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Low-Cost Carriers Versus Legacy Carriers: Passenger Preference During the
Covid-19 Pandemic

by

Aaron Bushelle

A thesis submitted to the College of Aeronautics of
Florida Institute of Technology
in partial fulfillment of the requirements
for the degree of

Master of Science in Aviation
in
Airport Development and Management

Melbourne, Florida
May, 2022

We the undersigned committee hereby approve the attached thesis,
Low-Cost Carriers Versus Legacy Carriers: Passenger Preference During the
Covid-19 Pandemic

by
Aaron Ricardo Bushelle

John Deaton, Ph.D.
Professor and Dean
College of Aeronautics
Major Advisor

Debbie Carstens, Ph.D.
Professor
College of Aeronautics

Troy Nguyen, Ph.D.
Associate Professor
Mechanical and Civil Engineering

Abstract

Title: Low-Cost Carriers Versus Legacy Carriers: Passenger Preference During the Covid-19 Pandemic

Author: Aaron Bushelle

Advisor: John Deaton, Ph.D.

The purpose of the current study was to identify whether passengers had a preference between traveling on low-cost carriers versus legacy carriers during the ongoing pandemic. Building off research conducted by another researcher, several dimensions were identified and utilized within the question items. For this research, the target population was persons residing within the United States who were at least 18 years old and have traveled since the start of the pandemic in the United States in January 2020. A questionnaire was distributed online, and convenience sampling was undertaken. A T-test was conducted, and results indicated that when it came to pandemic travel, more participants preferred to utilize legacy carriers. Reliability and validity of the questionnaire were assessed and found to be acceptable.

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Acknowledgements

Dr. Deaton, thank you for agreeing to be my thesis advisor and for the continual support you gave throughout the entire process. Thank you for always being readily available whenever I needed feedback or encountered any issues, especially during the data collection stage.

Dr. Carstens and Dr. Nguyen, thank you for agreeing to be on my committee and for the helpful feedback provided. I genuinely appreciate all you have done for me.

Dedication

This paper is dedicated to my friends and family, more specifically my parents and sister. Thank you for the constant love and support you gave throughout the entire process of attaining my master's degree. Without the constant support and motivation, none of this would have been possible.

Chapter 1

Introduction

Background

In 2019, the International Civil Aviation Organization (ICAO) released a report that stated in 2019, 4.3 billion passengers were transported via airlines on 48,500 routes worldwide (ICAO, 2019). Broken down, this meant that airlines conducted over 100,000 flights daily, transporting twelve million passengers and approximately eighteen billion dollars' worth of goods. It was noted by ICAO that the aviation industry tended to double in size every fifteen years, outgrowing most other industries. With this information, ICAO forecasted that by 2036, the aviation industry would provide approximately ninety-eight million jobs and generate gross domestic product (GDP) in excess of 5.7 trillion U.S. dollars.

There are two clear and concise representatives when it comes to airline business models. These are the low-cost business model and the legacy carrier business model. Prior to airline deregulation in 1978, competition was limited due to governance over the operation of the aviation industry. The purpose of this regulation was to create stability within the industry, thus creating high barriers of entry for new players into the industry. Since airline deregulation in 1978, there have been over one hundred bankruptcy filings, with a few leading to liquidation (Airlines for America, 2019). With this new level of power being given to the airlines, the high barriers to entry became relaxed, increasing competition amongst the legacy carriers and introducing a number of new low-cost carriers (LCC) who utilize a different business model to that of the traditional legacy carrier to the industry.

A few key differences can be identified when looking at low-cost and legacy carriers' business models head-to-head. In the case of legacy carriers,

services are typically bundled together and appear under one price on the ticket. Legacy carriers give full service to passengers, including checked baggage allowances, frequent flier programs, and inflight meals, to name a few. On the other hand, low-cost carriers provide an unbundled experience known as “no-frills.” Under this model, the passenger pays for a less expensive ticket and is given the option to purchase add-ons such as priority boarding, checked baggage allowances, and seat selection for a fee. Both business models also utilize differing transportation strategies. Legacy carriers utilize the hub and spoke model, where traffic is fed into the hub for connecting flights while low-cost carriers employ a point-to-point network strategy offering direct flights between destinations.

In recent times, the airline industry has been negatively impacted by the coronavirus pandemic (Covid-19). Events such as these are a threat to the growth of the industry. According to Vasigh et al. (2018), other events which can pose a threat to the aviation industry include disease outbreaks, natural disasters, terrorism threats, and terrorism and financial uncertainty and crises. These events are not localized as they can also go on to have a domino effect within other countries’ aviation systems. The public health crisis has led to the shutdown of domestic and international aviation (IATA, 2020). IATA stated that revenue passenger kilometers had fallen over by over 94% when analyzing April 2019 versus April 2020. Originally, it was suggested that airline passenger revenues could see a decrease of approximately \$314 billion for the year 2020, a decrease of 55% when compared to 2019, but that number has been revised to almost \$419 billion. According to ICAO (2021), in 2021, three things are evident, (1) an overall reduction of 39% to 40% of seats offered by airlines, (2) an overall reduction of 2,204 to 2,255 million passengers and (3) approximately USD \$324 to \$331 billion of gross passenger operating revenue of airlines when compared to the world’s 2019 numbers. Domestically in North America, compared to 2019, in 2021, (1) domestic seat capacity was reduced by 20.6% to 19.9%, (2) airlines transported

approximately 240 million fewer passengers and (3) approximately USD \$28 billion loss in domestic passenger revenue.

Covid-19 is not the first pandemic to wreak havoc on the aviation industry. IATA identifies events such as the avian flu (2005 and 2013), SARS (2003), and MERS (2015) as events that have all had varying impacts on the aviation industry, whether it be the industry as a whole, or localized to a specific region.

Purpose Statement

The purpose of this study is to gain a better understanding of passenger preference between low-cost carriers and legacy carriers with respect to travel during the Covid-19 pandemic. Each airline took various approaches on how to manage the pandemic, with some approaches being employed by many airlines. The target population of the study will be airline passengers in the United States who are at least 18 years of age. Sampling will be done via convenience sampling utilizing a questionnaire which will be distributed online. The study will identify which airline passengers were more willing to fly based on implemented policies and whether the airline was a low-cost carrier or a legacy carrier.

Definition of Terms

1. *Attitude*: Refers to the favorable or unfavorable perception towards a behavior.
2. *Subjective Norms*: Refers to how much a behavior was supported and approved by a person's peers.
3. *Perceived Behavioral Control*: Refers to the perceived ease or difficulty of performing a behavior.
4. *Travel Risk*: Refers to how passengers view airline travel and associated risk.
5. *International Travel*: Refers to how risky passengers perceived international flight to be.

6. *Policy*: A law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions
7. *Intention to Fly Scale*: Scale created by Dr. Liang which measures passengers' intention to fly during a global disruption.
8. *Low-Cost Carrier*: An airline that typically flies direct, point-to-point flights, serves major markets through secondary, lower-cost airports, provides a single class of service, and operates one or two aircraft families. These characteristics are undertaken to reduce the cost incurred by the airline.
9. *Legacy Carrier*: An airline that had established interstate routes before the beginning of route liberalization in 1978. Also known as full-service carriers, these airlines operate on the hub and spoke network, utilize a wide mix of different aircraft, and have multiple fare classes.

Research Question

The research question which will guide this study is as follows:

1. What impact do policies implemented by low-cost carriers and legacy carriers affect passengers' intentions to fly during the global Covid-19 pandemic?

Null Hypothesis

H₀: There is no significant difference in passenger choice with respect to intention to fly utilizing a low-cost carrier versus a legacy carrier based on Covid-19 policies implemented.

Alternative Hypothesis

H₁: There is a significant difference in passenger choice with respect to intention to fly utilizing a low-cost carrier versus a legacy carrier based on Covid-19 policies implemented.

Significance of Study

The current study has practical significance, especially in recent times. As the airline industry has been affected by a pandemic it would be interesting to understand how passengers make choices in airline selection (low-cost versus legacy) regarding the different policies being implemented by various airlines. This study also looks to build upon previous research regarding passengers' intentions to fly during global pandemics. Results from this study could potentially be used to confirm the appropriateness of the intention to fly (ITF) scale developed by Liang (2021).

The current study has theoretical significance as well. Two theories were identified which would pertain to this study. The first theory is the theory of planned behavior which is an attitude-intention-behavior model. Intention is determined by a person's attitudes, subjective norms, and perceived behavioral control (Seyal et al., 2017). The second theory is the protection motivation theory. The theory suggests that when persons perceive risk, they are willing to take adaptive measures (Hu et al., 2021). Intention to travel is measured through travel risk.

