means, as well as between the various variables. The null hypotheses stated that there is no significant difference between group means and any difference is due to

sampling or experimental error, whereas the alternative hypotheses claim that there was a statistically significant relationship.

Research Questions (*RQ*)

RQ_1: Will consumers' trust in the pilot differ as a function of the preference of the pilot for using breathalyzers in the cockpit?

RQ_2: Will consumers' trust in the pilot differ as a function of the participant's gender?

RQ_3: Will consumers' trust in the pilot differ as a function of the country of origin?

RQ_4: Is there an interaction as a function of the variables?

Hypotheses

H_{01}: There will be no difference in consumer's trust as a function of the preference of the pilot.

H_{A1}: There will be a difference in consumer's trust as a function of the preference of the pilot.

H_{02}: There will be no difference in consumer's trust as a function of gender.

H_{A2}: There will be a difference in consumer's trust as a function of gender.

H_{03}: There will be no difference in consumer's trust as a function of the country of origin.

H_{A3}: There will be a difference in consumer's trust as a function of the country of origin.

H_{04}: There will be no interaction between the variables.

H_{A4}: There will be an interaction between the variables.

The Purpose of the Study

This report evaluated how consumers' trust is affected given the preference of the pilot for the use of a breathalyzer in the cockpit and examined if there are any effects based on gender or country of origin of the participant. There is limited research into how consumers' trust is affected by pilot's preferences, so the experiment used participants from India and the United States to provide ratings of trust based on these various conditions and look at gender and country of origin as independent variables as well.

Theoretical Base of the Study

This study looked at consumers' trust toward pilots based on the pilot's preference to use a breathalyzer in the cockpit. Various disciplines including psychology, sociology, and business have looked at trust and how to define it. Two definitions of trust stand out amidst the numerous definitions of trust. Mayer, Davis, and Schoorman (1995) define trust as, "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." Next, Eckel and Wilson (2004) and Ergeneli, Saglam, and Metin (2007) defined trust as the ability to predict another person's behavior. These two definitions created the foundation for trust in this current study.

The nature of what trust is has been unclear in previous research. Lee and See (2004) offered an outlook on whether trust was a belief, attitude, intention or behavior.

The connection was this; “behaviors result from intentions and that intentions are a function of attitudes” (Lee & See, 2004). Based on this perspective, it can be assumed that trust is a behavior. Interpersonal trust and human-human trust go hand in hand and will be discussed in detail in Chapter 2.

Passenger and pilot relationships are unique and therefore understanding how interpersonal trust exists within a relationship between people is critical. Mayer, Davis, and Schoorman (1995) stated that trust is “an expectancy held by an individual or a group that the word, promise, verbal, or written statement of another individual or group can be relied upon.” Trust requires an individual or trustor to become vulnerable and at risk with a trustee. In order for trust to exist there has to be a level of confidence in the intentions of others and belief in their abilities.

Operational Definitions

For the sake of clarity to readers, the following words, clauses, or phrases as they were used in the context of this study, were described below:

Trust – perceived level of trust of the participant in the pilot based on the pilot’s preference for use of a breathalyzer in the cockpit. Measured using a Likert-type scale of trustworthiness developed by Rice et al., (in press) using a scale from -3 extremely disagree to +3 extremely agree via a survey questionnaire.

Gender – what a participant classifies themselves as either male or female, and is not based on biological characteristics.

Country of Origin – what the participant claims as their country and for the purpose of this study either as being from the United States or India.

Significance of the Study

The basis for interpersonal relationship is trust. Throughout the last century and beyond, researchers have examined what trust is and how best to define it. Exchange relationships were studied, where trust was looked at between management and employees (Tan & Tan, 2000). Trust between an organization and an individual have also been analyzed in order to increase organizational productivity and strengthen organizational commitment (Nyhan, 2000). Even interpersonal relationships that are romantic in nature have caught the attention of researchers when discussing trust (Rempel, Holmes, & Zanna, 1985). In various disciplines, trust has been an intriguing subject that affects not only interpersonal relationships, but also corporations and businesses alike.

In aviation, trust is as important if not more so for the success of the industry compared to other realms. Passengers' perceptions of an airline, airport, or other aviation organization can rely heavily on how much they trust aviation. As mentioned previously, Malaysia Airlines has been at the forefront of aviation accidents within the last year, and the results have proved to be costly to the airline. This study sought to understand how consumers' perceived trust is affected based on the preference of the pilot. Understanding how consumers' trust is affected can prove to be invaluable to the aviation industry for

making business and safety decisions. Cross-cultural and gender analyses stand to offer insight into potential differences between varying groups of people, which furthers our understanding of various peoples' preferences.

The opportunity for further research is vast considering the limitations and delimitations that this study will be conducted under. This study seeks to set a foundation for future scholarly research in consumers' trust in aviation settings. Since this study aims to focus on interpersonal trust, it will be an addition to the trust literature currently available. The following chapters will detail the various parts to this study. Chapter 2 provided a literature review. Chapter 3 described this study's research methodology, setting, and design. Chapter 4 presented and interpreted the data, and finally, Chapter 5 discussed the results and draw conclusions from the results.

Chapter 2 – Literature Review

Introduction

Trust is a characteristic of human beings that continues to cause disagreement in various disciplines. Researchers in psychology, sociology, business, and beyond have mulled over how to define trust, yet there are still numerous definitions for trust. Mayer, Davis, and Schoorman (1995) define trust as, "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." Whereas Eckel and Wilson (2004) and Ergeneli, Saglam, and Metin (2007) defined trust as the ability to predict another person's behavior. These definitions will prove to be useful for the current study. Vulnerability in the first definition offers a unique perspective of the trustor for the trustee. In this case, vulnerability is when there is something of importance to be lost (Mayer el al., 1995). Pilots and passengers share a unique trusting relationship, but the passenger (trustor) is vulnerable since the important thing that could be lost or damaged is their own well-being at the hands of the pilot (trustee). The ability to predict a person's behavior allows people to assess the risk associated with trusting the individual. To clarify, risk does not necessarily mean trust or vice versa, but there is a willingness to take a risk that coincides with trusting a person (Mayer et al., 1995).

This report covered relevant documents in trust literature. Trust will be the primary focus of this report and the literature will cover topics such as human-human

trust, also referred to as interpersonal trust, and trustworthiness. These topics will help set a foundation for the importance of trust, especially within the aviation industry. There will also be an examination of alcohol and breathalyzers in aviation and also cultural and gender considerations within the parameters of this study.

Multiple databases were used to collect relevant literature for inclusion in this study. The *Florida Institute of Technology online library* is where the majority of the literature was gathered, which pulled documents from various research databases. There was not a specific time range used for searching for literature. Through this report, various variables of trust were identified and helped to gain new insight into trust. The report also established the context of the research questions and rationalized the importance of the issue.

Trust

Various disciplines have endeavored to create a definition for trust. Trust has been examined between individuals, between individuals and organizations, and between organizations (Lee & See, 2004). Tan and Tan (2000) focused on exchange relationships, where trust was looked at between management and employees or supervisors and subordinates. To increase organizational productivity and strengthen organizational commitment, trust has been implicated as being an important contributor (Nyhan, 2000). Even some research has explored the relationship between organizations with multinational firms, where there are cross-disciplinary and cross-cultural collaboration

(Lee & See, 2004). Trust has also been looked at as being important in interpersonal relationships, where the focus is romantic in nature (Rempel, Holmes, & Zanna, 1985). Trust research has infiltrated every discipline. There has been an influx of trust research, especially in aviation. Automation in aviation has spurred many discussions about how humans trust in automation (Winter, Rice, & Reid, 2014).

Establishing trust between people has been an issue for decades (Simpson, 2011), and defining it has been even more difficult. For the purposes of this study, predicting a person's behavior and the willingness to be vulnerable to the actions of another party based on the expectation that the other party will perform an action that is of importance to the trustor (Eckel & Wilson, 2004; Mayer et al., 1995) will be used as the definition for trust.

Human-Human Trust

Antecedents to trust have been discussed in numerous research studies as constructs for trust. Mayer et al. (1995) stated that, "trust in fiduciary relationships is based on a belief in the professional's competency and integrity." Bulter and Cantrell (Mayer et al., 1995) used integrity and consistency as trust determinants, whereas Caillouet determined that integrity, fairness and openness to management were the three factors for determining trust. The common thread between the studies has been narrowed down to three factors: benevolence, ability, and integrity (Mayer et al., 1995). These three

factors share commonalities between other antecedent terms in determining trust. These will be discussed in more detail in a subsequent section covering trustworthiness.

Markovitz (2010) offered an interesting perspective on the pilot/passenger relationship. Passengers trust in the pilots and flight crew to safely get them to their destinations. The only thing a passenger has control over is having their seats upright, tray tables stowed, and their seatbelts fastened. Other than that, the pilots are in control of taxiing, take-off, en-route, and landing procedures. Passengers trust in the pilots to communicate effectively with the tower, properly go through checklists, monitor all the different systems in the cockpit, and beyond.

This is a unique relationship that does not exist in all services. There are very few professions where the service provider has the life of their client in their hands. Doctors are another example of where this type of relationship exists. They are unique in that the trustor has limited information and knowledge on the subject whether it is medical or aeronautical in nature.

To obtain coherence in any social system, trust is a necessity (Davis, Lee, & Ruhe, 2008). It is also an essential and omnipresent quality of individual and organizational relationships. It helps people accommodate complexity (Lee & See, 2004) by replacing the need for supervision when direct observation is unrealistic. In addition, it helps individuals choose under uncertain circumstances by acting as a social decision heuristic. Lee and See (2004) also mention how it decreases uncertainty in evaluating the actions of others, which helps guide appropriate reliance and generating a collaborative advantage.

Trust has notoriously been unclear in whether it is a belief, attitude, intention, or behavior (Lee & See, 2004). The connection between these inconsistencies is this; "behaviors result from intentions and that intentions are a function of attitudes" (Lee & See, 2004). Sequentially, this means that attitudes are based on beliefs. Depending on the availability and past experience of an individual influence beliefs as well. This then leads to how an attitude is an emotional assessment of beliefs that leads people assume a particular intention. Intentions then become behavior, which can be limited by environmental and cognitive constraints. Trust and reliance can then be translated into trust being an attitude and reliance is a behavior. When looking at trust as a whole, it helps fill in some of the inconsistencies that trust has as being a belief, attitude, intention, or behavior. Beliefs underlie trust (Lee & See, 2004), where behaviors and intentions can result from various levels of trust.

Trust is a fragile construct that is easily shattered. When an individual does not comply, then there can be consequences for breaking that trust (Mayer et al., 1995). Trust relies on interdependency between a trustor and trustee. In other words, working together depends on one another to accomplish personal or organizational goals. What happens though when the trustor and the trustee are distant from one another? Determining trust also depends on the social distance between the parties and prior knowledge of the counterpart (Eckel & Wilson, 2004). The more distance and lack of knowledge translates to a reduced amount of trust. In addition, anonymity heightens riskiness and predispositions toward risk could predict when individuals will choose to trust (Eckel & Wilson, 2004). Trust between strangers can vary on a scale then and maybe it is because

of status or position that we trust more in some individuals over others such as with the doctor and pilot mentioned earlier.