Limitations

1. *Sample representativeness.* The current study will utilize an online questionnaire hosted by Qualtrics. A link will be created and distributed to participants via MTurk. The researcher will have no control over who participates in the study until data collections ends.
2. *Self-reporting.* The study will utilize an online questionnaire to collect data. Participants may not be entirely truthful when filling out the form or may even rush through the answering process.

Delimitations

1. *Sampling Strategy.* Convenience sampling will be employed by the researcher for data collection purposes. This means that data is collected based on participants' availability. By utilizing MTurk, the researcher will access a large pool of potential participants.
2. *Research Target.* The research focuses on airline passengers within the United States who are at least 18 years of age. This was done to limit how varied answers may be as different countries airlines have varying rules, regulations, and policies regarding travel during the pandemic.

In the next chapter, literature pertaining to the current study will be reviewed.

Chapter 2

Literature Review

Introduction

Over the past 20 years, the aviation industry in the United States of America has seen major changes. From deregulation, which occurred in 1978, to the terrorist attacks of 2001 and a number of global recessions, the industry has fluctuated and adapted to each event. Now in the years of 2020 and 2021, the nation faces a new threat, the global coronavirus pandemic.

Airline Deregulation

According to Vasigh et al. (2018), the United States aviation industry could be considered volatile since the U.S. Airline Deregulation Act of 1978. During this time, the industry was riddled with uncertainty, shareholder and airline wealth loss, bankruptcies, and employee layoffs. Smith and Cox (2018) stated that prior to deregulation, the aviation industry was controlled by the Civil Aeronautics Board (CAB). While operating under CAB, investment and decision on operations were highly inhibited. Under this type of operation, the industry was considered to be stable, seeing healthy profits and minimal losses. However, with CAB oversight, there was minimal competition between airlines in the market and, due to high entry barriers to the market, dissuaded the possibility of new entrants. The only competition among airlines was the services which the airline provided such as food, cabin crew quality and frequency (Smith & Cox, 2018). Vasigh et al. (2018) acknowledged that the passenger was the biggest loser during this time as the prices from the various airlines were all relatively the same cost.

In the aftermath of deregulation, the airlines that survived were given the name of legacy carriers. These legacy carriers now had to compete among themselves as well as with new entrants to the market who were no longer deterred

by the abolished regulations. This was a challenging time for airlines and was compounded by the terror attacks of 2001, recessions, competition, and rising fuel costs. This led to airlines participating in one of three behaviors: liquidation, bankruptcy, or merger (Vasigh et al. 2018). In the 10 years after deregulation, the industry witnessed fifty-one airline mergers and acquisitions, and since 1990, 189 airlines have filed for bankruptcy. In recent years, mergers are still occurring, with the Delta Airlines – Northwest and United Airlines - Continental Airlines mergers in 2005 and 2010, respectively.

Airline Business Models

There are two main business models employed by airlines within the United States. They are the legacy carriers and the low-cost carriers. As stated earlier, the legacy carriers are considered to be those full-service airlines that survived the aviation industry deregulation. These airlines tend to utilize the hub-and-spoke model, which was utilized first by Delta Airlines in 1955 (Kang, 2015). How this model works is aircraft with larger seating capacities are flown between large cities or “hubs,” while smaller aircraft connect the hubs to airports in more remote locations, also referred to as “spokes.” Usually, the majority of the aircraft in this system arrive and depart around the same time allowing for easy connection of passengers to other flights. The hub and spoke model means that passengers must fly through an airline’s hub to get to their destination, that is if the hub city is not the destination. Slack time must be given to allow passengers the opportunity to get to their connecting flights. This forces the aircraft to be grounded for a longer period of time. Delays are often incurred in this system as well, due to the aircraft all arriving and departing at the same time, causing airport congestions. This brings into play the notion of turnaround time which according to Ciesluk (2020), is the time incurred from landing until takeoff for a new flight. It is important for airlines to have a low turnaround time, as if the aircraft does not fly, it is not making the airline any money. With regards to legacy carriers, the average turnaround time is approximately an hour.

Another characteristic of legacy carriers is the fleet mix employed by the airline. Legacy carriers utilize both long and short-range, wide, and narrow-body aircraft to transport their passengers around the globe. However, there are some disadvantages to having such a diverse fleet. Expenses such as maintenance for multiple aircraft, training of flight crews in various aircraft operations, and the verification and storage of manuals for each aircraft must be retained on record.

Onboard these aircraft, the service is usually bundled as this was the practice before deregulation. This allows the customer to pay one price for all services included within the ticket fare. For example, items such as priority boarding, luggage, seat choice, and in-flight meals can be bundled together (Vasigh et al., 2018). In recent times, however, legacy carriers are starting to reduce how much is offered within their bundled services. This was seen when American Airlines started charging for checked luggage in 2008 in response to rising fuel prices (Clarke, 2008). It is key to remember that legacy carriers have different costs compared to those incurred by low-cost carriers.

The second business model is that of low-cost carriers. According to Diaconu and Popescu (2011), the LCC model was first developed by Pacific Southwest Airlines (PSA) in 1970 and implemented by Southwest Airlines, whose goal was to offer low fares to travelers. Unlike legacy carriers, LCCs utilize the point-to-point method to route aircraft. Vasigh et al. (2018) state that by utilizing point-to-point network structures, LCCs operate a more spread-out network, allowing them to offer non-stop travel between city pairs. This allows the airline to operate more flights with fewer facilities and personnel and as a result reduces operating costs. This type of operation allows for faster turnaround times averaging around 25 to 30 minutes (Ciesluk, 2020). LCCs tend to utilize secondary airports over the heavily legacy contested primary airports, but in recent times, this has been changing. These secondary airports are less congested and offer the airlines incentives for service such as reduced landing and handling fees.

It tends to be quite uniform when looking at a LCCs fleet mix. Southwest is noted to have pioneered this strategy, building its entire fleet around the Boeing 737 aircraft (Vasigh et al., 2018). Utilizing this type of fleet structure has its advantages. These include reduced spare parts inventory, reduced flight crew training expenses, and increased operational flexibility. Usually, narrowbody aircraft such as the Boeing 737NG and the A32X are the preferred aircraft for LCCs (Vasigh et al. 2018). However, it should be noted that there are some LCCs who utilize a more diverse fleet, such as JetBlue.

Another characteristic that differentiates LCCs from their legacy counterparts is the unbundled or otherwise known as the “no-frills” services that are offered (Vasigh et al., (2018). Whereas on legacy carriers it was common to get service such as hot meals, checked luggage fees and other services included within the ticket prices, LCCs did not offer these packages. An example of this is undertaken by U.S. carrier Spirit Airlines. Kahler (2019), explains that practices employed currently by the airline include the charging of passengers who check-in at the airport and require a printed boarding pass, charging of passengers for seat selection, charging for food and water on board the aircraft, charging for priority boarding and the charging for checked baggage and carry-on baggage which cannot fit under the seat. This type of service is quite common across the U.S. LCCs although some aspects may be included within the fare, such as is seen with Southwest whose fares included checked luggage (Southwest Airlines, n.d.).

According to Kwoka et al. (2016), LCCs now play a much larger role within the aviation industry and have more direct competition with the legacy carriers. It was found that although LCCs do have a major impact on fares, this effect diminishes when they begin to dominate the route. The low fares offered by LCCs act as one of the major incentives for passenger travel utilization (Pan and Truong, 2018). Passengers have grown to expect high service quality regardless of whether the airline is a legacy carrier or a low-cost carrier, allowing for airline differentiation and competitive edge (Pearson et al., 2015).

Theory of Planned Behavior

The theory of planned behavior is an attitude-intention-behavior model. This model provides a conceptual framework for understanding human actions (Ajzen, 2002). The theory deduced that human behavior is influenced by three considerations: behavioral beliefs (attitude), normative beliefs (subjective norms), and control beliefs (perceived behavioral control). Behavioral beliefs are those about potential consequences or other attributes of behavior, normative beliefs are the normative expectations of others, and control beliefs are the factors that are present that may have a negative impact on the behavior (Ajzen, 2002). **Figure 1** below shows a depiction of the theory of planned behavior.