Interpersonal Trust

Interpersonal trust and human-human trust go hand in hand. Most definitions on trust include an organizational aspect to them, but with interpersonal trust, it focuses solely on interactions and trust between people. It is an emerging view on trust within the literature. Annette Baier (1986) defined trust as the trustor's expectation of being the beneficiary of the trustee party's good will. This perspective looks at trust at a very interpersonal level. Koehn (1996) argues that interpersonal trust is constructed on self-trust. If an individual has too much self-confidence, they may trust too much in their opinions and own character. Equally, if someone lacks self-confidence it could affect their ability to form relationships with others on the grounds that they are too scared or insecure. An absence of balance in self-trust can lead to making self-righteous or even racist remarks of others with different beliefs or expectations. There is also an issue with expectations of the trustor being clearly projected for the trustee to interpret. People may misjudge another's intentions and actions and accordingly assert that the other person is untrustworthy, when in reality, they are the very person they should trust (Koehn, 1996).

In order for interpersonal trust to exist Mayer, Davis, and Schoorman (1995) state that trust is "an expectancy held by an individual or a group that the word, promise, verbal, or written statement of another individual or group can be relied upon." It returns us to the definition put forth by Eckel and Wilson (2004) and Ergeneli, Saglam, and

Metin (2007) stating that trust is the ability to predict another person's behavior. Interpersonal trust requires a level of risk and predictability for a trustor to put trust in them. There has to be a level of faith in the intentions of others to exist and confidence in their abilities.

Geller (1999) defined interpersonal trust as focusing on the relationships between people and their confidence in their ability or behavior, integrity, and character, which he defines as person-based dimensions. He argues that the best way to build interpersonal trust is to be trustworthy as an individual first. Trust does not exist without the presence of faith in other's intentions and confidence in their abilities. An interpersonal trust scale has even be created which is comprised of a 12-item questionnaire that is meant to gauge interpersonal trust at work (Geller, 1999). Upon totaling the scores it gives an estimate of an individual's perception of interpersonal trust.

One of the main advantages of trust is improved interpersonal relationships and openness (Tan & Tan, 2000). In addition, trust depends on the credence that the other individual is "competent, open, concerned, and reliable" (Ergeneli et al., 2007). It is through transparency between a trustor and trustee that trust can be found. It requires a level of honesty and openness for the trustor to take a risk in the relationship. Interpersonal trust is specifically important for trust between individuals, but requires some preconditions to be met or ongoing for that trust to blossom.

Trustworthiness

Upon looking at how trust is defined and interpersonal trust, how is it possible to not only trust, but be trustworthy as well? Mayer, Davis, and Schoorman (1995) argued that for there to be trust, three characteristics must be met: ability, benevolence, and integrity. Ability is the group of skills, capabilities, and characteristics that allow someone to guide others within a specific area. Other terms to describe ability include competence or perceived expertise, but for the purpose of this explanation are interchangeable. Ability is ideal because it covers both the task- and situation-specific nature of this concept. Benevolence is the belief that the trustee wants to do good to the trustor. This does not include egocentric profit motives of the trustee. In addition to benevolence, other authors have used similar terms such as intentions or motives, but benevolence connotes a connection with the trustor. The final characteristic for trust to exist is integrity. Mayer et al. (1995) define integrity as the "trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable." Following a set of principles defines personal integrity (McFall, 1987). Therefore, having trust or finding someone trustworthy requires ability, benevolence, and integrity.

Returning to a previous example by Markovitz (2010), passengers expect the pilot, co-pilot and crew to be competent at all times or have the ability to execute their jobs safely. As part of this, passengers also expect the crew to follow the procedures that govern their jobs. If the trustee fails to follow the correct procedures there could be a loss of trust in the trustor. In addition if the trustee does not adhere to the principles of the

trustor then there could be a perceived lack of integrity viewed by the trustor of the trustee, which results in a reduction of trust (Mayer et al., 1995).

An alternative perspective on how to view trustworthiness is through three determinants of trusting and trustworthiness set forth by Ben-Ner and Putterman (2001). They argued that in order for there to be trust or trustworthiness there have to be repetition and reputation, third-party enforcement, and the trustor's preferences and values. Repetition and reputation require that trust is built through repetition. Multiple dealings and interactions that result in positive outcomes are more likely to be viewed as trustworthy relationships. In addition, reputation with third parties can also have the same effect. When a trustee works with others and performs in a trustworthy manner, then the trustor of interest will be more trustworthy of the trustee based on their interactions with others that are positive.

Third-party enforcement refers to how an outside party can support or provide assurance that the trustee will be trustworthy. Examples of this include the government, courts of law, or even mafia enforcers. If the trustee makes arrangements with the trustor and has the support of the government, the trustee will be more likely to uphold their end. This is particular true if the trustee fails to do as they have agreed upon and could be incarcerated because of the failure. Contracts come into existence for this type of trustworthiness. This way the trustor does not need to solely rely on the actions of the trustee being trustworthy or having a verbal promise to trust them, but has a written legal obligation to fulfill the items within the contract (Ben-Ner & Putterman, 2001).

The final determinant is the preferences and values of the trustee. Preferences, values, moral character could affect the trustee's trustworthiness and the trustor's trust in

them. Ben-Ner and Putterman (2001) broke down preferences and values into three distinct categories: self-regarding, other-regarding, and process-regarding. Self-regarding is the dimension that focuses primarily one's self-interest. Other-regarding is one's concern for another's well-being. If the trustor believes the trustee has sympathetic regard for them, they would be more likely to trust them. Process-regarding preferences are focuses on the adherence to a norm, rule, or principle. These could include fairness, truth-telling, or adherence to one's word. Preferences, values, or moral character may affect the trustee's trustworthiness and the trustor's trust in the trustee.

Alcohol and Aviation

The use of alcohol has been thoroughly studied especially in the realm of the automotive industry. An estimated 32% of all fatal car accidents are attributed to driving while intoxicated ("Drinking and Driving," n.d.). There has been a recent crackdown each year in alcohol-related accidents, and that does not even include the thousands that are injured. Alcohol is a depressant that induces rest and relaxation, but prolonged use can result in arrests for DUI offenders, as well as negative health effects. Nearly 13,000 people are killed or heavy consumption results in brain damage (Wijdicks, 2000). It impairs judgment, reaction time, and various cognitive abilities. Overall, alcohol has deleterious effects on performance for specific tasks.

With the recent release of *Flight* in 2012 featuring Denzel Washington as an alcoholic pilot who flew while intoxicated and under the effects of drugs and various

other issues, it brings forward the discussion about pilots flying while intoxicated or above the legal limit to fly. The Federal Aviation Administration or FAA sets forth guidelines and rules for alcohol consumption by pilots. Federal Aviation Regulation (FAR) 91.17 states that:

> No person may operate or attempt to operate an aircraft:
>
> - Within eight hours of having consumed alcohol
> - While under the influence of alcohol
> - With a blood alcohol content of 0.04% or greater
> - While using any drug that adversely affects safety (Federal Aviation Administration, n.d.)

These regulations are meant to serve as the principles that pilots are expected to adhere to, but there are currently no systems in place to ensure that pilots are abiding by these regulations. It has been found that pilots can become impaired in their ability to fly in Instrument Landing System (ILS) approach or to fly Instrument Flight Rules (IFR) (FAA, n.d.). Not to mention at higher altitudes there is an increase in the negative effects of alcohol effects on pilots due to the decrease in oxygen availability.

Within the realm of aviation, alcohol-related accidents are only attributable to less than 10% of general aviation accidents and approaching zero in commercial aviation (Cook, 1997b). Although the statistics surrounding alcohol-related incidents and accidents is relatively low, does not give credence to complacency. A minor mistake on the part of an intoxicated pilot could potentially be more catastrophic than compared to an intoxicated automobile driver. With regards to low Blood Alcohol Concentrations

(BAC), aircrew performance can still be impaired in a way that could compromise flight safety (Cook, 1997a). This suggests that pilots should not fly until their BAC returns to zero, and even after heavy drinking should not fly well after their BAC as fallen below <5 mg/dl.

In a study conducted by Ross and Ross (1990), they researched pilots' knowledge of blood alcohol levels and the 0.04% blood alcohol concentration rule. They surveyed 1,947 licensed pilots and found that of the 53.4% response rate about half of the pilots overestimated the number of drinks needed to get to a specific BAC. These pilots also underestimated the time necessary for their BAC to decrease. It was also found that moderate and heavy drinkers have a propensity to make more evident errors compared to light drinkers.

Breathalyzers or other methods for screening have been utilized by the FAA as random screeners, but the effectiveness of such tests are dependent upon perceived enforcement (Cook, 1997b). Cook goes on to mention that installation of a screening measure, such as an ignition interlock system, is considered a very controversial topic. This type of system would prevent the pilot from starting the plane without first passing a test, like a breathalyzer ignition start machine. This measure is controversial due to its technical issues and overall costs associated with retrofitting aircraft with this type of device. This type of machine has been found to be very effective in the automotive world to discourage and prevent people from driving under the influence. The effectiveness in an aviation setting might be less considerable due to the lack of data related to the quantity of alcohol consumption among aircrew.

Cultural Considerations

No previous study has examined the perspective of participants from different cultures when looking at trust in pilots based on the pilot's preference. Culture is the fabric of our being that makes us individuals and a society as a whole. Helmreich (2000) defined culture as norms, values, and practices that are shared within a society and can be on a national, organizational, and/or professional level. India and the United States vary at different levels, but are most distinctly different based on their collectivism versus individualistic qualities. India is a nation that is usually classified as a collectivistic society where the citizens are interdependent upon one another (Markus & Kitayama, 1991). Whereas the United States is commonly referred to as an individualistic society, which means that the people are independent of each other and focus more on their own person rather than concerned of the collective whole.

Markus and Kitayama (1991) found that collectivistic cultures have an interdependent view of the self, which means that they were taught to trust without question (Wu & Jang, 2008). In addition, individuals from a more collectivistic society have a tendency to regard the opinion of others with respect to their decision-making and this results in them considering other people's interests over their own as to not offend or contradict them. Tjosvold (2010) found that Indians focus mainly on relationships and working towards the greater wellbeing of the group. This demonstrates their willingness to trust others because it contributes to the group and the relationships within the group.

Collectivistic countries have a higher probability of trusting one another, while individualistic nations are distrustful of new people (Hofstede, 1980). Hofstede has a

Cultural Values by Nation Index, which classifies different nations on a scale of collectivism and individualism. The United States scored 91 out of 100 being the highest. On the other hand, India scored a 48, which translates to India having a preference predominantly towards collectivistic views, but some individualistic tendencies as well (Robbins & Judge, 2009). Understanding different perspectives helps create a fuller view of the topic. Numerous studies have examined collectivistic and individualist characteristics, but now the goal is to see how those traits, if at all, affect how consumers' trust pilots based on the pilot's preferences.