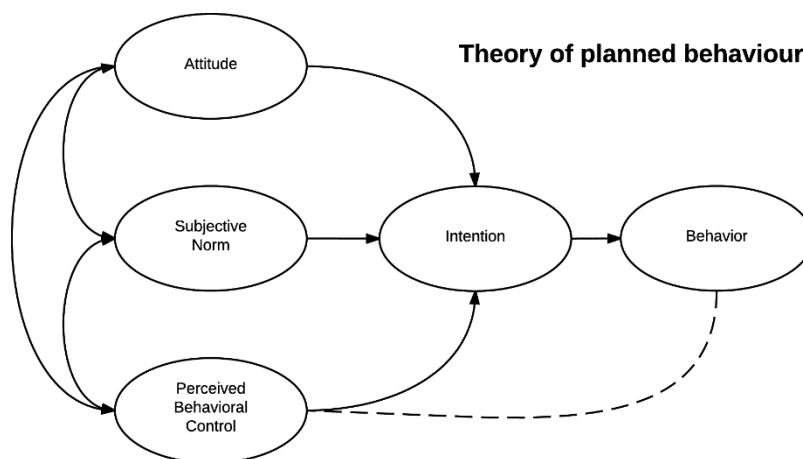


Figure 1: Theory of Planned Behavior

Attitude

In the theory of planned behavior, an attitude refers to the favorable or unfavorable perception of a behavior (Ajzen, 2002). This means that a person's intention to fly can be dictated by their attitude. With respect to the current study, passengers' intention to fly during the coronavirus pandemic can be measured via

their attitudes. Within the literature, attitude was measured utilizing question items, and thusly the current study will employ the same approach.

Subjective Norms

In the theory of planned behavior, subjective norms referred to how much a behavior was supported and approved by a person's peers. This means that a person's intention to fly can be understood through subjective norms (Ajzen, 2002). With respect to the current study, passengers' intention to fly during the coronavirus pandemic can be measured via their subjective norms. Within the literature, subjective norms were measured utilizing question items, and thusly the current study will employ the same approach.

Perceived Behavioral Control

In the theory of planned behavior, perceived behavioral control refers to the perceived ease or difficulty of performing a behavior. This means that a person's intention to fly can be understood through perceived behavioral control (Ajzen, 2002). Within the current study, passengers' intention to fly during the coronavirus pandemic can be measured via their perceived behavioral control. Perceived behavioral control was measured utilizing question items, and thusly the current study will employ the same approach as was detailed in prior literature.

Intention

In the theory of planned behavior, intention refers to the expectancy of a person to carry out an intention when the opportunity presents itself. The aim of the current study is to measure the passengers' intention to travel on legacy carriers versus low-cost carriers based on the policies put into place by various airlines. The original intention to travel scale was developed and validated in a dissertation presented by Guangda Liang (Liang, 2021), who investigated passengers' intention to fly during a global pandemic.

Protection Motivation Theory

The theory suggests that when persons perceive risk, they are willing to take adaptive measures (Hu et al., 2021). Intention to travel can be measured through travel risk. Within protection motivation theory, Hu et al., (2021) state that persons engage in protective behaviors based on two components: threats appraisal and coping appraisal. Within the confines of this research, threat appraisal will be discussed.

Threat Appraisal

Within protection motivation theory, threat appraisal refers to a person's beliefs of possible negative consequences of a risk event (Hu et al., 2021). In the current study, the airline passenger's threat appraisal of flying during the coronavirus pandemic can indicate their intention to fly, as was determined by Dr. Liang (Liang, 2021). Dr. Liang indicated that two types of risks could be measured on the intention to fly scale: travel risk and international travel. Passengers' intention to fly during a global disruption decreased with higher evaluations of travel risk and international travel. Liang (2021) stated that travel risk refers to how passengers view airline travel. On the other hand, international travel was how risky passengers perceived international flights.

Liang (2021) measured the overall intention to assess the validity of questions used to populate the intention to fly scale. As he stated, "if the ITF scale was indeed measuring airline passengers' intention to fly during a global disruption, every dimension in the newly developed ITF scale should be significantly correlated with participants' overall dimension" (p. 29). The scale also assessed the discriminant validity of questions utilized as it was necessary to identify passengers who intended to travel versus those who did not.

Prior Studies

Research conducted by Rather (2021), aimed to investigate the risk perception and fear on a tourist's attitude and revisiting behavior in the aftermath of the coronavirus pandemic. At the height of the pandemic, many travel plans were canceled or deferred. This was due to the lockdown of the majority of countries worldwide and passengers' decision-making with regards to potential infection. Revisit intention was defined as how passengers wished to resume travel plans. Within the research done by Rather (2021), revisit intention was measured by attitude. Rather (2021) conducted surveys using a questionnaire and garnered 318 responses. The results of the analysis showed that there was a correlation between revisit intention and attitude.

Rather's (2021) study measured attitude with the posing of four questions: (a) "Traveling would be useful in the short/medium term during the current situation," (b) "It would be valuable to travel in the short/medium term during the current situation," (c) "Traveling would be beneficial in the short/medium term during the current situation," and (d) "Traveling would be attractive in the short/medium term during the current situation (Rather, 2021, p.4)." With respect to the current study, the measurement of intention through attitude is supported. This study will be informed by the research design and questions posed within Rather's (2021) study.

Das and Tiwari (2021) conducted research to investigate the intention of Indian travelers to travel internationally and domestically during the coronavirus pandemic. Within the study, the intention was studied through attitude, subjective norms, and perceived behavioral control. The research also looked at a number of other aspects such as desire, positive anticipated emotion, and negative anticipated emotion. The results concluded that attitude, subjective norms, and perceived behavioral control positively influenced the desire to travel both domestically and internationally. Das and Tiwari (2021) conducted the research with the use of two

questionnaires, domestic and international, which received 1,050 total responses, 566 responses for domestic, and 484 responses for international.

Domestic

Das and Tiwari's (2021) study measures attitude with the following six questions: (a) "I think that traveling during COVID-19 is positive," (b) "I think that traveling during COVID-19 is useful," (c) "I think that traveling during COVID-19 is valuable," (d) "I think that traveling during COVID-19 is dynamic," (e) "I think that traveling during COVID-19 is attractive," and (f) "I think that traveling during Covid-19 is delightful (Das & Tiwari 2021, p. 243)." Subjective norms were measured by four questions: (a) "Most people who are important to me think it is okay for me to travel during COVID-19," (b) "Most people who are important to me support me traveling during COVID-19," (c) "Most people who are important to me understand my travel during COVID-19," and (d) "Most people who are important to me agree with me about traveling during COVID-19 (Das & Tiwari 2021, p. 243)." Perceived behavioral control was measured by five questions: (a) "I am capable of traveling during COVID-19," (b) "I am confident that if I want, I can travel during COVID-19," (c) "I have enough resources (money) to travel during COVID-19," (d) "I have enough time to travel during COVID-19," and (e) "Whether or not I travel during COVID-19 is completely up to me (Das & Tiwari 2021, p. 243)."

International

Das and Tiwari's (2021) study measures attitude with the following six questions: (a) "I think that traveling internationally is positive," (b) "I think that traveling internationally is useful," (c) "I think that traveling internationally is valuable," (d) "I think that traveling internationally is dynamic," (e) "I think that traveling internationally is attractive," and (f) "I think that traveling internationally is delightful (Das & Tiwari 2021, p. 243)." Subjective norms were measured by four questions: (a) "Most people who are important to me think it is okay for me to travel internationally," (b) "Most people who are important to me support that I

travel internationally,” (c) “Most people who are important to me understand that I travel internationally,” and (d) “Most people who are important to me agree with me about traveling internationally (Das & Tiwari 2021, p. 244).” Perceived behavioral control was measured by five questions: (a) “I am capable of traveling internationally,” (b) “ I am confident that if I want, I can travel internationally,” (c) “I have enough resources (money) to travel internationally,” (d) “I have enough time to travel internationally,” and (e) “Whether or not I travel internationally is completely up to me (Das & Tiwari 2021, p. 244).” The decision to ground this study in the theory of planned behavior is supported. This study will be informed by the research design and questions posed within Das and Tiwari’s (2021) study.

Floyd, Gibson, Pennington-Gray, and Thapa (2004), conducted a study to identify American tourists’ intention to travel in the aftermath of the 9/11 terror attacks. The study was grounded in the protection motivation theory. Travel intention was studied through travel risk, destination risk, safety concerns, and international versus domestic travel.