Gender Considerations

Does gender have any effect on preferences towards other's preferences? Gender differences have been a subject of debate for many researchers. Croson and Gneezy (2009) discovered that current studies on trust and gender can be somewhat divided. They found that in some studies, men proved to be more trusting, wherein other studies both genders trusted equally. Schwartz and Rubel (2005) conducted various studies examining gender differences across cultures, but focused on different values that were different and similar between genders. Gender equality has an effect on the values of the genders. Finland was found to have greater gender equality, whereas Greece has less gender equality. Schwartz and Rubel (2005) also discovered that gender equality relates positively with benevolence, universalism, self-direction, stimulation, and hedonism

values and also negatively with security, tradition, conformity, power, and achievement values.

If there is greater wealth, cultural autonomy, and freedom it makes it easier to pursue values like self-direction and hedonism (Schwartz, 2006, 2007). These types of associations with values and gender equality are in the same direction for both men and women. As in most areas, some associations might be stronger for men, while other associations are stronger for women. With that being said, there could be certain values that are inherently more important to one gender. This would mean that they would put more importance on a certain value depending on their gender (Schwartz & Rubel, 2005).

In evolutionary psychology, it argues that our ancestors faced various trials and tribulations, which gave rise to adaptive problems that fundamental altered psychological goals that guide contemporary human cognition and behavior (Kenrick, Maner, Butner, Li, Becker, & Schaller, 2002). This argument has some basis since both genders faced different adaptive problems and developed different cognitive and affective mechanisms, especially in the mating and reproduction domains. The social role theory argues that the biological and physical features give rise to gender differences. It also refers to the differences between men's and women's functions in reproduction and in their size and strength (Wood & Eagly, 2002). Both approaches offer a basis for inferring values that are inherently more important to one gender over the other.

Summary

In this literature review, trust has been examined from various perspectives including human-human trust, interpersonal trust, and trustworthiness. Trust is based on being able to predict a person's behavior and the willingness to be vulnerable to the actions of another party based on the expectation that the other party will perform an action that is of importance to the trustor (Eckel & Wilson, 2004; Mayer et al., 1995) will be used as the definition for trust. Interpersonal trust looked specifically at interactions between two people. Trustworthiness is based on three main characteristics: ability, benevolence, and integrity. Ben-Ner and Putterman (2001) argued that in order for there to be trust or trustworthiness there have to be repetition and reputation, third-party enforcement, and the trustor's preferences and values.

Alcohol and aviation offered a view of how alcohol is managed and dealt with in the aviation industry. Cook (1997b) mentions that installation of a screening measure, such as an ignition interlock system, is considered a very controversial topic. This type of system would prevent the pilot for starting the plane without first passing a test, like a breathalyzer ignition start machine. Although alcohol-related accidents are only attributable to less than 10% of general aviation accidents and approaching zero in commercial aviation, it is still a relevant topic to discussed, especially in such a field where one mistake could be fatal. Cultural and gender considerations were also taken into account. A brief overview of collectivistic and individualistic societies was examined. Gender differences, which is associated with gender equality, found that on average there are not very many differences between genders, but that based on evolutionary

psychology and social role theory, there could be some basis for value differences between genders.

The following chapter detailed the methodology of the current study. This included a detailed description of the population and sample of interest. It also included a discussion on the research procedure, which incorporated the study design and approach, research instrumentation, and materials. Finally, it included information about data analysis methodology used in the study.

Chapter 3 – Methodology

Introduction

In this chapter, it focused on detailing the methodology behind the study. It included information about the population and the sample of interest (sampling technique, sample size, and participants' eligibility requirement for the study). In addition, it incorporated a detailed description of the research procedure, which included an explanation of the study design and approach, and information pertaining to the research instrumentation and materials used. Finally, information about the data analysis methodology are expounded upon in the last section of this chapter. The question that this study is examining is how will consumers' trust in a pilot be affected based on the pilot's preference for the utilization of a breathalyzer in the cockpit, and also what effects did gender or country of origin of the participants have on their ratings of trust in the pilot?

Research Design and Approach

The research design that this study employed was a factorial design. This was an experimental design with two additional quasi-experimental variables. The quasi-experimental variables are gender and country of origin and cannot be randomly assigned, but random assignment can be done with respect to pilot preference (supports or not supports). One goal of this study was to test whether gender and country of origin

of the participants had any effect on their trust ratings for a pilot. The participants are already assigned a group based on their gender or country or origin, which was something that cannot be randomly assigned. There were three between-participant independent variables with 2 (gender of participant), 2 (country of participant), and 2 (pilot preference) levels each. Thus, this was a 2x2x2, or three-way ANOVA.

An ANOVA was used because it considers multiple independent variables, unlike a traditional t-test, which only looks at one independent variable. A factorial ANOVA permits researchers to examine different factors, and look at the dependency or independency of the factors. This was a parametric procedure upon determining that the assumptions of an ANOVA were satisfied. A key point for determining if this is a parametric procedure was that the normality assumption was fulfilled (Hoskin, n.d.).

The three assumptions of a three-way ANOVA were as follows (Gravetter & Wallnau, 2000):

- They must have independent scores.
- The parent populations should be approximately normally distributed.
- Finally, that there is homogeneity of variance, or where the populations from which the samples are selected must have equal variances.

Upon collecting the data, analyses were used to make sure the data fits these assumptions. JMP ® Pro 11 (SAS Institute, 2013) was used to run the analyses. The data was inputted into JMP and then the focus was on the residuals since that was what the model assumptions are concerned with. When looking at the residuals, the distribution and variance were the only areas to concentrate on because the sum of the residuals of

any group will be zero by definition. The residuals were only used to check the assumptions. For homogeneity of variance, a Fit Model was used to see and save the residuals. Next, a Fit Y by X analysis was conducted, and the residual trustworthiness scores and predicted trustworthiness scores were plotted on a graph. If there was no overall significance seen graphically (no discrete pattern) or quantitative through the analysis, then homogeneity of variance was satisfied. In addition the data was ran using the Levene's test to check for homogeneity of variance. A Fit Y by X analysis was used and an Unequal Variance test was ran, which included Levene's test. The null hypothesis for Levene's test is that the data has homogeneity of variance. If Levene's test is significant then the data has variance heterogeneity, and then the data fails the variance of homogeneity assumption.

To check the normal distribution assumption of an ANOVA, the residuals were used to check the data. A Distribution analysis was ran looking at the residuals and variables. A Q-Q plot will be requested through the program. A Q-Q plot shows how far an individual actually was from the mean and how far we would expect them to be from the center given a normal distribution. After pulling up the plot, a Continuous Fit analysis was used and a Fitted Normal and Goodness of Fit were added to the analysis with included quantitative evidence. If there was no significance, then there was no evidence to say that the distributions were not normally distributed, thus the normal distribution assumption would be fulfilled.

The third assumption involved the independence of the data, which meant that the data observations were independent from one another (Gravetter & Wallnau, 2000). Since random assignment was possible for pilot preference, independent scores can be

possible. The data will be inspected to check to see if any participants took both surveys, which would cause this assumption to not be satisfied.

This study had three factors with two levels each. Instead of conducting three different experiments for each factor, it allowed for a more efficient way of combining the factors into one study. In addition, this type of research design was one of the only ways to effective examine interaction effects, which was helpful for finding relationships between the factors.

Research Setting and Sample

Population

The targeted population for this study was Indians and Americans who participate in Amazon's ® Mechanical Turk ® (MTurk). Indians refers to citizens of India and Americans are citizens of the United States of America. These two populations were selected due to the convenience sampling of MTurk.

Sample

The sample for this study was collected through the convenience sampling of MTurk for Americans and Indians who meet the eligibility requirement for the study. The total sample size of at least (N = 351) Americans and Indians will be collected and used in the study. There will be an effort to retrieve equal representation of males and females for inclusion in this study. This can be done by indicating through the MTurk system how many participants are requested to complete the survey or Human Intelligence Task

(HIT) ("Requester Best Practices Guide", n.d.). The sampling technique that was used will be the convenient sampling through MTurk.

Power Analysis

A priori sample size determination was performed using G*Power 3.0.10 (Faul, Erdfelder, Land, & Bucher, 2007). This analysis provided evidence for a minimum sample size of 351 participants. To determine the minimum sample size, the following parameters were entered into the program: an effect size f of .15, power (beta) of .80, the numerator degrees of freedom being 1, number of groups being 8, and an alpha level of significance of .05. Using the G*Power software, an F test, or more specifically, an "ANOVA: Fixed effects, special, main effects and interactions" test with the subtest being an "A priori: Compute required sample size – given α, power, and effect size" gave the resulting minimum sample size of 351. The sample size will be drawn from the population mentioned above, American and Indian citizens who participate in MTurk. Based on the power analysis, the minimum required sample size is $N = 351$.

Participants' Eligibility Requirement

This study required that each participant was either American or Indian, who was at least 18 years of age. In addition, the nature of this study required participants to live in the country of origin. Participants were picked through MTurk and therefore needed to be

registered through MTurk to participate in the study. English proficiency was not an eligibility requirement to participate. English is the official language for the United States and is recognized as a language in India. This could affect the data by not including participants from India who speak Hindi or other nationally recognized language in India. It limits the generalizability of the results to only English-speaking Americans and Indians.

Research Instrumentation and Materials

The Study Instrument

This study used survey questionnaires as the primary data collection tool. This study instrument measured American's and Indian's feelings towards pilot's preference for breathalyzer use in the cockpit and examined if gender and/or country of origin affects their trust toward the pilot. The surveys was distributed electronically via FluidSurveys ®. Participants were recruited via Amazon's ® Mechanical Turk ® (MTurk). MTurk is a platform for individuals to sign up to participate in Human Intelligence Tasks or HITs. These participants are generally referred to as Turkers, and receive monetary compensation for their participation. All participants through MTurk remain anonymous and participation is voluntary. MTurk has been associated with reliable data that is comparable to laboratory data (Buhrmester, Kwang, & Gosling, 2001).

The survey combined Rice et al.'s (in press) trustworthiness scale for Indian's and American's into a combined scale to measure participants' level of trustworthiness towards a pilot. It was comprised of statements and the participants were asked how strongly they agree or disagree with the statements. A couple of examples of the statements included "The pilot is dependable" or "The pilot is reliable." The surveys used were attached in the appendix of this report. The survey employed a 5-point Likert-type scale ranging from negative two (-2), strongly disagree, to positive two (+2), strongly agree. The survey was designed so that all questions included in the survey appropriately matched the study topic and context.

Design and Methodology

Dependent Variable

The dependent variable for this study was the perceived level of trust that the participants have towards pilot's preferences and the data was on an ordinal scale of measurement. An ordinal scale is a rank order scale, which means that there is an order of importance to the value and are not categorical (-2, -1, 0, +1, +2). There is also no measurable magnitude between the values. The scale for extremely disagree to neutral to extremely agree is not measurable. The nature of the data determines the type of appropriate scale used. The use of a survey questionnaire was used to measure participants' perceived level of trust. A 5-point Likert-type scale was utilized to measure responder's preferences. Rensis Likert is the creator of the Likert scale, and this method

is widely used by researchers from different disciplines to help gauge individuals' or groups' attributes or traits (Murray, 2013).