Within the study done by Floyd et al. (2004), travel risk was measured by four questions: (a) “I feel nervous about traveling right now,” (b) “Traveling is risky right now,” (c) “Because of terrorism large theme parks should be avoided,” and (d) “I would feel very comfortable traveling right now (Floyd et al., 2004, p. 28).” Destination risk was measured by four questions: (a) “Travel to natural areas such as national parks is not risky,” (b) “Trips to natural area scenic attractions are safe right now,” (c) “Vacation travel is perfectly safe,” and (d) “Visiting art galleries/museums are safe tourist activities (Floyd et al., 2004, p. 28).” Safety concerns were measured by three questions: (a) “Safety is the most important attribute a destination can offer,” (b) “Safety is a serious consideration when choosing a travel destination,” and (c) “Additional security measures at airports make traveling safe (Floyd et al., 2004, p. 28).” International versus domestic travel was measured by two questions: (a) “International travel is just as safe as domestic travel,” and (b) “Domestic travel is just as risky as international travel (Floyd et al.,

2004, p. 28).” Although this research does not directly relate to the subject being studied, it is included as terrorism, like the pandemic, can disrupt the global aviation industry. This study will utilize the question design employed by Floyd et al.’s (2004) research.

Airline Policies

Several policies were put in place by the airlines to help curb the spread of the coronavirus pandemic and as a way to assure the public that airlines were taking public health issues seriously while facilitating travel. According to an article written by M2 Presswire (M2 Presswire, 2021), worldwide seating capacity fell almost 50 percent in 2020, with 1.8 billion persons traveling versus 2019, which saw around 4.5 billion travelers. Due to this difference, the industry lost more than approximately \$498 billion in total. In April 2020, at the height of the pandemic where national lockdowns were prevalent, the overall passenger numbers had fallen 92 percent when compared to 2019 figures. A large drop-off in traffic was seen in both international and domestic travel, accounting for a reduction of 98 percent and 87 percent, respectively. With respect to North America, it is estimated that a loss of \$88 billion was incurred (M2 Presswire, 2021). With the industry in such a depressed state, airlines had to undertake measures to reinvigorate and encourage air travel and had to prove to the public that travel via flight gave little to no exposure of the coronavirus to potential passengers while on the aircraft. Some of the policies implemented by the airlines were common from airline to airline, but there are a couple with unique approaches to policies implemented. An example of one such common policy undertaken at the height of the pandemic among most airlines included the blocking of the middle seat. It should be noted that as of 2021, all U.S. carriers, both legacy and low-cost carriers have returned to full seating capacity.

Within the confines of this research, the legacy carriers being studied are:
(a) United Airlines, (b) American Airlines, (c) Alaska Airlines, and (d) Delta

Airlines. The low-cost carriers being studied are: (a) Southwest Airlines, (b) JetBlue Airlines, (c) Spirit Airlines, and (d) Frontier Airlines.

United Airlines. According to United Airlines' website (United, n.d.), the airline employs a five-category list broken into various activities through the flight process to educate passengers on practices employed by the airline as well as what is expected of the passenger while traveling with United. The categories are: (a) Before Travel, (b), In the Lobby, (c) At the Gate, (d) On Board, and (e) After Landing. Included within these categories are the following policies.

- Permanent removal of change fees
- Passengers must complete a "Ready-to-fly" self-assessment checklist
- Encouragement of passengers to utilize the airlines' app for less person-to-person contact
- Offering baggage delivery services for a fee
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Installation of sneeze guards at check-in and gate podiums
- Promotion of social distancing through floor decals
- Implementation of temperature checks for employees and flight attendants working at hub and line stations
- Disinfection of high-touch areas
- Provision of sanitizer stations and sanitizer wipes for customers
- Self-scanning of boarding passes
- Utilization of high-efficiency (HEPA) filters during flight to circulate air and remove airborne particles
- Utilization of Ultraviolet C (UVC) lighting wands to disinfect sensitive components
- Utilization of antimicrobial technology (electrostatic spraying) to add an additional layer of sanitization to the aircraft

- Blocking of the middle seat (now discontinued)

According to Honig (2021), another practice utilized by the airline is boarding the plane from back to front to minimize onboard interaction (now discontinued).

American Airlines. According to American Airlines' website (American, 2020), the airline has received GBAC STAR Accreditation from the Global Biorisk Advisory Council following a review of the organization's procedures in response to biological threats such as the coronavirus. The policies employed by American Airlines include:

- Passengers must complete a checklist that confirms they have been free of coronavirus symptoms within 10 days of travel
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Enhanced cleaning of aircraft and common areas within the airport
- Installation of hand sanitizing stations throughout hub airports
- Installation of protective shields at check-in counters, lounges, boarding gates, and service desks
- Self-scanning of boarding passes
- Limitation of food and beverage services offered onboard
- Permanent removal of change fees except for basic economy fares as of April 1st, 2021
- Blocking of the middle seat (now discontinued)

Alaska Airlines. The policies employed by Alaska Airlines (Alaska Airlines, n.d.), include:

- Permanent removal of change fees
- Extension of expiration dates of travel credits
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up

- Encouragement of passengers to utilize the airlines' app for less person-to-person contact
- Provision of sanitizer wipes for customers
- Installation of protective shields at check-in counters, lounges, boarding gates, and service desks which are regularly disinfected
- Promotion of social distancing through floor decals
- Scanning of boarding passes at distances up to six feet away.
- Utilization of high-efficiency (HEPA) filters during flight to circulate air and remove airborne particles
- Changing the airflow within the aircraft from front to back to from the ceiling to the floor to minimize particle movement throughout the cabin
- Outside and filtered air is exchanged every 2-3 minutes
- Limitation of food and beverage services offered onboard
- Blocking of the middle seat (now discontinued)

According to Potter (2021), Alaska Airlines utilized back-to-front boarding and the usage of electrostatic spraying technology to deep clean aircraft and high-traffic areas.

Delta Airlines. The policies employed by Delta Airlines include:

- Permanent removal of change fees
- Extension of expiration dates of travel credits
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Installation of protective shields at check-in counters, lounges, boarding gates, and service desks which are regularly disinfected
- Regular sanitization of regularly used equipment such as kiosks
- Passengers must complete a checklist which confirms they have been free of coronavirus symptoms within 10 days of travel

- Provision of sanitization stations
- Utilization of fresh air from outside and HEPA filtration
- Continuous cleaning throughout the flight
- Utilization of electrostatic spraying and antimicrobial lighting
- Blocking of the middle seat (now discontinued)

According to Honig (2021), another practice utilized by the airline is boarding the plane from back to front to minimize onboard interaction (now discontinued).

Southwest Airlines. The policies implemented by Southwest Airlines include:

- Provision of sanitizer stations and sanitizer wipes for customers
- Regular sanitation of high traffic areas such as ticket counters and gates
- Utilization of fresh air from outside and HEPA filtration
- Utilization of electrostatic disinfectant and anti-microbial spray to neutralize viruses and form an anti-microbial coating for 30 days
- Encouragement of passengers to utilize the airlines' app for less person-to-person contact
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Blocking of the middle seat (now discontinued)

According to Honig (2021), passengers were also encouraged to scan their own boarding passes. Potter (2021) also states that Southwest changed its boarding process, allowing groups of ten passengers to board.

JetBlue. The policies implemented by JetBlue include:

- Permanent removal of change fees except for Blue Basic fares
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up

- Utilization of high-efficiency (HEPA) filters during flight to circulate air and remove airborne particles
- Filtration of aircraft air every 3 minutes with approximately 50 percent fresh air and 50 percent HEPA filtered air.
- Touchless check-in, bag-tagging, and boarding
- Blocking of the middle seat (now discontinued)

According to Honig (2021), Jetblue also changed its boarding procedure, electing to utilize back-to-front boarding of the aircraft.

Spirit Airlines. The policies implemented by Spirit Airlines include:

- Option to modify travel itinerary once up to 24 hours before departure through a program called FlightFlex
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Utilization of fogging treatments and antimicrobial products to disinfect aircraft and create a virus killing barrier, respectively
- Filtration of aircraft air every 2-3 minutes through HEPA filters
- Encouragement of passengers to utilize the airlines' app for less person-to-person contact
- Promotion of social distancing through floor decals
- Regular sanitation of high traffic areas such as ticket counters and gates

According to Potter (2021), Spirit was one of the only airlines not to indulge in blocking the middle seat. However, the program implemented disallowed persons to select middle seats until the flight fills up or other special circumstances. Spirit was also one of the few airlines who continued to offer regular cabin service inflight.