Utilizing the Likert scale for this study was appropriate, due to its ease and reliability (Royeen, 1985). This scale has been found to provide valid results for non-parametric and parametric tests such as Pearson correlation and Spearman rho using the Likert scale (Murray, 2013). The Likert scale is a 5-point scale that involves having the participants check whether they strongly agree, agree, undecided, disagree, or strongly disagree using the corresponding numerical values ranging from 1-5 (Royeen, 1985). This study used a Likert-type scale developed by Rice et al. (in press) as mentioned above.

Independent Variables

The independent variables for this study were: gender of participant, country of origin of participant, and pilot preference (support or not support). The pilot preference was scenario-based. In one survey, the pilot supported using a breathalyzer, while in the other survey the pilot did not support the use of a breathalyzer. Pilot preference (supports or not supports) differed depending on which survey the participant received. A sample of how this variable will be worded is: "*There is currently a discussion regarding the possible installation of a breathalyzer-type device in the cockpit of commercial aircraft that would ensure that all pilots are under the legal limit for alcohol in their system prior to flight. Imagine that you are going to fly on a commercial airline with a pilot who SUPPORTS using the breathalyzer in the cockpit. Please respond how strongly you agree or disagree with the following statements.*" The participants then rated their perceived

level of trust in the pilot by using the Likert-type scale mentioned above on a scale from -2 to +2 (strongly disagree to strongly agree).

The pilot's preference was IV1 (independent variable 1), gender was represented as IV2, and country of origin was IV3. For IV1, there were two levels for pilot's preference, supports or not support. For IV2, there were also two levels, male and female. Finally, IV3 had 2 variables, Indian and American. The scale of measurement to be used for IV1, IV2, and IV3 will all be nominal data. They are all categorical in nature and have no ranking, magnitude or zero value.

Data Analysis

The methodology for this study was quantitative in nature and was analyzed using a three-way ANOVA. A three-way ANOVA allowed multiple independent variables to be examined in one test, unlike that of a t-test. This type of analysis looks at main effects of each independent variable as well as interactions between variables. It was useful for examining three or more means or groups for statistical significance. A three-way analysis of variance (ANOVA) was used to look for main effects for each independent variable, as well as the effect for the interaction between the variables upon checking to see that the data fulfills the assumptions of an ANOVA as previously mentioned. After running the three-way ANOVA, a Tukey HSD post-hoc test will be used if any of the null hypothesis can be rejected. This test was used to see which groups within the sample differ. The ANOVA was useful for saying that there was a difference between the groups, but the Tukey HSD post-hoc test further elaborated on which groups differed and

confirmed significance. The current study was researching three different independent variables and looking at how the variables affect consumer's trust. The measurement scale used for this study is an interval scale for the dependent variable, consumer's rating of trust in the pilot.

Research Questions and Hypotheses

The following were the research questions that the study was looking to answer:

RQ_1: Will consumer's trust in the pilot differ as a function of the preference of the pilot for using breathalyzers in the cockpit?

RQ_2: Will consumer's trust in the pilot differ as a function of the participant's gender?

RQ_3: Will consumer's trust in the pilot differ as a function of the country of origin?

RQ_4: Is there an interaction as a function of the variables?

The study was testing the following hypotheses:

H_{01}: There will be no difference in consumer's trust as a function of the preference of the pilot.

H_{A1}: There will be a difference in consumer's trust as a function of the preference of the pilot.

H_{02}: There will be no difference in consumer's trust as a function of gender.

H_{A2}: There will be a difference in consumer's trust as a function of gender.

H_{03}: There will be no difference in consumer's trust as a function of the country of origin.

H_{A3}: There will be a difference in consumer's trust as a function of the country of origin.

H_{04}: There will be no interaction between the variables.

H_{A4}: There will be an interaction between the variables.

The alpha-level of significance was set at $\alpha = .05$ as stated in the power analysis. The results will be gathered, presented, interpreted, and discussed in the last two chapters of this report.

Participants' Protection

Responses given by participants were both confidential and anonymous. There was no need to identify or assign an identifier to the participants because of the data collection method. The surveys were distributed through MTurk as previously mentioned. MTurk was a voluntary and confidential source for participants to complete HITs for monetary compensation. The MTurk system has its own participation agreement that participants were required to agree and adhere to. One such agreement was that participants were required to be at least 18 years old to sign up and participate. Participants were not required to finish the survey and exit out of it at any time or simply not submit their results. The participants were able to complete the surveys at their convenience remotely. In the end, it was the researcher's duty, responsibility, and

obligation to protect the participants' privacy and confidentiality and to be accountable for violating the participants' privacy and confidentiality.

Legal and Ethical Consideration

The study was an experimental study with two quasi-experimental variables, since random assignment cannot be completed because of the previously assigned groups such as nationality and gender. There was no known or expected risk to the human subjects to participate in this study. Participants' responses were not expected to expose them to any legal, physical, psychological, or social risk. MTurk is a voluntary and confidential system, wherein participants participate under the MTurk participation agreement. MTurk required participants to be over 18 years old upon registering to partake in HITs, which excluded any minors to be included in this study.

Summary

This chapter gave detailed explanation of the study's methodology. It described the study's setting, sample, population, and beyond. It examined the study's instrumentation and materials that will be used to conduct this study. Finally, there was an explanation about the data analysis, participants' protection, and legal and ethical considerations. In Chapter 4, the results were presented and interpreted, and Chapter 5 discussed and made conclusions concerning the results.

Chapter 4 – Results

This chapter included various significant aspects of this thesis such as narrative and graphical representation of sample data distribution, and descriptive and inferential statistical results.

Initial Data Analysis (IDA)

As discussed in Chapter 3 of this thesis work, this was a parametric type ANOVA study. To perform an ANOVA analysis, the sample data have to fulfill specified statistical assumptions. The three ANOVA assumptions the data were expected to fulfill are independent scores, normally distributed, and homoscedasticity or have equal variances. Ensuring that the data meets these assumptions determines that it was appropriate to run an ANOVA analysis and also helps reduce Type I and II errors.

Independent Scores

The first of the three statistical assumptions of an ANOVA was data independence. Data independence was important for verifying that it would have been suitable to analyze the data, if this assumption did not hold, then the analysis would be invalid. The Durbin-Watson statistic was used to compute independence of errors. Garson (2012) stated that a Durbin-Watson coefficient should be between 1.5 and 2.5 to be acceptable for determining whether the data is independent or not. After running a Fit Model of the data through SAS JMP ® 11, the Durbin-Watson coefficient was determined

to be 2.106, which is considered acceptable. Therefore, the data is independent and fulfills the independence assumption.

Normality Assumption

The normality assumption was tested by looking at the residuals from the sample data. The residuals equal the actual response reported by participants subtracted from the predicted value from the model. In other words, the residuals filter out individual differences and show a more accurate distribution of y, trustworthiness, from the sample data. Figure 4.1 depicts the residual plot from the sample data distribution. The residuals were focused on in this univariate analysis. The continuous fit line demonstrates what a perfect normal distribution is.

Figure 4.2 represents a normal probability plot of the residuals. From a graphical viewpoint, the points on the graph should follow a relatively straight line and fall within the dotted curvilinear lines on either side of the points. Both the normal probability plot and sample distribution histogram confirm that the data is normally distributed. To verify quantitatively, a Goodness-of-Fit test, or more specifically a Shapiro-Wilk W Test, was run to test against the assumption of normality. The test failed to reject the null hypothesis with a $p = .0551$. Therefore, the data does fulfill the normality assumption.

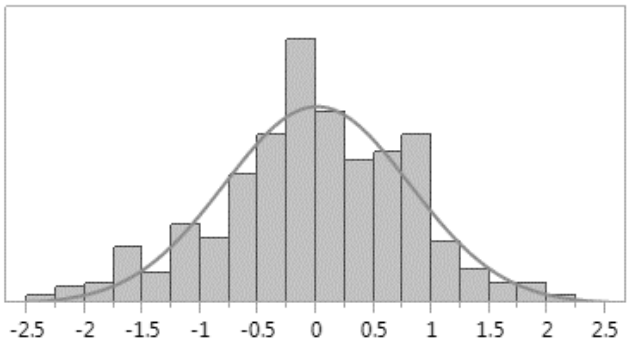

Figure 4.1 Sample data distribution for the residuals that demonstrate satisfying the normality assumption.

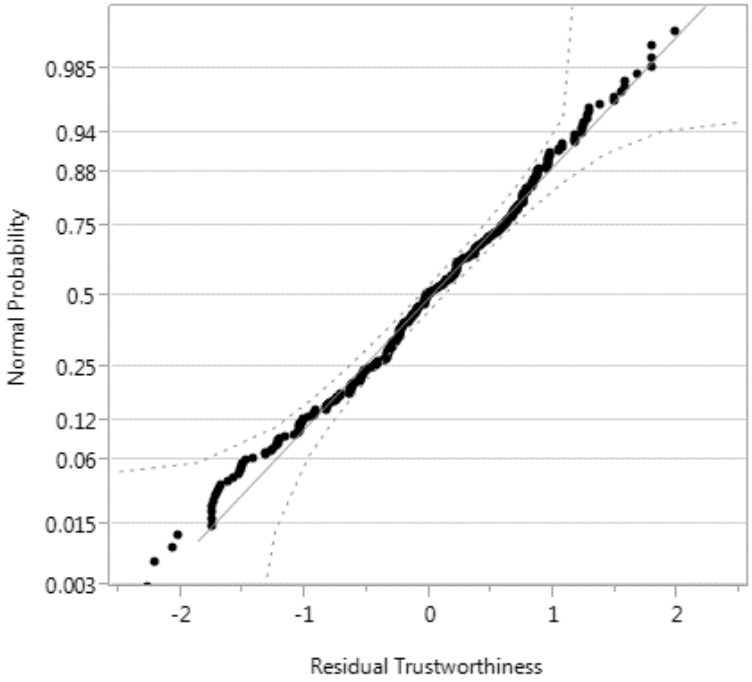

Figure 4.2 Normal probability plot of the residuals to test normality assumption.

Homogeneity of Variance Assumption

The final assumption is homoscedasticity or homogeneity of variance, which the sample data does not satisfy. Homogeneity of variance assumes that there is equal variance within the sample data (Gravetter & Wallnau, 2000). Figure 4.3 illustrates a

bivariate plot of the standardized residuals (errors) by the standardized predicted values. The corresponding R^2 value was 0, which means that the model explains 0% or none of the variability of the response data around the mean. In addition, the scatterplot in Figure 4.3 does not illustrate any definite pattern like a fan opening up to either side, which could imply that the homogeneity of variance assumption was met. Upon further investigation, the data was tested using Levene's test, which examines if *k* samples have equal variances (Levene, 1960). The data output resulted in a significant Levene test for Pilot preference ($F = 36.02$, $p < .001$). Gender ($F = 1.87$, $p = .17$) and Country of Origin ($F = .03$, $p = .87$) fulfilled the homogeneity of variance assumption. We reject the null hypothesis for this test, which states that the sample has homoscedasticity. In other words, the data fails the homogeneity of variance assumption.