Frontier Airlines. The policies implemented by Frontier Airlines include:

- Passengers must fill out a health acknowledgement form at check-in which states they understand that they must wear a mask at all times
- Face coverings are required to be worn in the airport and throughout the flight of passengers aged two and up
- Regular sanitation of high traffic areas such as ticket counters and gates
- Filtration of aircraft air every 2-3 minutes through HEPA filters
- Installation of protective shields at check-in counters, lounges, boarding gates, and service desks which are regularly disinfected
- Promotion of social distancing through floor decals
- Utilization of back-to-front boarding

According to Potter (2021), Frontier also participated in the behavior of blocking the middle seat, but in a unique way. Frontier blocked the middle seats within the more expensive classes near the front of the plane but allowed booking of seats in the rear. Another feature highlighted by Potter (2021) is that Frontier was one of the first airlines within the U.S. to test passenger temperatures before the flight.

Summary

Since the deregulation of the aviation industry, competition between airlines has been amplified. To stand out, each airline must find ways to entice passengers to select their airline as the preferred mode of transportation. This differentiation played a different role as the world was impacted by the coronavirus, as airlines now had to appeal to passengers and ensure their health was a priority of the airline. Most airlines implemented similar policies in response to the ongoing pandemic, a few implemented policies that made them stand out when analyzed from a health safety perspective. With the help of the intention to fly scale developed by Guangda (2021), the present study will identify if any particular policies enacted by different airlines impacted consumers' decision making not only on the flight, but also on which airline to use for travel purposes.

The next chapter will present the proposed methodology for the study being undertaken.

Chapter 3

Methodology

Research Design and Approach

The purpose of this study was to gain a better understanding of passenger preference between low-cost carriers and legacy carriers with respect to travel during the Covid-19 pandemic. The current study looked to build off a previous dissertation study undertaken by Liang (Liang, 2021), which investigated airline passengers' intentions to fly during a global pandemic.

The researcher of this study utilized a questionnaire in order to identify if there was a preference for flying with low-cost carriers or legacy carriers during the Covid-19 pandemic based on policies implemented by airlines. The questionnaire was posted online and distributed to participants via Amazon Mechanical Turk (MTurk). Participants' responses were recorded and analyzed to determine if the null hypothesis should be accepted or rejected. Prior literature supports the validity of data collection through MTurk (Clifford et al., 2015). Utilizing the framework of past studies done related to the topic being studied, questions were generated for the following: (a) attitude dimension, (b) subjective norms dimension, (c) perceived behavioral control dimension, (d) travel risk dimension, and (e) international travel dimension.

Population and Sample

Population.

The target population of this study was airline passengers who are at least 18 years old, reside within the United States and have traveled since the start of the pandemic in the United States in January 2020. The study looked to specifically at the following demographics: (a) age, (b) sex, and (c) annual income. According to the United States Census Bureau (n.d.), as of 2019, the estimated population of the

United States was 328,239,523 people. According to the official census conducted in 2020, the population on April 1, 2020, was 331,449,281 persons. In 2020, the gender makeup of the United States was determined to be 50.8 percent females and 49.2 percent males. In 2020, the age make-up of the population was estimated to be (a) 24 percent under 18 years old, (b) 36.5 percent between 18 and 44 years old, (c) 26.4 percent between 45 and 64 years old, and (d) 13 percent 65 years old and older.

As stated before, MTurk was utilized for the collection of data. According to Moss and Litman (2020), the MTurk user gender make-up is approximately 57 percent female and 43 percent male. The age make-up of MTurk participants was estimated to be (a) 29.7 percent between the ages of 18 and 29, (b) 36.8 percent between the ages of 30 and 39, (c) 16.8 percent between the ages of 40 and 49, (d) 10.7 percent between the ages of 50 and 59 and (e) 6 percent between the ages of 60-69. The income make-up of MTurk participants was estimated to be (a) 6.31 percent less than \$10,000, (b) 6.60 percent between \$10,000 and \$19,999, (c) 11.67 percent between \$20,000 and \$29,999, (d) 10.82 percent between \$30,000 and \$39,999, (e) 11.02 percent between \$40,000 and \$49,999, (f) 11.22 percent between \$50,000 and \$59,999, (g) 7.94 percent between \$60,000 and \$69,999, (h) 7.30 percent between \$70,000 and \$79,999, (i) 5.06 percent between \$80,000 and \$89,999, (j) 5.16 percent between \$90,000 and \$99,999, (k) 11.97 percent between \$100,000 and \$149,999, and (l) 4.92 percent over \$150,000. This information shows that MTurk participants reflect the general demographics found within the United States.

Sample

The minimum sample size required for the study was done through power analysis and was calculated to be 102 participants. An independent t-test was undertaken to utilize G*Power software to calculate the recommended sample size.

The parameters utilized for the test were as follows: one tail, an effect size of 0.5, an alpha of 0.05, and power 0.80.

The current study collected data through the use of convenience sampling. MTurk workers volunteered to complete the given questionnaire, which recorded responses. It should be noted that participants were allowed to withdraw participation at any point without consequence. The study collected participants' age, gender, income, and travel frequency since the start of the pandemic within the United States. The sample consisted of 109 participants. The average age of the sample was: $M = 38.15$ ($SD = 12.26$). The gender make-up of the sample was: 58.72% ($N = 64$) males and 41.28% ($N = 45$) females. The income make-up of the sample was: (a) 2.75% ($N = 3$) participants made less than \$10,000, (b) 30.28% ($N = 33$) participants made \$10,000 to \$39,999, (c) 39.45% ($N = 43$) participants made \$40,000 to 69,999, (d) 17.43% ($N = 19$) participants made \$70,000 to \$99,999, and (e) 10.09% ($N = 11$) participants made, more than \$99,999. The number of times traveled since the start of the pandemic in the United States were: (a) 60.55% ($N = 66$) participants traveled, one to three times, (b) 26.61% ($N = 29$) participants traveled four to six times, (c) 11.01% ($N = 12$) participants traveled seven to nine times, and (d) 1.83% ($N = 2$) traveled ten times or more.

Instruments

Participants were given access to an online questionnaire to record the answer to the questions posed. As stated previously, the questionnaire was made available on the MTurk system. The questionnaire consisted of both a Likert scale and multiple-choice questions. Demographic questions about age, sex, and annual income were asked at the beginning of the questionnaire.

The prompts on the questionnaire addressed passengers' intention to fly and whether any specific policies implemented by airlines impacted passengers' choice of the specific airline for travel purposes. Some prompts from the dissertation presented by Liang (2021) on passengers' intention to fly during a global disruption

were utilized within the questionnaire. The complete instrument can be found in Appendix A.

An example of a question that measures the attitude dimension is, “I think traveling during a pandemic is beneficial.” Each question will be rated on a 5-point Likert scale with the options being: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

An example of a question that measures the subjective norms dimension is, “Most persons associated with me support my decision to travel during the pandemic.” Each question will be rated on a 5-point Likert scale with the options being: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

An example of a question that measures the perceived behavioral control dimension is, “I am able to travel during the pandemic.” Each question will be rated on a 5-point Likert scale with the options being: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

An example of a question that measures the perceived travel risk dimension is, “I will fly if flights are available.” Each question will be rated on a 5-point Likert scale with the options being: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

An example of a question that measures the perceived international travel dimension is, “There is no difference between flying domestically versus internationally with respect to safety.” Each question will be rated on a 5-point Likert scale with the options being: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree.

Face validity was employed in creating the questions for the questionnaire. Face validity assesses whether or not the questions created will actually measure

what the study aims to measure. Face validity was assessed by having several subject matter experts (SMEs) review potential questions and providing feedback. With respect to reliability, Cronbach's alpha was utilized to analyze data once the study had been conducted and the data obtained. Cronbach's alpha was calculated to be 0.759 which is reliable.

Procedures

Data was collected through a questionnaire hosted via Qualtrics, a survey tool. Human participation was vital for the study, and as such, safety measures were taken. Answering a questionnaire is an overall safe activity with a minimum threat to the wellbeing of participants. To ensure participant safety, an application was sent to the Institutional Review Board (IRB) at the Florida Institute of Technology. No data was collected until IRB approval was awarded.

Once approval had been given, the questionnaire was published through Qualtrics, and a link was distributed to the participants via MTurk. The results were then recorded and distributed to the researcher for analysis utilizing both Microsoft Excel and SPSS software.

Data Analysis

The data analysis consisted of both descriptive statistics and inferential statistics. Descriptive statistics included the mean, standard deviation, and frequency of each item posed to the participants. As stated previously, the questions included 5-point Likert scale with a few multiple-choice and demographic questions. Summary statistics were provided of the participants' demographic data.

The inferential analysis was done utilizing an independent t-test, in which the two groups (low-cost carriers vs. legacy carriers) were the independent variable and the dependent variable was passengers' intention to fly mean score derived from the Likert-scale items on the questionnaire for both groups. The independent

t-test assessed whether there was a significant difference in intention to fly as a function of group membership.

Chapter 4

Results

Descriptive Statistics

The researcher utilized an online questionnaire to collect data from participants. These responses are presented within this section.

The sample included 109 participants. The descriptive statistics gathered from the sample were split into three sections: (a) demographic information inclusive of age, gender, income, and travel frequency since the start of the pandemic within the United States in January 2020, (b) descriptive statistics of participants' responses to the ITF scale developed by Liang (2021) and (c) descriptive statistics of implemented airline policies and protocols set in place during the pandemic as well as airlines utilized.

Likert Scale Coding. Except for question 4 and question 5, questions presented were coded as follows: (a) "Strongly disagree" was coded as 1, (b) "Somewhat disagree" was coded as 2, (c) "Neither agree nor disagree" was coded as 3, (d) "Somewhat agree" was coded as 4 and (e) "Strongly agree" was coded as 5. Questions 4 and 5 were reverse coded: (a) "Strongly disagree" was coded as 5, (b) "Somewhat disagree" was coded as 4, (c) "Neither agree nor disagree" was coded as 3, (d) "Somewhat agree" was coded as 2 and (e) "Strongly agree" was coded as 1.

Missing Data. Although a participant may miss a question, their responses may still be valuable to the research. If participants missed a question, the mean of the specific question was substituted for the missing response. According to 2U, Inc. (n.d.), if there is a small number of missing data, the mean of the existing data can be substituted for the missing value. In the case of this research, only three

responses for three different questions were absent, and as such, the respective question means were substituted in.

Responses to Demographic Questions. As stated previously, the study collected basic demographic information from participants. The first question posed was, “What is your current age?” Based on the responses recorded, the average age was $M = 38.15$ ($SD = 12.26$). The second question posed was, “What is your gender?” The data indicated that: 58.72% ($N = 64$) participants answered “Male,” while the other 41.28% ($N = 45$) participants answered “Female.” The third question was “What is your annual income?” The responses indicated that: (a) 2.75% ($N = 3$) participants answered, “less than \$10,000,” (b) 30.28% ($N = 33$) participants answered “\$10,000 to \$39,999,” (c) 39.45% ($N = 43$) participants answered “\$40,000 to 69,999,” (d) 17.43% ($N = 19$) participants answered “\$70,000 to \$99,999,” and (e) 10.09% ($N = 11$) participants answered, “more than \$99,999.” The fourth and final demographic question was “How many times have you flown since the start of the pandemic in the US in January 2020?” The responses indicated that: (a) 60.55% ($N = 66$) participants answered, “1 to 3,” (b) 26.61% ($N = 29$) participants answered, “4 to 6,” (c) 11.01% ($N = 12$) participants answered, “7 to 9,” and (d) 1.83% ($N = 2$) answered “10 or more.”

Responses to ITF Scale Questions. The first statement posed stated, “It is okay to fly during the ongoing Covid-19 pandemic.” Responses indicated that: (a) 4.59% ($N = 5$) participants answered, “Strongly disagree,” (b) 11.93% ($N = 13$) participants answered, “Somewhat disagree,” (c) 18.35% ($N = 20$) participants answered, “Neither agree nor disagree,” (d) 45.87% ($N = 50$) participants answered, “Somewhat agree,” and (e) 19.27% ($N = 21$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.63$ ($SD = 1.06$).

The second question stated, “I can fly during the ongoing pandemic if I want to.” Responses indicated that: (a) 3.67% ($N = 4$) participants answered, “Strongly disagree,” (b) 9.17% ($N = 10$) participants answered, “Somewhat

disagree,” (c) 16.51% ($N = 18$) participants answered, “Neither agree nor disagree,” (d) 32.11% ($N = 35$) participants answered, “Somewhat agree,” and (e) 38.53% ($N = 42$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.93$ ($SD = 1.11$).

The third question stated, “I will fly if airlines do not have available, direct flights to my destination.” Responses indicated that: (a) 9.17% ($N = 10$) participants answered, “Strongly disagree,” (b) 11.01% ($N = 12$) participants answered, “Somewhat disagree,” (c) 25.69% ($N = 28$) participants answered, “Neither agree nor disagree,” (d) 43.12% ($N = 47$) participants answered, “Somewhat agree,” and (e) 11.01% ($N = 12$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.36$ ($SD = 1.10$).

The fourth question stated, “My friends will think negatively of me for traveling during the ongoing pandemic.” Responses indicated that: (a) 16.67% ($N = 18$) participants answered, “Strongly disagree,” (b) 27.78% ($N = 30$) participants answered, “Somewhat disagree,” (c) 22.22% ($N = 24$) participants answered, “Neither agree nor disagree,” (d) 16.67% ($N = 18$) participants answered, “Somewhat agree,” and (e) 16.67% ($N = 18$) participants answered, “Strongly agree.” The mean score for this question was $M = 2.89$ ($SD = 1.33$). It should be noted that one person abstained from answering this question, and as such, the mean was substituted as their response.

The fifth question stated, “My family will think negatively of me for traveling during the ongoing pandemic.” Responses indicated that: (a) 21.30% ($N = 23$) participants answered, “Strongly disagree,” (b) 24.07% ($N = 26$) participants answered, “Somewhat disagree,” (c) 19.44% ($N = 21$) participants answered, “Neither agree nor disagree,” (d) 25.93% ($N = 28$) participants answered, “Somewhat agree,” and (e) 9.26% ($N = 10$) participants answered, “Strongly agree.” The mean score for this question was $M = 2.78$ ($SD = 1.29$). It should be

noted that one person abstained from answering this question, and as such, the mean was substituted as their response.

The sixth question stated, “Domestic destinations are as safe as international destinations with respect to travel protocols.” Responses indicated that: (a) 5.50% ($N = 6$) participants answered, “Strongly disagree,” (b) 11.93% ($N = 13$) participants answered, “Somewhat disagree,” (c) 20.18% ($N = 22$) participants answered, “Neither agree nor disagree,” (d) 37.61% ($N = 41$) participants answered, “Somewhat agree,” and (e) 24.77% ($N = 27$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.64$ ($SD = 1.14$).

The seventh question stated, “I intend to fly during the ongoing Covid-19 pandemic.” Responses indicated that: (a) 6.42% ($N = 7$) participants answered, “Strongly disagree,” (b) 11.01% ($N = 12$) participants answered, “Somewhat disagree,” (c) 20.18% ($N = 22$) participants answered, “Neither agree nor disagree,” (d) 33.03% ($N = 36$) participants answered, “Somewhat agree,” and (e) 29.36% ($N = 32$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.68$ ($SD = 1.19$). A summary of the descriptive statistics of the ITF questions can be found in Table 4.1.

Table 4.1*Descriptive Statistics Showing Responses to ITF Scale Questions (N = 109)*

	<i>M</i>	<i>SD</i>
1. It is okay to fly during the ongoing Covid-19 pandemic.	3.63	1.06
2. I can fly during the ongoing pandemic if I want to.	3.93	1.11
3. I will fly if airlines do not have available direct flights to my destination.	3.36	1.10
4. My friends will think negatively of me for traveling during the ongoing pandemic. *	2.89	1.33
5. My family will think negatively of me for traveling during the ongoing pandemic. *	2.78	1.29
6. Domestic destinations are as safe as international destinations with respect to travel protocols.	3.64	1.14
7. I intend to fly during the Covid-19 pandemic.	3.68	1.19

1-Strongly Disagree 2-Somewhat Disagree 3-Neither Agree nor Disagree 4-Somewhat Agree 5-Strongly Agree
*Question reverse-coded

Responses to Airline Policies and Protocols Questions. The first question in this section asked, “Have you flown with an airline classified as a legacy carrier since the start of the pandemic in the U.S. in January 2020. Examples of legacy carriers include American Airlines, Alaska Airlines, Delta Airlines, United Airlines, etc.” The data indicated that 65.74% ($N = 71$) participants answered “Yes,” while 34.26% ($N = 37$) participants answered “No.” It should be noted that one participant abstained from answering this question.