Violation of the homogeneity of variance assumption is fairly common when working with real data (Luh, 1999). Rogan & Keselman (1977) found that the prevailing conclusion when the homogeneity of variance assumption is violated is that the ANOVA is robust enough to variance heterogeneity. There is a higher likelihood for an increased Type I error when homoscedasticity is not present within the data. Zimmerman (1998) also found that parametric statistical significant tests, such as an ANOVA, are robust against violations that are not too extreme.

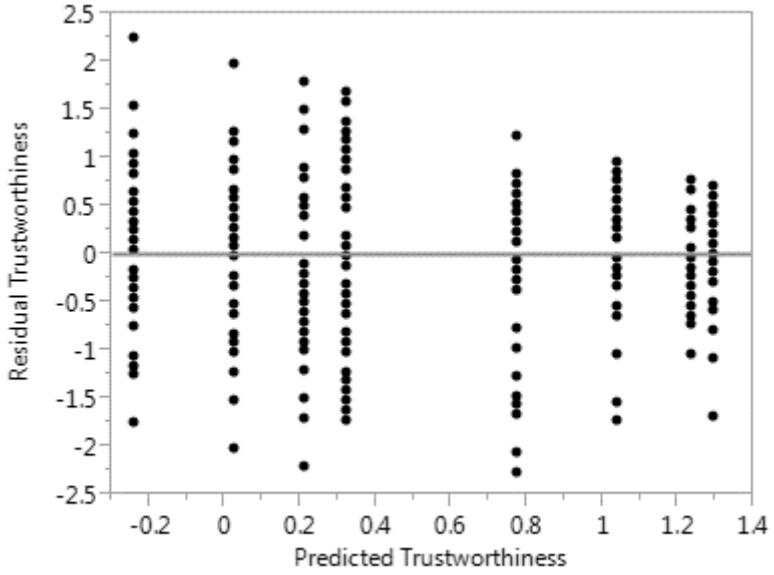

Figure 4.3 Bivariate fit of residual trustworthiness (Y) by predicted trustworthiness (X)

Research Tools

The study utilized survey questionnaires and the research questions on the surveys were carefully written and examined for errors and wording before being sent out to participants. A 5-point Likert-type scale developed by Rice et al. (in press) was used to assess participant's perceived trustworthiness of a pilot based on the pilot's preference for using a breathalyzer in the cockpit. Both of Rice et al.'s scales (in press) were combined to try and capture perceived trust of both Americans and Indians, leaving out items that were duplicates between the scales. The five items on the ordinal scale that measured participant's trust ranged from: strongly disagree (SD), disagree (D), neutral (N), agree (A), and strongly agree (SD). Numerical values corresponded to each item on an interval

scale ranging from: SD (-2), D (-1), N (0), A (1), and SA (2), respectively. SAS JMP® 11 was used to run an analysis on the data.

Cronbach's alpha (α) was critical for this study because the two scales were combined to make a new scale. A high Cronbach's alpha implies internal consistency, or how closely related a set of items are as a group, and is often referred to as a measure of scale reliability (Bland & Altman, 1997). Cronbach's alpha ranges from 0 to 1, and the closer the coefficient is to 1, the greater the internal consistency of the items on a scale are. Acceptable reliability coefficients are typically above 0.7 and 0.8. The reliability coefficient for this study instrument was ($\alpha = .96$), which correlates to high internal consistency within the scale.

Data Analysis

The data analysis was conducted using SAS JMP ® 11 as mentioned previously in Chapter 3 of this report. This section will include information about the descriptive statistics, inferential statistics, outlier analysis, results from the ANOVA, and the decisions made pertaining to the hypotheses. Justification and rationale were also included to support the decisions that were made.

Descriptive Statistics

This study used a sample size ($N = 352$) participants: (n = 176) females and (n = 176) males which represented 50% representation from each group of the sample data distribution. There were (n = 176) Americans and (n = 176) Indians which represented

50% representation from each group of the sample data distribution. The age distribution of the study group showed a mean age $M = 34.29$ years, with a standard deviation of 11.09 years. Table 1 below contained further details concerning the descriptive statistics.

Table 1

Means and Standard Deviations on the Measure of Trustworthiness in a Pilot as a Function of Pilot Preference, Country of Origin, and Gender

Pilot Preference	Country of Origin	Gender	Mean (*M*)	Std. Deviation (*SD*)	*n*
Supports	India	Female	1.04	0.70	44
		Male	.77	0.84	44
	USA	Female	1.29	0.50	44
		Male	1.24	0.51	44
Not Supports	India	Female	.21	1.00	44
		Male	.32	1.02	44
	USA	Female	-.24	.93	44
		Male	.03	.80	44
Total Pilot Preference		Supports	1.09	.68	176
		Not Supports	.08	.96	176
Total Country of Origin		India	.59	.95	176
		USA	.58	.99	176
Total Gender		Female	.57	1.01	176
		Male	.59	.93	176

Note: The summary of descriptive statistics such as means (*M*), standard deviations (*SD*), and sample sizes (*n*) of various groups looked at perceived trust based on country of origin, gender, and pilot preference. Also includes *M*, *SD*, and *n* of each independent variable (Pilot Preference, Gender, and Country of Origin).

Inferential Statistics

The hypothesis testing procedure chosen for this study was an Analysis of Variance or ANOVA. An ANOVA made it possible to assess whether or not there was a relationship between not only the independent variables and dependent variable, but also enabled us to examine the interactions between the variables.

Unlike the descriptive statistics that described the characteristics of sample data distribution, the inferential statistics was used to make inferences about the population of interest based on the information from the sample data. The a priori power analysis presented in Chapter 3 required that a minimum sample size of (N = 351) participants were needed. A total sample data size of (N = 352), Americans and Indians, participated in the study, which met the minimum required sample size.

Outlier Analysis

Outliers can have adverse effects on the data if they are left unchecked. Outliers can inflate the significance of the data or conceal it (Gravetter & Wallnau, 2000). An outlier analysis was conducted using Jackknife Distances in SAS JMP® 11 to see if there were any outliers present in the data. There were 12 data points that were considered to be outliers based on the Jackknife analysis. The data points were kept because when removed the ANOVA was $F(7, 332) = 20.00$, $p < .05$, $\eta_P^2 = 0.30$, which only differs slightly when including the outliers $F(7, 344) = 22.77$, $p < .05$, $\eta_P^2 = .32$. Also, even with the outliers removed, the statistical findings were still the same and the decisions concerning the hypotheses were consistent.

ANOVA

A three-way ANOVA was conducted using SAS JMP® 11 as mentioned previously in this thesis work. The perceived trust among the participants was the dependent variable, and the three factors or independent variables were pilot preference, gender, and country of origin. Each factor had two levels, making this a 2x2x2 factorial ANOVA. The *p*-values had to be lower than .05 to show statistical significance. The *F*-ratio had to be greater than ±2.04 for there to be statistical significance.

The ANOVA looked at all of the factors independently to determine if there were any main effects or interactions. Table 2 demonstrates the ANOVA output data. There were three main effects, three two-way interactions, and one three-way interaction. Looking at the effects test created through SAS JMP® 11, at a $p < .05$ there was a main effect for pilot preference $F(1, 344) = 135.98$, $p < .001$, $\eta_p^2 = .28$, where participants were more willing to trust a pilot who supports the use of a breathalyzer ($M = 1.09$, $SD = .68$) over a pilot who does not support the use of a breathalyzer ($M = .08$, $SD = .96$). Gender $F(1, 344) = .03$, $p = 0.86$, $\eta_p^2 < .001$ was not significant, where males and females did not differ significantly in their trust towards the pilot. Country of origin $F(1, 344) = .0085$, $p = .92$, $\eta_p^2 < .001$ was not significant, where Americans and Indians did not differ significantly in their trust towards the pilot. This model accounted for 32% of the variability of the data around its mean.

Table 2

Three-Way Analysis of Variance Output of Trustworthiness in a Pilot

Source	df	Sum of Squares	F Ratio	Prob >F
Model	7	104.56	22.77	< .001*
Pilot Preference	1	89.20	135.98	< .001*
Gender	1	.02	.03	.86
Country of Origin	1	.01	.001	.93
Pilot Preference*Gender	1	2.73	4.16	.04*
Pilot Preference*Country of Origin	1	11.86	18.07	< .001*
Gender*Country of Origin	1	.73	1.11	.29
Pilot Preference*Gender*Country of Origin	1	.02	.02	.87
Error	344	225.67		
C. Total	351	330.22		

Note: * = $p < .05$.

The interaction between pilot preference and gender $F(1, 344) = 4.16$, $p = .04$, $\eta_p^2 = .01$, was significant, where males' or females' trustworthiness rating did depend on the pilot's preference. Both males and females were more trusting of the pilot who supports using a breathalyzer in the cockpit ($M = 1.00$, $SD = .73$) and ($M = 1.17$, $SD = .62$), respectively. Both males and females were less trusting of the pilot who did not support the use of a breathalyzer ($M = .17$, $SD = .92$) and ($M = -.02$, $SD = .98$), respectively.

Females were slightly distrustful of the pilot who did not support using a breathalyzer. There was also a significant interaction between pilot preference and country of origin $F(1, 344) = 11.86$, $p < .001$, $\eta_p^2 = .05$, where the effect of country of origin was not the same for each of the two types of pilot preference options. Both the Americans and Indians trust more in the pilot who supports using a breathalyzer in the cockpit ($M = 1.26$, $SD = .50$) and ($M = .91$, $SD = .78$), respectively, but Americans were more trusting in the pilot who supports the use of a breathalyzer compared to Indians. On the other hand, both Americans and Indians were less trusting of the pilot who does not support using a breathalyzer ($M = -.11$, $SD = .87$) and ($M = .27$, $SD = 1.01$), respectively, but Americans actually showed a tendency to not trust the pilot compared to Indians, who still trusted the pilot slightly. The third two-way interaction between gender and country of origin was not significant $F(1, 344) = 1.11$, $p = .29$, $\eta_p^2 = .003$, where male's or female's trustworthiness rating did not depend on whether they were American or Indian, and vice versa. Figure 4.4 illustrates the two-way interaction between pilot preference and country of origin. Figure 4.5 depicts the two-way interaction between pilot preference and gender, and Figure 4.6 shows the two-way interaction between country of origin and gender. The three-way interaction between pilot preference, gender, and country of origin was not significant $F(1, 344) = .02$, $p = .87$, $\eta_p^2 < .001$, where being an American male/female and Indian male/female did not depend significantly on the pilot preference for supporting or not supporting the use of a breathalyzer in the cockpit. Figure 4.7 graphically describes the three-way interaction between the independent variables.

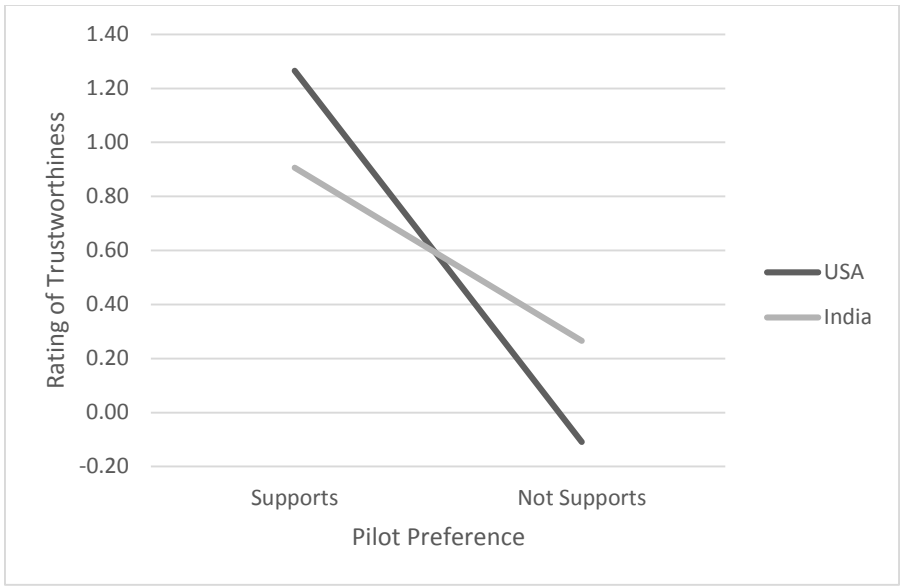

Figure 4.4 Interaction plot of two-way interaction between pilot preference and country of origin

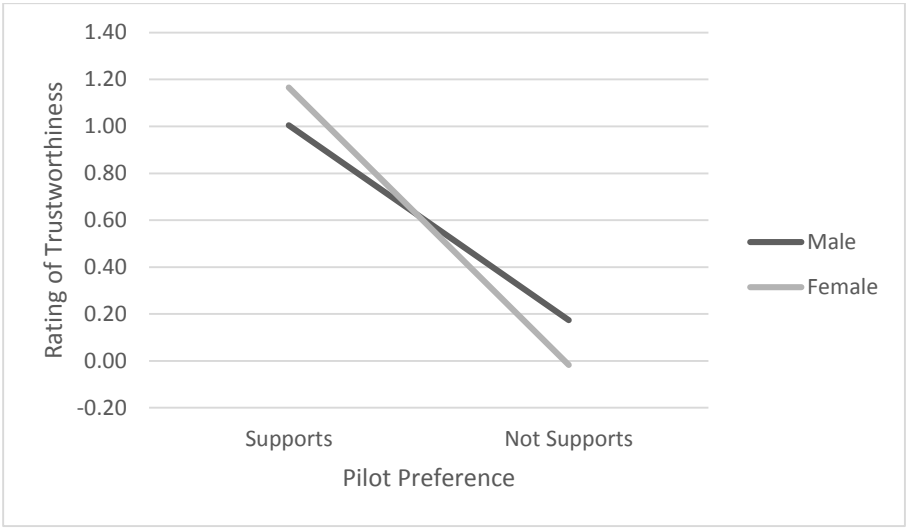

Figure 4.5 Interaction plot of two-way interaction between pilot preference and gender

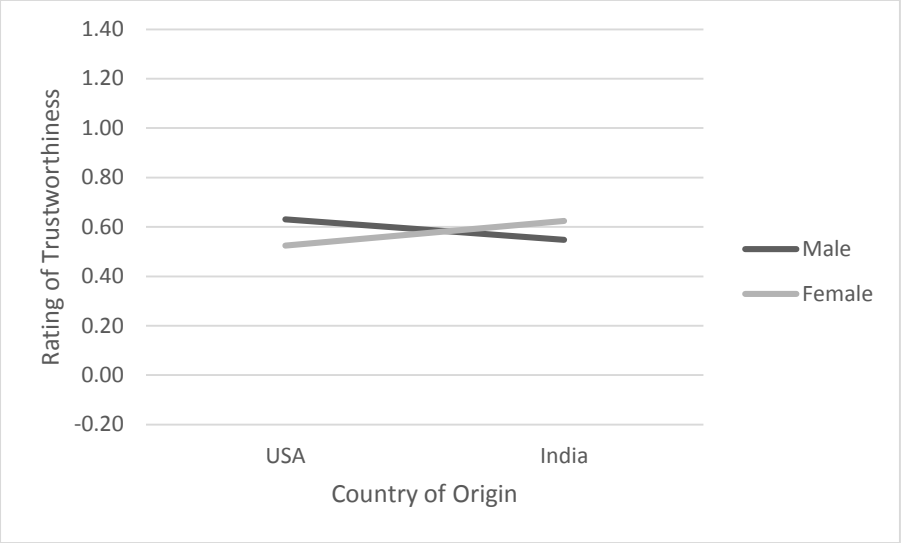

Figure 4.6 Interaction plot of two-way interaction between pilot country of origin and gender

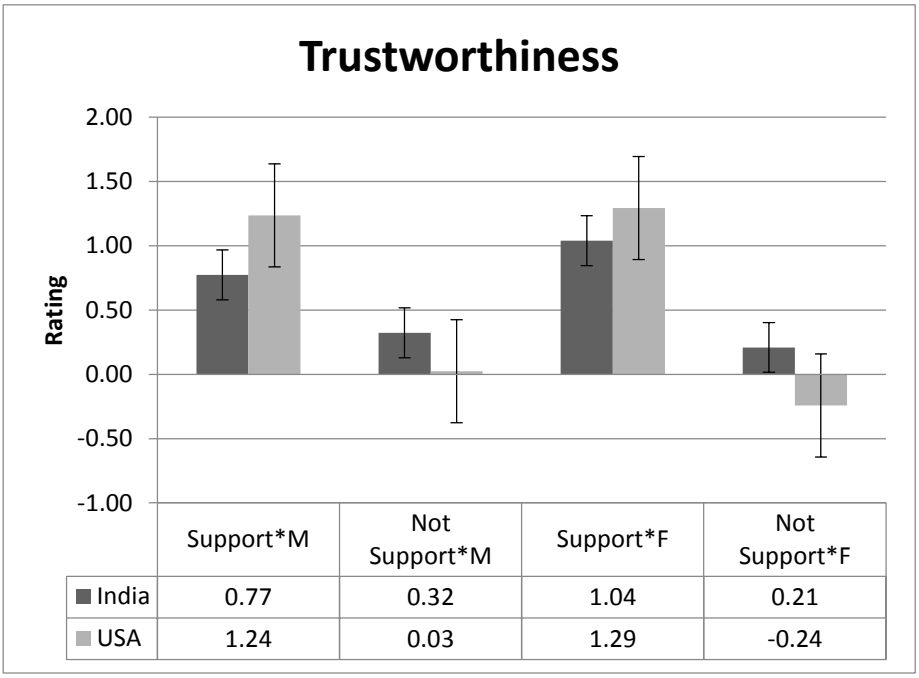

Figure 4.7 Three-way interaction plot of independent variables.

Post Hoc Test

Tukey's HSD test was conducted as a post hoc test for the ANOVA analysis. Tukey's HSD test computes a single value that determines the minimum difference between treatment means for there to be significance (Gravetter & Wallnau, 2000). If the mean difference exceeds the Tukey's HSD value, then there is significant difference between the treatments. At $p < .05$ the q-value was $q = 2.58$. For the two-way interaction between pilot preference and gender, the Tukey's HSD confirmed significance. Supports*Female and Supports*Male was statistically different from Not Supports*Male and Not Supports*Female. For the two-way interaction between pilot preference and country of origin, the Tukey's HSD confirmed significance between every level, Supports*USA, Supports*India, Not Supports*USA, and Not Supports*India. Table 3 and 4 shows the Tukey HSD output from SAS JMP® 11, where levels not connected by the same letter are significantly different.

Table 3

*Tukey's HSD Post Hoc Test Pilot Preference*Gender*

Level		Least Sq. Mean
Supports*Female	A	1.17
Supports*Male	A	1.00
Not Supports*Male	B	.17
Not Supports*Female	B	-.02

Table 4

*Tukey's HSD Post Hoc Test Pilot Preference*Country of Origin*

Level		Least Sq. Mean
Supports*USA	A	1.26
Supports*India	B	.91
Not Supports*India	C	.27
Not Supports*USA	D	-.11

Decision on Hypotheses

The goal of this study is to determine how participants' trust is affected based on the preference of the pilot for using a breathalyzer in the cockpit. There were four null and four alternative hypotheses used for this study. The first null hypothesis H_{01} stated that there would be no difference in consumer's trust as a function of the preference of the pilot. The alternative H_{A1} stated that there would be significant difference in consumer's trust as a function of the preference of the pilot. Based on the data, the null hypothesis was rejected in favor of the alternative hypothesis. Rejecting the null means that participant's trust was did differ depending on the pilot's preference for using a breathalyzer in the cockpit. Participant's perceived level of trust $F(1, 344) = 135.98$, $p < .001$, $\eta_p^2 = .28$ demonstrated a significant main effect and falls within the stated p-value of $p < .05$.

The second null hypothesis H_{02} stated that there would be no difference in consumer's trust as a function of gender. The alternative hypothesis H_{A2} stated that there would be a significant difference in consumer's trust as a function of gender. The results of this main effect $F(1, 344) = .03$, $p = .86$, $\eta_p^2 < .001$, was not significant based on the

baseline *p*-value, and therefore we fail to reject the null hypothesis. There was not sufficient evidence to say that gender had any influence on participant's perceived level of trust.

The third null hypothesis H_{03} stated that there would be no difference in consumer's trust as a function of country of origin. The alternative hypothesis H_{A3} stated that there would be a significant difference in consumer's trust as a function of country of origin. The results of this main effect $F(1, 344) = .01$, $p = .93$, $\eta_p^2 < .001$ was not significant based on the baseline *p*-value, and therefore we fail to reject the null hypothesis. There was not sufficient evidence to say that country of origin had any influence on participant's perceived level of trust.

The final null hypothesis H_{04} stated that there would be no significant interaction between the variables. The alternative hypothesis H_{A4} stated that there would be significant interaction between the variables. There are three two-way interactions and one three-way interaction in this study. There were two, two-way interaction that was significant $F(1, 344) = 4.16$, $p = .04$, $\eta_p^2 = .01$ for pilot preference and gender and $F(1, 344) = 18.07$, $p < .001$, $\eta_p^2 = .05$ for pilot preference and country of origin based on the baseline *p*-value, and therefore we reject the null hypothesis. This significance means that participant's trust in a pilot based on the pilot's preference for using a breathalyzer in the cockpit depends on the participant's gender. The same is true for participant's trust in a pilot based on the pilot's preference depends on country of origin.

Summary

This study produced significant results. The null hypothesis regarding pilot preference and interactions were rejected, giving valuable insight into participants' perceived trust towards a pilot with differing preferences on using a breathalyzer in the cockpit. Chapter 5 will include a discussion about the study findings in detail and conclude the study.

Ch. 5 – Conclusion

Overview

The purpose of this study was to examine how participants' trust in a pilot was affected based on the pilot's preference for using or not using a breathalyzer in the cockpit. The study examined three factors or independent variables, which include pilot preference, country of origin, and gender. Each factor consisted of two levels each including pilot preference (supports or not supports), country of origin (India or United States), and gender (male and female). The dependent variable was participants' trust rating using a Likert-type scale. The study had a total of 352 participants with 44 participants per group. The null hypotheses (H_0) and the alternative hypotheses (H_A) were included below to restate the propositions for this study.