The second question asked, “Have you flown with an airline classified as a low-cost carrier since the start of the pandemic in the U.S. in January 2020. Examples of low-cost carriers include Frontier Airlines, JetBlue, Southwest Airlines, Spirit Airlines, etc.” The results indicated that 63.30% ($N = 69$) participants answered “Yes,” while 36.70% ($N = 40$) participants answered “No.”

The third question asked, “Which mode of air transport do you prefer between legacy carriers and low-cost carriers for travel during the pandemic?” Responses indicated that 55.96% ($N = 61$) participants answered, “Legacy Carriers,” while 44.04% ($N = 48$) participants answered, “Low-Cost Carriers.”

The fourth question stated, “Low-cost carrier pandemic safety protocols are as safe as those implemented by legacy carriers.” Responses indicated that: (a) 1.83% ($N = 2$) participants answered, “Strongly disagree,” (b) 7.34% ($N = 8$) participants answered, “Somewhat disagree,” (c) 20.18% ($N = 22$) participants answered, “Neither agree nor disagree,” (d) 49.54% ($N = 54$) participants answered, “Somewhat agree,” and (e) 21.10% ($N = 23$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.81$ ($SD = 0.91$).

The fifth question stated, “There is no difference between pandemic safety protocols of legacy carriers and those of low-cost carriers.” Responses indicated that: (a) no participants answered, “Strongly disagree,” (b) 11.93% ($N = 13$) participants answered, “Somewhat disagree,” (c) 23.85% ($N = 26$) participants answered, “Neither agree nor disagree,” (d) 29.36% ($N = 32$) participants answered, “Somewhat agree,” and (e) 34.86% ($N = 38$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.87$ ($SD = 1.02$).

The sixth question stated, “The policies implemented by low-cost carriers bolstered my decision to fly with them.” Responses indicated that: (a) 10.09% ($N = 11$) participants answered, “Strongly disagree,” (b) 10.09% ($N = 11$) participants answered, “Somewhat disagree,” (c) 29.36% ($N = 32$) participants answered, “Neither agree nor disagree,” (d) 36.70% ($N = 40$) participants answered, “Somewhat agree,” and (e) 13.76% ($N = 15$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.34$ ($SD = 1.14$).

The seventh question stated, “The policies implemented by legacy carriers bolstered my decision to fly with them.” Responses indicated that: (a) 11.11% ($N =$

12) participants answered, “Strongly disagree,” (b) 10.19% ($N = 11$) participants answered, “Somewhat disagree,” (c) 29.63% ($N = 32$) participants answered, “Neither agree nor disagree,” (d) 34.26% ($N = 37$) participants answered, “Somewhat agree,” and (e) 14.81% ($N = 16$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.31$ ($SD = 1.18$). It should be noted that one participant abstained from answering this question.

The eighth question stated, “When it comes to pandemic travel, ticket cost per airline does not play a major role in my decision to travel.” Responses indicated that: (a) 15.60% ($N = 17$) participants answered, “Strongly disagree,” (b) 17.43% ($N = 19$) participants answered, “Somewhat disagree,” (c) 15.60% ($N = 17$) participants answered, “Neither agree nor disagree,” (d) 39.45% ($N = 43$) participants answered, “Somewhat agree,” and (e) 11.93% ($N = 13$) participants answered, “Strongly agree.” The mean score for this question was $M = 3.15$ ($SD = 1.28$).

The ninth and final question asked, “Were there specific policies which caused you to gravitate towards a specific airline during the ongoing pandemic? Select all options that apply.” Responses indicated that: (a) 8.30% ($N = 23$) participants answered, “Baggage delivery services for a fee,” (b) 14.08% ($N = 39$) participants answered, “Blocking of the middle seat,” (c) 15.16% ($N = 42$) participants answered, “Provision of sanitizer stations and sanitizer wipes for passengers,” (d) 14.44% ($N = 40$) participants answered, “Regular sanitization of high touch areas,” (e) 11.19% ($N = 31$) participants answered, “Removal of change fees and credit extensions,” (f) 11.91% ($N = 33$) participants answered, “Self-scanning boarding passes,” (g) 5.78% ($N = 16$) participants answered, “Utilization of back-to-front boarding,” (h) 12.27% ($N = 34$) participants answered, “Limiting of food and beverage services onboard,” and (i) 6.86% ($N = 19$) participants answered, “Not Applicable.”

A summary of the descriptive statistics of questions four through eight within the responses to airline policies can be found in Table 4.2.

Table 4.2

Descriptive Statistics Showing Responses to Airline Policies and Protocols Questions (N = 109)

	<i>M</i>	<i>SD</i>
4. Low-cost carrier pandemic safety protocols are as safe as those implemented by legacy carriers.	3.81	0.91
5. There is no difference between pandemic safety protocols of legacy carriers and those of low-cost carriers.	3.87	1.02
6. The policies implemented by the low-cost carriers bolstered my decision to fly with them.	3.34	1.14
7. The policies implemented by the legacy carriers bolstered my decision to fly with them.	3.31	1.18
8. When it comes to pandemic travel, ticket cost per airline does not play a major role in my decision to travel.	3.15	1.28

1-Strongly Disagree 2-Somewhat Disagree 3-Neither Agree nor Disagree 4-Somewhat Agree 5-Strongly Agree

Inferential Statistics

The purpose of the current study was to gain a better understanding of passenger preference between low-cost carriers and legacy carriers with respect to travel during the Covid-19 pandemic. Utilizing questions from the ITF scale developed by Liang (2021) as well as other questions related to airline travel protocols and practices, the following results were produced.

Reliability

As stated before, the reliability of the questionnaire was analyzed utilizing Cronbach's alpha. According to Tavakol and Dennick (2011), a Cronbach's alpha value of 0.70 and above was acceptable for scale reliability analysis. The

Cronbach’s alpha for the questionnaire was calculated to be 0.759, which is within the acceptable range.

Independent T-Test

As a reminder from Chapter 1, the research question and created hypotheses were as follows:

R.Q.: What impact do policies implemented by low-cost carriers and legacy carriers affect passengers’ intentions to fly during the global Covid-19 pandemic?

H₀: There is no significant difference in passenger choice with respect to intention to fly utilizing a low-cost carrier versus a legacy carrier based on Covid-19 policies implemented.

H₁: There is a significant difference in passenger choice with respect to intention to fly utilizing a low-cost carrier versus a legacy carrier based on Covid-19 policies implemented.

The results of the independent t-test are illustrated in Table 4.3.

Table 4.3

Independent T-Test Results

	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>
Equal Variances Assumed	2.392	107	.018	.462

A Levene’s test was conducted, and the results concluded that the test was insignificant ($p = .069$), thereby satisfying the homogeneity of variance. To ensure the normalcy of data, a Kolmogorov-Smirnov test was also conducted. According to Glen (2022), the Kolmogorov-Smirnov test is best utilized for sample sizes of

fifty or more. The test was insignificant ($p = .087$), thereby satisfying the normalcy of data. As a result, equal variances were assumed. The results of the test were statistically significant, $t(220) = 2.392$, $p < .05$. Thus, the null hypothesis is rejected. There is a significant difference between persons who preferred to travel with legacy carriers during the pandemic versus those who preferred to travel with low-cost carriers. Persons who selected legacy carriers were given a score of 1, while those who selected low-cost carriers were given a score of 2. Participants who preferred legacy carriers ($M = 43.3770$, $SD = 6.97145$) reported higher scores than those who preferred low-cost carriers ($M = 40.1454$, $SD = 7.68513$).

The measure of effect size, as indexed by d , was $.462$, thus indicating a medium effect between groups and the scores attained. The results of the test found that legacy carrier and low-cost carrier groups did differ significantly in scoring, with the legacy carrier group attaining higher scores. This means that when it comes to pandemic travel, passengers prefer to utilize legacy carriers for air travel.

Summary

Chapter 4 includes the results of both the descriptive and inferential statistics. With the utilization and analysis of some questions from the ITF scale and questions pertaining to airline pandemic protocols, the researcher was able to identify whether or not the null hypothesis should be rejected or not. Interpretation of the results and recommendations for future research are provided within the next chapter.

Chapter 5

Discussion and Recommendations

Summary of Study

The purpose of the study was to determine whether or not airline passengers had a preference between legacy versus low-cost carriers as a means to travel during the ongoing Covid-19 pandemic. Although a number of protocols implemented were common amongst airlines, there were a few unique to individual airlines. Differences were also noted in how some of the protocols were implemented. A questionnaire was created utilizing questions from the ITF scale created by Liang (2021), as well as other questions pertaining to airline pandemic protocols that were implemented. The questionnaire was then distributed via MTurk and garnered a total of 109 participants. To assess the reliability of the questionnaire, Cronbach's alpha was utilized. Data analysis was conducted through an independent t-test to determine whether or not passengers believed there was a difference between traveling with a legacy carrier versus a low-cost carrier when it came to implemented protocols.

Discussion of Findings

As mentioned in the previous section, Cronbach's alpha value of 0.759 was calculated. This value showed that the questionnaire could be deemed as reliable. Validity of the questionnaire was assessed on two aspects. The validity of the ITF prompts utilized within the questionnaire were previously assessed and deemed acceptable by Liang (2021). Interested persons can refer to the dissertation presented by Liang (2021) for more information. Face validity was also utilized. Several SMEs were consulted throughout the questionnaire creation process. Potential questions were reviewed, and SMEs gave helpful feedback, which was utilized to finetune the questionnaire. The aim of this study was to determine whether or not passengers had a preference between traveling via legacy carriers

versus low-cost carriers when it came to pandemic protocols implemented. The results indicated that there was indeed a significant difference, with more participants preferring to utilize legacy carriers for pandemic travel versus their low-cost counterparts $t(220) = 2.392, p < .05$. An effect size of $d = .462$ was also calculated, indicating a medium-sized effect between the two groups (legacy carriers versus low-cost carriers) and the scores attained by each one.

Inferences

As stated earlier within the study, each airline was forced to implement procedures and protocols in order to reinvigorate the public's trust in health safety during pandemic travel. With the number of protocols implemented, a considerable number were common among airlines, with some being unique to individual carriers. It was interesting to note that even though a number of participants did have various protocols which bolstered their decision to travel, there were also a few who were indifferent with respect to the protocols implemented. For those who were indifferent, a number of factors could have contributed to this decision such as the general need to travel. It is important to note, however, that even though low-cost carriers tend to be less expensive than their legacy counterparts, participants indicated that they would rather utilize legacy carriers.

For the airlines, a review of the protocols could be undertaken to understand which protocols work and also which protocols are seen as major incentives to passengers. For example, the delivery of baggage for a fee was a policy implemented by one airline (United Airlines). If this policy is popular within that airline, they may decide to make it permanent and even utilize it beyond the pandemic. For other airlines, it would function as an opportunity to offer a service that is seen as favorable for passengers. Airlines could therefore amend, discontinue, or even introduce protocols based on an analysis of what is already implemented within the said airline to become more competitive within the current global conditions.

With the pandemic seeming to reach a normalized stage throughout the globe, some countries have begun to discontinue pandemic protocols. As of the current moment, the airlines have dropped some of the protocols implemented, but some, such as mask-wearing, still remains intact. However, although protocols may be further amended or eradicated, it should be noted that some countries are once again seeing a resurgence in the number of cases, and thus some protocols are being reimplemented. With respect to the airlines, this may mean that certain protocols such as the mask-wearing may never be discontinued but may instead be around until the cessation of the pandemic.

As stated in an earlier chapter, the study looks to build off research done by Dr. Liang and the validation of the ITF scale. The ITF scale measured passenger intention through attitude and subjective norms, which are a part of the theory of planned behavior. The questionnaire included prompts from the ITF scale, which helped provide a look at passenger decision-making to fly during the pandemic. Analysis of the data showed that persons who had higher scores within the areas of attitude and subjective norms, had higher scores, meaning they had a high intention to travel during the pandemic. Travel risk was also identified as a dimension on the ITF scale and was grounded in the theory of protection motivation. The theory states that as risk increases, the intention to perform a behavior decreases. Within this study, as risk increased, passengers' intention to fly decreased.

Limitations

1. The demographics of the research were limited to participants who reside within the United States and were at least eighteen years of age. Although this is a good indicator of what is happening here nationally, it does not indicate how persons residing in other countries may make decisions when it comes to pandemic travel.
2. Due to the nature of the distribution of the questionnaire via MTurk, the researcher relied on participant self-reporting. Compensation was given to

participants, and as a result, some may have not been as truthful or even rushed through the questionnaire in order to receive the pay code at the end.

Recommendations for future study.

1. Based on the results of the current study, there are opportunities available for future studies along the same topic. The research built upon the ITF scale developed by Liang (2021). Future research can add other factors such as costliness and flight connectivity to further understand how passengers make the decision to travel during the ongoing Covid-19 pandemic.
2. The current study and that done undertaken by Liang (2021), both centered around the same basic demographics of being at least eighteen years of age and within the United States. Future research can be done to understand passenger preference in other sections of the world as human background plays a large factor in how each person makes decisions. For example, there is a cultural difference between persons with an American upbringing and those brought up in Asian countries. These differences may lead to different decision-making when it comes to pandemic travel.
3. Future studies could utilize a blended method of administering the questionnaire in person and through an online medium such as MTurk to get a more diverse mixture of answers. The current study depended heavily on participant self-reporting, but with a mixture, future results would have both self-reporting while verifying some of the data available via the use of in-person questionnaires.
4. The current study focuses mainly on the timeline of the start of the pandemic within the United States, which was from January 2020, to early 2022. As of late, a number of countries globally have relaxed or even discontinued a number of Covid-19 directives which had been in place since the start of the pandemic. Future study can analyze if as different countries changed their pandemic protocols, if it had an impact on passenger's

intentions to fly in order to understand if a passenger's decision can change based on the protocols implemented.

Conclusions

The purpose of the study was to determine passengers' preference between legacy carriers versus low-cost carriers for pandemic travel. With the development, distribution, and analysis of a questionnaire, it was determined that passengers did indeed have a preference, with the majority opting to utilize legacy carriers for pandemic travel.

The results of this study are quite relevant within the aviation industry as it can inform airlines on which policies are more popular among passengers, allowing amendments to current policies, implementations of new policies, and possibly retiring policies that were unpopular. The researcher also provided limitations and recommendations for future research to further understand how pandemic protocols can impact passengers' intentions to fly.

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Appendix A

Instrument

Demographic Questions

1. What is your current age?
2. What is your gender? (Male/ Female/ Other)
3. What is your annual income? (Less than \$10,000/ \$10,000 to \$39,999/ \$40,000 to \$69,999/ \$70,000 to \$99,999/ more than \$99,999)
4. How many times have you flown since the start of the pandemic in the U.S. in January 2020? (1 to 3, 4 to 6, 7 to 9, 10 or more)

ITF Scale

Questions 1 through 7 in this section can be answered utilizing the following scale:

- (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly agree
1. It is okay to fly during the ongoing Covid-19 pandemic.
 2. I can fly during the ongoing pandemic if I want to.
 3. I will fly if airlines do not have available, direct flights to my destination.
 4. My friends will think negatively of me for traveling during the ongoing pandemic.
 5. My family will think negatively of me for traveling during the ongoing pandemic.
 6. Domestic destinations are as safe as international destinations with respect to travel protocols.
 7. I intend to fly during the ongoing Covid-19 pandemic.

Airline Policies

Questions 11 through 15 in this section can be answered utilizing the following scale: (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly agree

8. I have flown with an airline classified as a legacy carrier (American, Alaska, Delta, United, etc.) since the start of the pandemic in the U.S. in January 2020. (Yes, No)
9. I have flown with an airline classified as a low-cost carrier (Frontier, JetBlue, Southwest, Spirit, etc.) since the start of the pandemic in the U.S. in January 2020. (Yes, No)
10. Which mode of transport do you prefer between legacy carriers and low-cost carriers for travel during the pandemic? (Legacy carriers, low-cost carriers)
11. Low-cost carrier pandemic safety protocols are as safe as those implemented by legacy carriers
12. There is no difference between pandemic safety protocols of legacy carriers and those of low-cost carriers

13. The policies implemented by the low-cost carriers bolstered my decision to fly with them
14. The policies implemented by the legacy carriers bolstered my decision to fly with them
15. When it comes to pandemic travel, ticket cost per airline does not play a major role in my decision to travel
16. Were there specific policies which caused you to gravitate towards a specific airline during the ongoing pandemic? Select all options that apply.
 - a. Regular sanitization of high touch areas
 - b. Blocking of the middle seat
 - c. Utilization of back-to-front boarding
 - d. Removal of change fees and credit extensions
 - e. Baggage delivery services for a fee
 - f. Provision of sanitizer stations and sanitizer wipes for passengers
 - g. Self-scanning boarding passes
 - h. Limiting of food and beverage services onboard
 - i. Not applicable