H_{01}: There will be no difference in consumer's trust as a function of the preference of the pilot.

H_{A1}: There will be a difference in consumer's trust as a function of the preference of the pilot.

H_{02}: There will be no difference in consumer's trust as a function of gender.

H_{A2}: There will be a difference in consumer's trust as a function of gender.

H_{03}: There will be no difference in consumer's trust as a function of the country of origin.

H_{A3}: There will be a difference in consumer's trust as a function of the country of origin.

H_{04}: There will be no interaction between the variables.

H_{A4}: There will be an interaction between the variables.

Summary of Findings (Conclusion)

This study determined whether participants' trust in a pilot was affected by the pilot's preference in using a breathalyzer in the cockpit. A three-way ANOVA was used to test for statistical significance differences between the three factors (pilot preference, country of origin, and gender), and the dependent variable (trustworthiness).

The ANOVA examined to see if there would be any main effects and/or interactions between the variables. There were not main effects for gender or country of origin. There was a significant main effect for pilot preference, where participants were more willing to trust a pilot who supports the use of a breathalyzer over a pilot who does not support the use of a breathalyzer.

The interaction between pilot preference and gender, was significant, where males' or females' trustworthiness rating did depend on the pilot's preference. There was also a significant interaction between pilot preference and country of origin, where the effect of country of origin was not the same for each of the two types of pilot preference options. The third two-way interaction between gender and country of origin was not significant. The three-way interaction between the variables was also not significant.

Based on the statistics, the first null hypothesis was rejected, which stated that there was no difference in consumer's trust as a function of pilot preference. We failed to reject the second and third null hypotheses for gender and country of origin. Both gender and country of origin depend on the pilot preference. The null hypothesis for interactions was rejected, which stated that there would be no interaction between the variables.

Interpretation of Findings

This study examined the factors that affect participants from India and the United States' trust toward a pilot based on the pilot's preference for using a breathalyzer in the cockpit. As a result two out of four of the null hypotheses were rejected. A summary of findings in the above paragraph included more detailed information regarding the statistics for rejecting the null hypotheses. This section discussed the meaning of the statistics.

Based on the statistical findings, there is a significant difference in the perceived rating of trust of the participants based on the pilot's preference for use of a breathalyzer in the cockpit. Participants were more willing to trust a pilot who supported the use of a breathalyzer compared to a pilot who does not support the use of a breathalyzer. It is possible that participants are less trusting in the pilot who does not support using a breathalyzer because it could possibly be a reflection of the pilot's character. For example, the pilot might want to try to get away with something and is therefore less trustworthy. There was no significant difference for gender or country of origin. Neither

males nor female's rating of trustworthiness was significantly different. Indian and American's rating of trust also did not differ significantly.

There was a significant interaction between pilot preference and gender, where males' or females' trustworthiness rating did depend on the pilot's preference. Both males and females were more trusting of the pilot who supports using a breathalyzer in the cockpit, and both males and females were less trusting of the pilot who did not support the use of a breathalyzer. Females also demonstrated to be slightly distrustful of the pilot who did not support the use of a breathalyzer. There was also a significant interaction between pilot preference and country of origin, where the effect of country of origin was not the same for each of the two types of pilot preference options. Both the Americans and Indians trust more in the pilot who supports using a breathalyzer in the cockpit, but Americans were more trusting in the pilot who supports the use of a breathalyzer compared to Indians. On the other hand, both Americans and Indians were less trusting of the pilot who does not support using a breathalyzer. Americans demonstrated a tendency to be distrustful of the pilot who did not support using a breathalyzer.

The third two-way interaction between gender and country of origin was not significant. This means that trust of males or females did not depend on whether they are from India or the United States, and vice versa. The three-way interaction between the independent variables was also not significant.

General Discussion

This study focused on the trust and examined if participant's trust was affected based on pilot preference, country of origin, or gender. Trust for the purpose of this study was defined as, "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995). In addition it also relates to the ability to predict another person's behavior (Eckel & Wilson, 2004; Ergeneli, Saglam & Metin, 2007). Trust is a social construct that exists in every interaction between human beings. In is also important to note that the trust between passengers and pilots is a unique relationship, where the passengers put a great deal of trust in the pilot to maneuver and fly the plane safely (Markovitz, 2010).

Based on the provided definition of trust, it could give some insight into why some participants are more trusting, while others may be distrustful of a pilot. The study demonstrated that participants did trust the pilot more when the pilot supported the use of a breathalyzer, whereas participants were less trusting of the pilot who did no support using a breathalyzer. When a pilot does not support using a breathalyzer, they are less predictable since the participant does not necessarily know why the pilot is against using a breathalyzer. The passenger might then make assumptions about the pilot's character, such as a rule-breaker or lack of integrity. As mentioned in Chapter 2, ability, benevolence, and integrity are all characteristics associated with someone worthy of

being trusted (Mayer et al., 1995). With a lack of perceived integrity, participants are then less willing to be vulnerable because they are unable to predict the pilot's behavior.

The study also found a significant interaction between pilot preference and gender. Gender preferences have been researched for decades, but whether there are real differences between the genders is still under debate. Females were found to be a little distrustful of the pilot that did not support using a breathalyzer, whereas males trusted the pilot in the not support scenario slightly. This gives evidence that certain values are perhaps more important for one gender over the other (Schwartz & Rubel, 2005). Croson and Gneezy (2009) found that current studies on trust and gender are somewhat divided. In some studies they found that men were more trusting, whereas in other studies both genders trusted equally. Based on the social role theory, females are physically smaller and weaker on average compared to males (Wood & Eagly, 2002). Perhaps because of these biological and physical differences, it causes the females to be less willing to be vulnerable to the actions of the pilot. Based on the results, trust appears to be a value that is inherently different between females and males (Schwartz & Rubel, 2005).

The final finding of this study included how country of origin affected how participants rated their trust toward a pilot based on the pilot's preference for using a breathalyzer in the cockpit. Individualistic countries are known for their independence from one another, and tend to be less trusting of others. Collectivistic nations are more interdependent with others, and therefore more trusting of others (Markus & Kitayama, 1991). Americans were more trusting of the pilot that supported using a breathalyzer, but was actually distrustful of the pilot who did not support using a breathalyzer. Indians trusted the pilot in both situations, although they did trust the pilot less in the not support

scenario. Americans were more extreme in their perceived trust rating, which could possibly be attributed to their cultural background, which can influence a person's propensity to trust (Hofstede, 1980). Indians being classified as a more collectivistic nation focus mainly on relationships and working towards the greater wellbeing of the group (Tjosvold, 2010). Therefore, they are more willing to trust others because it contributes to the group and the relationships within that group. Either way, Indians did prove to be trusting of the pilot in both scenarios, whereas Americans were actually distrustful toward the pilot who did not support using a breathalyzer in the cockpit.

Trust within the aviation sector is a critical value for the industry to succeed economically. Trust is also a fragile entity that can easily be lost (Mayer et al., 1995), and with the high publicity that the aviation industry receives, especially concerning accidents and incidents, it is important to track how passenger's trust is affected. Breathalyzers are a reality in cars when people are convicted with driving under the influence ("Breathalyzers," 2008), but not much attention has been brought to whether breathalyzers will exist within the cockpit, and less attention about how passengers' trust will be affected. Regardless, this study offered evidence to demonstrate that passenger's trust can be affected based on the pilot's preference, and that there are significant differences in ratings of trust based on country of origin and gender.

Recommendation for Future Research

This study found that there was a significant main effect and interactions for how participants' rating of trust in a pilot based on the pilot's preference for using a

breathalyzer in the cockpit. However, the sample size used (N = 352) was the minimum required amount to detect an effect based on an a priori power analysis. It would be beneficial to recreate the study and include a larger sample size to better capture the possible effects. It would also be interesting in future research to examine other populations to see if these effects translate to other populations of people. Also, would help to increase external validity.

The scale used to measure trust in this study was a combination of two scales developed specifically for either Americans or Indians. This can affect construct validity of the study and may not just focus on trust but other similar ideals such as reliability or other variables. It may not capture trust within the two different cultures. Future research should verify that the items used in the survey do accurately measure trust within Americans and Indians.

All the participants used in this study were members of Amazon's ® Mechanical Turk ® (MTurk). This could affect external validity as well since all the participants were required to be internet users that participated in MTurk. Future research should include participants from other data collection means, such as paper surveys or other data collection websites. Another recommendation would be for future research to repeat this experiment and collect data that fulfilled all three of the ANOVA assumptions. Future research could take this concept a few steps further and look at measuring not only trust, but other constructs such willingness to fly or reliability of the pilot based on the pilot's preference for the use of a breathalyzer in the cockpit.

Limitations

This study was limited to the resources and information available throughout the length of the study. The participants were only required to be from the United States or India, but did not specify where exactly that is within each country. Both countries are comprised of multiple states, and the sample collected for the study may not have been a representative sample across the various states within each country. Time and budget constraints limited the likelihood of collecting a larger sample data, which may mean that the sample size of (N = 352) might not be large enough to represent the population of both America and India.

Another limitation to this study was recruiting participants via MTurk. This type of environment is unable to be altered by the researchers. Participants are required to be internet users and members of MTurk, which could affect the generalizability of the data to the population. The scale used was a combination of two independent scales to measure trust within Americans and Indians. This could affect construct validity of the study, but Cronbach's alpha was high, which should lessen issues with construct validity.

The final limitation to this study is that the data violated the homogeneity of variance assumption. The data had variance heterogeneity, or in other words, the variances were not equal. Rogan & Keselman (1977) found that the prevailing conclusion when the homogeneity of variance assumption is violated is that the ANOVA is robust enough to variance heterogeneity. Since this assumption was violated, the data was susceptible to Type I errors. Future studies should recreate this study and verify that the data fulfills all three assumptions for an ANOVA test.

A delimitation to this study is the analysis of only Americans and Indians. These two countries were picked based on their perceived level of trust in general from the literature review. The United States is not the only individualistic nation and India is not the only collectivistic nation, but decided based on the literature available and personal preference to limit the scope of the study to examine only Americans and Indians.

Another delimitation was structuring the study around the use of a breathalyzer in the cockpit. The study could also be focused around transparent cockpit doors or cameras within the cockpit for example. The breathalyzer was picked because of its meaning to the researcher and also because the lack of pilots' knowledge of blood alcohol levels required to legally fly an aircraft (Ross & Ross, 1990), and the detrimental effects of flying while intoxicated.

References

Baier, A. (1986). Trust and Antitrust. *Ethics, 96*(2), 231-260. Retrieved from http://www.jstor.org/discover/10.2307/2381376?uid=3739600&uid=2134&uid=2&uid=70&uid=4&uid=3739256&sid=21104597002547

Ben-Ner, A., & Putterman, L. (2001). Trusting and trustworthiness. *Boston University Law Review, 81*, 523–551.

Bland, M., & Altman, D.G. (1997). Statistics Notes: Cronbach's Alpha. *BMJ: British Medical Journal, 314*(7080), 572. Retrieved from http://www.jstor.org/stable/25173851

Breathalyzers. (2008). *Philadelphia Inquirer.* Retrieved from http://search.proquest.com/docview/287679144?accountid=27313Buhrmester

M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality data? *Perspectives on Psychological Science, 6*(3), 3-5.

Cook, C. C. (1997a). Alcohol and aviation. *Addiction, 92*(5), 539-555. Retrieved from http://search.proquest.com/docview/199635466?accountid=27313

Cook, C. C. (1997b). Alcohol policy and aviation safety. *Addiction, 92*(7), 793-804. Retrieved from http://search.proquest.com/docview/199583265?accountid=27313

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature, 47*(2), 448-474. doi:http://dx.doi.org/10.1257/jel.47.2.448

Davis, J. H., Lee, M., & Ruhe, J. (2008). Trust: An intercultural comparison of consumer perceptions. *International Journal of Commerce & Management, 18*(2), 150-165. Retrieved from http://search.proquest.com/docview/212819995?accountid=27313

Drinking and Driving. (n.d.). *National Council on Alcoholism and Drug Dependence, Inc*. Retrieved from https://ncadd.org/learn-about-alcohol/drinking-and-driving/203-drinking-and-driving?format=phocapdf

Eckel, C. C., & Wilson, R. K. (2004). Is trust a risky decision? *Journal of Economic Behavior & Organization, 55,* 447-465.

Ergeneli, A., Saglam, G., & Metin, S. (2007). Psychological empowerment and its relationship to trust in immediate managers. *Journal of Business Research, 60,* 41-49.

Faul, F., Erdfelder, E., Lang, A. G., & Bucher, A. (2007) G*Power 3: A flexible statistical power analysis program for social, behavioral, and biomedical sciences. *Behavior Research Methods. 39,* 175-191.

Federal Aviation Administration. (n.d.). Alcohol and Flying. *Federal Aviation Administration*. Retrieved from http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/alcohol.pdf

Fischetti, M. A. (1986). Hero or scapegoat? Most standard practices of commercial airline pilots are safe, yet pilots are often blamed for accidents.*Spectrum, IEEE, 23*(11), 75-77.

Garson, G.D. (2012). *Testing statistical assumptions*. [PDF Document]. Retrieved from http://www.statisticalassociates.com/assumptions.pdf

Geller, E. S. (1999). Interpersonal trust. *Professional Safety, 44*(4), 16-19. Retrieved from http://search.proquest.com/docview/200429045?accountid=27313

Gravetter, F. J., & Wallnau, L. B. (2000). *Statistics for the behavioral sciences* (5th ed., Instructor's ed.). Australia: Wadsworth/Thomson Learning.

Helmreich, R. L. (2000). Culture and error in space: Implications from analog environments. *Aviation, Space, and Environmental*

Hofstede, G. (1980). Motivation, leadership and organization: do American theories apply abroad? *Organizational Dynamics, 9*(1): 42-63.

Homogeneity of Variance in One-Way Models. (n.d.). *SAS Institute*. Retrieved from https://v8doc.sas.com/sashtml/stat/chap30/sect37.htm

Hoskin, T. (n.d.). Parametric and Nonparametric: Demystifying the Terms. *Mayo Clinic*. Retrieved from http://www.mayo.edu/mayo-edu-docs/center-for-translational-science-activities-documents/berd-5-6.pdf

International Civil Aviation Organization. (2014). ICAO Predicts Continued Passenger Traffic Growth and Rebound in Freight Traffic Through 2016. *International Civil Aviation Organization*. Retrieved from http://www.icao.int/Newsroom/Pages/ICAO-predicts-continued-passenger-traffic-growth-and-rebound-in-freight-traffic-through-2016.aspx

Ironside, R. (2014). Malaysia Airlines cuts fares again as MH370 search starts. *The Australian*. Retrieved from http://www.theaustralian.com.au/travel/news/malaysia-airlines-cuts-fares-again-as-mh370-search-starts/story-e6frg8ro-1227083995137?nk=44092e52328a08716d6ca05c4db5b77a

Kembrey, M. (2014). MH17: Malaysia Airlines can win back trust of passengers, experts say. *The Sydney Morning Herald*. Retrieved from http://www.smh.com.au/business/aviation/mh17-malaysia-airlines-can-win-back-trust-of-passengers-experts-say-20140724-zw1a0.html

Koehn, D. (1996). Should we trust in trust? *American Business Law Journal, 34*(2), 183-203. Retrieved from http://search.proquest.com/docview/203423740?accountid=27313

Lee, J. D., & See, K. A. (2004). Trust in Automation: Designing for Appropriate Reliance. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 46*(1), 50-80.

Levene, H. (1960). Robust tests for equality of variances. In *Contributions to Probability and Statistics* (I. Olkin, ed.) 278-292. Stanford Univ. Press, Palo Alto, CA

Levene Test for Equality of Variances. (n.d.). *Engineering Statistics Handbook*. Retrieved October 2, 2014, from http://www.itl.nist.gov/div898/handbook/eda/section3/eda35a.htm

Luh, W. (1999). Developing trimmed mean test statistics for two-way fixed-effects ANOVA models under variance heterogeneity and nonnormality. *The Journal of Experimental Education, 67*(3), 243. Retrieved from http://search.proquest.com/docview/217663950?accountid=27313

Markovitz, D. (2010). It's all about trust. *Journal of GXP Compliance, 14*(4), 26-27. Retrieved from http://search.proquest.com/docview/1331940075?accountid=27313

Mayer, R. C., Davis, J. H., & Schoorman, F. (1995). AN INTEGRATIVE MODEL OF ORGANIZATIONAL TRUST. *Academy of Management Review, 20*(3), 709-734. Doi:10..5465/AMR.1995.9508080335

Markus, H. R. & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*(2): 224-253.

McFall, L. (1987). Integrity. *Ethics. 98*(1), 5-20. Retrieved from http://www.jstor.org/stable/2381289

Murray, J. (2013). Likert data: What to use, parametric or non-parametric*? International Journal of Business and Social Science,* 4(11) Retrieved from http://search.proquest.com/docview/1446602622?accountid=27313.

Nyhan, R. C. (2000). Changing the paradigm – Trust and its role in public sector organizations. *American Review of Public Administration, 30,* 87–109.

Rempel, J. K., Holmes, J. G., & Zanna, M. P. (1985). Trust in close relationships. *Journal of Personality and Social Psychology, 49*(1), 95–112.

Requester Best Practices Guide. (n.d.).*Amazon Mechanical Turk*. Retrieved from http://mturkpublic.s3.amazonaws.com/docs/MTURK_BP.pdf

Rice, S., *Mehta, R., Steelman, L.A. & Winter, S.R. (in press). A trustworthiness of commercial airline pilots (T-CAP) scale for Indian consumers. *International Journal of Aviation, Aeronautics, and Aerospace*.

Robbins, S. P. & Judge, T. A. (2009). *Organizational behavior* (13th Ed.). Upper Saddle River NJ: Prentice Hall.

Rogan, J.C., & Keselman, H.J. (1977). Is the ANOVA *F*-test robust to variance heterogeneity when sample sizes are equal?: An investigation via a coefficient of variation. *American Educational Research Journal, 14*, 493-498.

Ross, S., & Ross, L. (1990). Pilots' knowledge of blood alcohol levels and the 0.04% blood alcohol concentration rule. *Aviation, Space, and Environmental Medicine, 61*(5), 412-417. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2350310

Royeen, C. B. (1985). Adaptation of Likert scaling for use with children. *The Occupational Therapy Journal of Research, 5*(1), 59-69. Retrieved from http://search.proquest.com/docview/910816923?accountid=27313

SAS Institute (2013). JMP (Version 11) [Computer software]. Available from https://itservices.fit.edu/purchase/software/students/index.php

Schwartz, S. H., & Rubel, T. (2005). Sex differences in value priorities: Cross-cultural and multimethod studies. *Journal of Personality and Social Psychology, 89*(6), 1010-1028. Retrieved from http://dx.doi.org/10.1037/0022-3514.89.6.1010

Simpson, E. (2011). Reasonable Trust. *European Journal of Philosophy, 21*(3), 402-434. Retrieved from http://onlinelibrary.wiley.com.portal.lib.fit.edu/doi/10.1111/j.1468-0378.2011.00453.x/pdf

Tan, H. H., & Tan, C. S. F. (2000). Toward the differentiation of trust in supervisor and trust in organization. *Genetic, Social, and General Psychology Monographs, 126*(2), 241-60. Retrieved from http://search.proquest.com/docview/231482545?accountid=27313

Tjosvold, D., Wu, P., & Chen, Y. F. (2010). The effects of collectivistic and individualistic values on conflict and decision making: An experiment in China. *Journal of applied social psychology (0021-9029), 40*(11), p. 2904. DOI: 10.1111/j.1559-1816.2010.00686.x

Wijdicks, E. F. (2000). Alcohol and the brain: A love and hate relationship. *Liver Transplantation, 6*(3), 372-373.

Winter, S. R., Rice, S., & Reid, K. M. (2014). Using system-wide trust theory to analyze passenger loss of trust in aircraft automation. Proceedings of the 2nd International Conference on Human Factors in Transportation, Krakow, Poland.

Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin, 128*(5), 699-727. Retrieved from http://dx.doi.org/10.1037/0033-2909.128.5.699

Zimmerman, D. W. (1998). Invalidation of Parametric and Nonparametric Statistical Tests by Concurrent Violation of Two Assumptions. *The Journal of experimental education (0022-0973), 67*(1), 55.

Appendix

Survey Questionnaire

Instructions

You will be presented with a scenario and you will then be asked some questions about that scenario. Following that, you will be asked some demographics questions. The data collection process is anonymous and your responses will remain confidential. This should take you between 3-5 minutes.

Survey

There is currently a discussion regarding the possible installation of a breathalyzer-type device in the cockpit of commercial aircraft that would ensure that all pilots are under the legal limit for alcohol in their system prior to flight.

Imagine that you are going to fly on a commercial airline with a pilot who SUPPORTS using the breathalyzer in the cockpit.

Please respond how strongly you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The pilot is dependable	O	O	O	O	O
The pilot is reliable	O	O	O	O	O
The pilot is responsible	O	O	O	O	O
The pilot is safe	O	O	O	O	O
The pilot is trustworthy	O	O	O	O	O
The pilot is qualified	O	O	O	O	O
The pilot is talented	O	O	O	O	O
The pilot is efficient	O	O	O	O	O
The pilot is experienced	O	O	O	O	O
The pilot is active	O	O	O	O	O

*Note: This is an example of the SUPPORTS survey. The NOT SUPPORTS survey is the same but includes “NOT” before SUPPORTS.

Are you male or female?

- O Male
- O Female

What is your ethnicity?

- O Caucasian
- O African descent (e.g. African-American
- O Asian (not India)
- O Hispanic, Latin America, etc.
- O Other
- O Indian (from India)

What is your age?

What country do you live in?

Thank you for completing our survey! You are done now.

Please input your initials followed by your age. For example, if your name is John Smith and you are 23 years old, then you would put: JS23.

Please return to MTurk and enter this code (that you generated above) into the appropriate place so that you can be paid for your time.